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DRAFT | Environmental Impact Report

Chapters 1–8

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LIST OF ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meters
2018 Community Plan	2018 Midway-Pacific Highway Community Plan
2022 Scoping Plan	*Final 2022 Scoping Plan for Achieving Carbon Neutrality*
2022 Scoping Plan	*Final 2022 Scoping Plan for Achieving Carbon Neutrality*
2024-2050 RTP/SCS	2024-2050 Regional Transportation Plan/Sustainable Communities Strategy
AB	Assembly Bil
ABM3	Activity Based Model
ACC	Advanced Clean Cars
ACM	asbestos-containing materials
Action Plan	California's Wildfire and Forest Resilience Action Plan
ADAM	Aerometric Data Analysis and Management
ADP	airport development plan
ADRP	Archaeological Data Recovery Program
AFV	alternative fuel vehicle
AHSC	Affordable Housing and Sustainable Communities Program
AIA	Airport Influence Area
AICUZ	Air Installations Compatible Use Zone
ALUC	airport land use commission
ALUCP	airport land use compatibility plan
AMI	area median income
AMSL	above mean sea level
APZ	accident potential zone
ARPA	Archaeological Resources Protection Act
ARPs	Advance Restoration Plans
ASB	Area of Special Biological Significance
ATDM	Active Transportation and Demand Management
ATP	Active Transportation Program
Basin Plan	Water Quality Control Plan for the San Diego Basin
BCLA	Biological Core and Linkage Area
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
Bike Plan EAP	Regional Bike Plan Early Action Program
BIL	Bipartisan Infrastructure Law
BLM	US Bureau of Land Management
BMO	Biological Mitigation Ordinance

BMP	best management practice
BNSF	Burlington Northern Santa Fe
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
CalARP	California Accidental Release Prevention
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
California MUTCD	*California Manual on Uniform Traffic Control Devices*
Cal-IPC	California Invasive Plant Council
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAO	Cleanup and Abatement Order
CAP	climate action plan
CAPP	Community Air Protection Program
CARB	California Air Resources Board
CBC	California Building Code
CCA	California Coastal Act
CCA	Community Choice Aggregation
CCAA	California Clean Air Act
CCC	California Coastal Commission
CCC	California Conservation Corps
CCE	Community Choice Energy
CCR	California Code of Regulations
CDE	California Department of Education
CDFW	California Department of Fish and Wildlife
CDO	Active Cease and Desist Order
CDP	coastal development permit
CDP	development permit
CE	conservation easement
CEA	Clean Energy Alliance
CEC	California Energy Commission
CEC	contaminant of emerging concern
CEPAM	California Emissions Projection Analysis Model
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFCP	California Farmland Conservancy Program
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations

CH_4	methane
CHHSL	California Human Health Screening Level
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
City	City of San Diego
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
COCs	contaminates of concern
Copermittees	San Diego County Copermittees
COS	Conservation and Open Space
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank Species
CTC	California Transportation Commission
CTPA	California Timberland Productivity Act
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWPP	community wildfire protection plan
CZMA	Coastal Zone Management Act
dB	decibels
dBA	A-weighted decibels
DEHQ	County of San Diego Department of Environmental Health and Quality
diesel PM	diesel particulate matter
DMA 2000	Disaster Mitigation Act of 2000
DMG	Division of Mines and Geology
DMU	diesel-multiple unit
DNL	day-night sound level
DOC	Department of Conservation
DOD	US Department of Defense
DOI	US Department of the Interior
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EDC	California Education Code
EERD	DTSC Enforcement and Emergency Response Division
EFH	Essential Fish Habitat
EHRA	Earthquake Hazards Reduction Act
EIR	environmental impact report

EIS	environmental impact statement
EMMA	Emergency Managers Mutual Aid
EMP	Environmental Mitigation Program
EO	executive order
EPA	US Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
ESA	Environmental Site Assessment
ESHA	environmentally sensitive habitat area
ESL	Environmentally Sensitive Lands
FAA	Federal Aviation Administration
FAA	Federal Aviation Authority
FAST Act	Fixing America's Surface Transportation
FAST	Fixing America's Surface Transportation
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRM	Federal Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FMP	Fisheries Management Plan
FMP	Floodplain Management Plan
FPD	Fire Protection Districts
FPPA	Farmland Protection Policy Act
FRA	Federal Railroad Administration
FRAP	Fire and Resource Assessment Program
FSZ	Farmland Security Zone
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
FUDS	formerly used defense sites
GHG	greenhouse gas
GIS	geographic information system
GSA	groundwater sustainability agency
GSP	Groundwater Sustainability Plan
GVWR	gross vehicle weight rating
GWh	gigawatt-hours
HAP	hazardous air pollutant
HAPC	Habitat Area of Particular Concern
HARRF	Hale Avenue Resource Recovery Facility

HAZMAT Area Plan	San Diego County Operational Area Hazardous Materials Area Plan
HCD	Housing and Community Development
HCP	habitat conservation plan
HDM	*California Highway Design Manual*
HDPUV	heavy-duty pickup trucks and van
HFC	hydrofluorocarbon
HFTD	high fire threat district
HHZ	High-Hazard Zone
HIRT	Hazardous Materials Incident Response Team
HLP	Habitat Loss Permit
HMD	Hazardous Materials Division
HMGP	Hazard Mitigation Grant Program
HMP	Habitat Management Plan
HMP	hydromodification management plan
hp	horsepower
HSAs	Hydrologic subareas
HSC	Health and Safety Code
HSRA	High-Speed Rail Authority
HST	High-Speed Train
HUD	Housing and Urban Development
HU	hydrologic unit
Hz	hertz
I	Interstate
IA	Implementing Agreement
IBA	Important Bird Area
ICM	Integrated Corridor Management
IEPR	Integrated Energy Policy Report
IFC	International Fire Code
Industrial General Permit	NPDES General Permit for Storm Water Discharges Associated with Industrial Activities Excluding Construction Activities
INRMP	Integrated Natural Resource Management Plan
IRP	integrated resource planning
IRWM	Integrated Regional Water Management
ITP	incidental take permit
ITS	intelligent transportation system
IWMP	integrated waste management plan
kVA	kilovolt amps
kW	kilowatts
kWh	kilowatt hours

LAFCO	local agency formation commission
LAMP	Local Agency Management Program
LBP	lead-based paint
LCFS	Low Carbon Fuel Standard
LCI	Office of Land Use and Climate Innovation
LCP	local coastal plan
LCP	local coastal program
L_{dn}	day-night sound level
LDV	light-duty vehicles
LEA	County of San Diego Local Enforcement Agency
LEED	Leadership in Energy and Environmental Design
L_{eq}	equivalent sound level
LFPZ	Levee Flood Protection Zone
LHP	Landslide Hazard Program
LID	low impact development
L_{max}	maximum sound level
LOSSAN	Los Angeles–San Diego–San Luis Obispo
LPG	liquefied petroleum gas
LQG	large-quantity generator
LRA	Local Responsibility Area
LSI	large spark-ignition
LTMP	long-term management plan
LUEG	Land Use and Environment Group
LUST	leaking underground storage tank
L_v	vibration velocity level
MAP	mitigation action plan
MAP-21	Moving Ahead for Progress in the 21st Century Act
MBC	Marine Corps Base
MBTA	Migratory Bird Treaty Act
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCRD	Marine Corps Recruit Depot
MDPV	medium-duty passenger vehicles
mgd	million gallons per day
MHCP	Multiple Habitat Conservation Program
ML	Managed Lane
MLD	Most Likely Descendant
MMPA	Marine Mammal Protection Act
MMRP	mitigation monitoring and reporting program
MOM	Master Occurrence Matrix
MOU	memorandum of understanding

MP	mile post
mph	miles per hour
MPO	metropolitan planning organization
MPRSA	Marine Protection, Research, and Sanctuaries Act
MRZ	Mineral Resource Zone
MS4	municipal separate storm sewer system
MSAT	Mobile Source Air Toxic
MSCP	Multiple Species Conservation Plan
MSHCP	Multi-Species Habitat Conservation Plan
MSP	Management Strategic Plan
MTS	Metropolitan Transit System
MY	model year
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAGPRA	Native American Graves Protection and Repatriation Act
NAHASDA	Native American Housing Assistance and Self Determination Act
NAHC	Native American Heritage Commission
NAVWAR	Naval Information Warfare Systems Command
Navy	US Department of the Navy
NBC	Naval Base Coronado
NCCP	Natural Community Conservation Planning
NCCP/HCP	Natural Community Conversation Plan/Habitat Conservation Plan
NCMT	National City Marine Terminal
NCTD	North County Transit District
NCWRP	North City Water Reclamation Plant
ND	negative declaration
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutant
NEV	neighborhood electric vehicle
Next OS	Next Operating System
NFIP	National Flood Insurance Program
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NNL	National Natural Landmarks
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	notice of availability
NOAA	National Oceanographic and Atmospheric Administration

NOP	notice of preparation
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	National Park Service
NRHP	National Register of Historic Places
NSB	National Scenic Byway
NWI	National Wetlands Inventory
O_3	ozone
OAEOC	Operational Area Emergency Operations Center
OAL	Office of Administrative Law
OEHHA	California Office of Environmental Health Hazard Assessment
OES	County of San Diego Office of Emergency Services
OHP	Office of Historic Preservation
OHWM	Ordinary High Water Mark
OPR	Governor's Office of Planning and Research
OSHA	US Occupational Safety and Health Administration
OTC	Old Town Campus
OWTS	onsite wastewater treatment systems
OWTS	On-Site Wastewater Treatment Systems
ozone	ozone
PACTAC	Pacific Highway Coastal Rail Trail airport connections
PAH	polycyclic aromatic hydrocarbons
PAMA	Pre-Approved Mitigation Area
Pb	lead
PCAP	Priority Climate Action Plan
PCB	polychlorinated biphenyl
PCT	Pacific Crest Trail
PDP	priority development project
PFC	perfluorinated carbon
PIR	Pacific Imperial Railroad, Inc.
PM	particulate matter
PM_{10}	particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ and PM_{10}	fine and respirable particulate matter
$PM_{2.5}$	particulate matter smaller than or equal than $_{2.5}$ microns in diameter
PMP	Port Master Plan
PMPU	Port Master Plan Update
POE	port of entry
Port	San Diego Unified Port District
Porter-Cologne Act	Porter-Cologne Water Quality Control Act

ppm	parts per million
PPV	peak particle velocity
PRC	California Public Resources Code
PRC	Public Resource Code
PRPA	Paleontological Resources Preservation Act
PUC	Public Utilities Code
PV	photovoltaic
PWP/TREP	Public Works Plan/Transportation and Resource Enhancement Program
RCP	Regional Comprehensive Plan
RCP	Representative Concentration Pathways
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
RCS	Resource Conservation and Sustainability
REC	recognized environmental condition
RES	Regional Energy Strategy
RHA	Rivers and Harbors Act
RHNA	regional housing needs allocation
Riding to 2050	Riding to 2050 — San Diego Regional Bicycle Plan
RMP	resources management plan
RMP	Risk Management Plan
RMS	root-mean-square
ROG	reactive organic gases
ROW	right-of-way
ROWD	report of waste discharge
RPA	Register of Professional Archaeologists
RPO	Resource Protection Ordinance
RPS	Renewables Portfolio Standard
RTIP	Regional Transportation Improvement Program
RTP	regional transportation plan
RTP/SCS	regional transportation plan/sustainable communities strategy
RWQCB	regional water quality control board
SAA	California State Aeronautics Act
SAA	streambed alteration agreement
SAFE	Safer Affordable Fuel-Efficient
SALCP	Sustainable Agricultural Lands Conservation Program
SAM	Site Assessment and Mitigation
SANDAG	San Diego Association of Governments
SB	Senate Bill
SBIWTP	South Bay International Wastewater Treatment Plant
SCAG	Southern California Association of Government
SCIC	South Coastal Information Center

SCS	sustainable communities strategy
SD&AE	San Diego and Arizona Eastern Railway Company
SDAB	San Diego Air Basin
SDAPCD	County of San Diego Air Pollution Control District
SDAPCD	San Diego Air Pollution Control District
SDCP	San Diego Community Power
SDCRAA	San Diego County Regional Airport Authority
SDCSD	San Diego County Sheriff's Department
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas and Electric
SDIA	San Diego International Airport
SDIV	San Diego and Imperial Valley Railroad
SDMC	San Diego Municipal Code
SDMMP	San Diego Management and Monitoring Program
SDSU	San Diego State University
SEIR	Subsequent Environmental Impact Report
SF_6	sulfur hexafluoride
SFHA	Special Flood Hazard Area
SFP	School Facilities Program
SGMA	Sustainable Groundwater Management Act
SHMA	Seismic Hazards Mapping Act
SIP	State Implementation Plan
SIS	Smart Intersection Systems
SLF	Sacred Lands File
SLT	Screening Level Threshold
SMARA	State Surface Mining and Reclamation Act of 1975
SMGB	State Mining and Geology Board
SO_2	sulfur dioxide
South OC	South Orange County
SO_X	sulfur oxide
SPCC	Spill Prevention, Control, and Countermeasure
Specific Plan	Midway Rising Specific Plan
SPL	sound pressure level
SQG	small-quantity generator
SR	State Route
SRA	state responsibility area
SRO	Single room occupancy unit
SSMP	sewer system management plan
SSO	sanitary sewer overflow
SUSMP	Standard Urban Stormwater Mitigation Plan
SVP	Society of Vertebrate Paleontology
SWIS	Solid Waste Inventory System

SWPPP	stormwater prevention pollution plan
SWRCB	State Water Resource Control Board
TAC	toxic air contaminant
TAMT	Tenth Avenue Marine Terminal
Tanner Act	Toxic Air Contaminant Identification and Control Act
TDM	transportation demand management
TDS	total dissolved solids
THP	Timber Harvest Plan
TMDL	total maximum daily load
TPA	transit priority area
TPZ	Timberland Production Zone
TRI	Toxics Release Inventory
TSM	transportation system management
TSMO	transportation system management and operations
UBC	Uniform Building Code
UDC	Unified Disaster Council
UFP	ultrafine particulate matter
Unified Program	Unified Hazardous Waste and Hazardous Materials Management Regulatory Program
USACE	US Army Corps of Engineers
USC	U.S. Code
USC	United States Code
USCG	U.S. Coast Guard
USDA	US Department of Agriculture
USDOT	US Department of Transportation
USEIA	US Energy Information Administration
USFS	US Forest Service
USGS	U.S. Geological Survey's
UST	underground storage tank
UTC	University Town Center
VAP	Voluntary Assistance Program
VdB	vibration decibels
VMT	vehicle miles traveled
VPHCP	Vernal Pool Habitat Conservation Plan
VSQG	very small-quantity generator
WDR	waste discharge requirement
Wildfire Crisis Strategy	US Forest Service 10-Year Wildfire Crisis Strategy
WMA	Watershed Management Area
WQIP	Water Quality Improvement Plan
WQO	water quality objective

WRP	Water Reclamation Plant
WUI Planning Guide	Wildland-Urban Interface Planning Guide
WUI	wildland urban interface
WWTP	wastewater treatment plant
ZEV	zero-emission vehicle

ES EXECUTIVE SUMMARY

This is the San Diego Association of Governments' (SANDAG's) Draft Environmental Impact Report (EIR) for the 2025 Regional Plan ("the proposed Plan"). It has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of CEQA (CEQA Guidelines) (14 California Code of Regulations Sections 15000 et seq.). The proposed Plan is an update to San Diego Forward: The 2021 Regional Plan ("the 2021 Regional Plan"), adopted in December 2021, and subsequently amended in October 2023 by the SANDAG Board of Directors (the Amended 2021 Regional Plan). The proposed Plan updates the Regional Comprehensive Plan (RCP) for the San Diego region and the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS).

This Draft EIR analyzes the significant environmental impacts of the proposed Plan, mitigation measures to avoid or reduce these impacts, and alternatives to the proposed Plan. It was prepared to disclose this information to decision makers, members of the public, and public agencies so that informed decisions can be made about the proposed Plan. CEQA requires that decision makers make informed decisions on a project, considering the information presented in the EIR, along with social, economic, and other factors.

The Draft EIR is available for a 49-day public review period, from August 26, 2025 to October 13, 2025. Following the public review period, SANDAG will prepare written responses to significant environmental concerns raised in the comments on the Draft EIR. The Final EIR will include revisions to the Draft EIR, comments received on the Draft EIR either verbatim or in summary, and SANDAG's responses to significant environmental concerns raised in the public comments.

ES.1 SUMMARY OF THE PROPOSED PLAN

The proposed Plan includes a blueprint for a regional transportation system, serving existing and projected residents and workers within the San Diego region (Figure 2-1) that further enhances quality of life and offers more mobility options for people and goods. The proposed Plan looks ahead to 2050, and accommodates for more than 112,000 new residents, approximately 170,000 new jobs, and over 202,000 new housing units.

The underlying purpose of the proposed Plan is to develop a regional plan that meets federal and state planning requirements and addresses the regional transportation needs of both the population of today and the population of the future. These transportation needs impact the quality of life in the San Diego region, including ensuring access to economic opportunities, remedying historical social inequities, planning for climate change, and prioritizing public health and safety. The proposed Plan envisions a sustainable and resilient future for the region and economy supported by a transportation network that is convenient, equitable, healthy, and safe.

To accomplish this purpose, the objectives of the proposed Plan are:

- Focus population and employment growth to protect sensitive habitat and natural resource areas.
- Provide transportation investments that support compact land development patterns and reduce vehicle miles traveled.
- Meet greenhouse gas emissions targets established for the San Diego region by the California Air Resources Board.
- Provide transportation investments and a land use pattern that promotes social equity.
- Provide transportation investments and a land use pattern that improves air quality.
- Provide multimodal access to employment centers and key destinations for all communities.
- Enhance the efficiency of the transportation network for moving people and goods through the deployment of new technologies.

Under Senate Bill (SB) 375, the regional transportation plan must include an SCS consisting of land use, housing, and transportation strategies that, if implemented, would allow the region to meet its regional targets for greenhouse gas (GHG) emissions reductions from passenger vehicle use established by the California Air Resources Board (CARB). The purpose of an SCS is to align regional transportation, housing, and land use planning to attain the regional GHG reduction target. Although SB 375 requires a regional GHG reduction targets for 2035, the proposed Plan also includes a longer 2050 time horizon. This was done because a major local transportation funding program (the *TransNet* Extension Ordinance and Expenditure Plan) extends to almost 2050.

The SCS land use pattern identifies areas in the region sufficient for housing for the required 8-year projection of the regional housing need. The proposed SCS land use pattern is derived from jurisdictions' general plans, those general plan amendments pending at the time of SCS land use pattern development, and more specifically the most recent adopted housing elements approved by the California Department of Housing and Community Development.

The proposed Plan's transportation network will make travel safer and more efficient, while offering people more alternatives to driving alone—including more transit options, more Flexible Fleet options, and more opportunities for biking, walking, and other forms of active transportation. These transportation improvements are informed by recent and historical data trends, as well as input from regional stakeholders, to address evolving travel demands and needs. Capital investments include an updated Regional Active Transportation Network that represents a significant increase in investment in safety and mobility for people who travel the region by foot, bike, scooter, transit, or other means outside of a car. They also include Complete Corridors that incorporate various transportation improvements to enhance connectivity, including managed lanes, connectors and direct access ramps for managed lanes, transportation technology and Smart Intersection Systems, and goods movement. Lastly, capital investments include transit investments that include regional rail; light rail, Streetcar, a variety of bus options, an Airport Transit Connection, and pricing strategies for transit, Flexible Fleets (which are on-demand, shared services), and parking.

The proposed Plan also includes several supporting policies and programs, and investments to support them, as well as investments in systemwide support services.

ES.2 PROJECT LOCATION

The boundary of the proposed Plan includes the entire San Diego region, which is comprised of more than 4,200 square miles (see Figure 2-1). The San Diego region is coterminous with San Diego County. To the north, the region is bordered by Orange and Riverside counties, although largely separated from Orange County by Marine Corps Base Camp Pendleton. To the south of the region is the U.S. border with Mexico. The Pacific Ocean forms a natural border to the west, and the region shares a border with Imperial County to the east. The majority of urban development lies in the western portion of the San Diego region along the coast. The communities located inland in the eastern portion of the region have focused on maintaining a rural character. Over half of the total land area in the region is not available for public development, including public lands, dedicated parks and open space, lands constrained for environmental reasons, and military use. The San Diego region is supported by an existing network of freeways, expressways, regional arterials, transit corridors, regional bus and rail transit corridors, bikeways, commercial and general aviation facilities, seaport facilities, and ports of entry at the U.S–Mexico border. The project location and environmental setting are discussed in more detail in Chapter 3, Environmental Setting.

ES.3 AREAS OF CONTROVERSY

CEQA Guidelines Section 15123(b)(2) requires that an EIR contain a discussion of areas of controversy known to the lead agency, including issues raised by agencies and the public. Several areas of controversy were identified during the EIR scoping process, and through public input on the proposed Plan outside of the Notice of Preparation (NOP) process.

These areas of controversy were identified through letters submitted to SANDAG and presentations at SANDAG board meetings. In no particular order, areas of controversy known to SANDAG include:

- Providing an increase in Rapid transit, the Purple Line as a Trolley, and other rail corridor service enhancements.
- Determining a long-term sustainable solution for continuing rail service through the Del Mar Bluffs area.
- Importance of meeting and exceeding SB 375 and other State greenhouse gas reduction targets.
- How to address the need for affordable housing in the region; make infrastructure investments in areas with future housing growth.
- Whether to provide transit fare subsidies for Youth Opportunity Passes, senior citizens, and disadvantaged community members.
- Whether to reduce freeway expansions. and focus land use and transportation growth within urban core areas that would provide affordable housing and transportation needs and meet GHG and vehicle miles traveled (VMT) reduction targets.
- How to reduce transportation-related pollution levels in disadvantaged communities.
- How to accommodate future growth and housing while decreasing sprawl into natural open space areas.
- Expanding opportunities for biking.
- Importance of having a plan that promotes planning strategies that include multiple species habitat conservation planning efforts.
- Provide a plan without a road usage charge.

ES.4 ISSUES TO BE RESOLVED

CEQA Guidelines Section 15123(b)(3) requires that an EIR contain a discussion of issues to be resolved. Issues to be resolved in this EIR include choosing among alternatives to the proposed Plan, and deciding how to mitigate the proposed Plan's significant environmental impacts. Additionally, if it adopts the proposed Plan, the SANDAG Board of Directors must decide whether specific social, economic, or other benefits of the proposed Plan outweigh its significant unavoidable environmental impacts; if so, the Board of Directors must adopt a Statement of Overriding Considerations.

ES.5 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table ES-1 provides a summary of environmental impacts, mitigation measures to avoid or reduce significant impacts, and significance of the impact after mitigation is applied, for 2035 and 2050. This summary is based on the impact analyses provided in Chapter 4, Sections 4.1 through 4.19. A detailed analysis of cumulative impacts is provided in each section, which analyzes the cumulative environmental impacts for each environmental resource area when impacts of the proposed Plan are combined with impacts of probable future projects, regional plans and growth projections.

Table ES-1 Summary of Environmental Impacts and Mitigation Measures

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
4.1 Aesthetics and Visual Resources			
AES-1 Have a substantial adverse effect on a scenic vista Significant impact in 2035 and 2050.	**AES-1a Protect Public Views of Scenic Vistas for Transportation Network Improvements.** **AES-1b Protect Public Views of Scenic Vistas for Development Projects.**	Significant and Unavoidable	Significant and Unavoidable
AES-2 Substantially damage scenic resources, including but not limited to, trees, rocks, outcroppings, and historic structures within a state scenic highway or local scenic route Significant impact in 2035 and 2050.	**AES-2a Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Transportation Network Improvements.** **AES-2b Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Development Projects.**	Significant and Unavoidable	Significant and Unavoidable
AES-3 Substantially degrade the existing visual character or quality of public views of the site and its surroundings, including adding a visual element of urban character to an existing rural or open space area, or conflicting with regulations governing scenic quality Significant impact in 2035 and 2050.	**AES-1a Protect Public Views of Scenic Vistas for Transportation Network Improvements.** **AES-2a Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Transportation Network Improvements.** **AES-2b Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Development Projects.** **AES-3a Reduce Impacts on Visual Character for Transportation Network Improvements.** **AES-3b Reduce Impacts on Visual Character for Development Projects.**	Significant and Unavoidable	Significant and Unavoidable
AES-4 Substantially degrade the existing visual character or quality of public views of the site and its surroundings by creating a new source of light or glare that would adversely affect day or nighttime views Significant impact in 2035 and 2050.	**AES-4a Minimize Effects of Light and Glare for Transportation Network Improvements.** **AES-4b Minimize Effects of Light and Glare for Development Projects.** **BIO-2a Implement Design, Minimization, and Avoidance Measures for Special-Status Animal Species.**	Significant and Unavoidable	Significant and Unavoidable
C-AES-1 Make a Cumulatively Considerable Contribution to Adverse Effects Related to Aesthetics and Visual Resources Cumulatively considerable in 2035 and 2050.	**AES-1a Protect Public Views of Scenic Vistas for Transportation Network Improvements.** **AES-1b Protect Public Views of Scenic Vistas for Development Projects.** **AES-2a Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Transportation Network Improvements.**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	AES-2b Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Development Projects. **AES-3a Reduce Impacts on Visual Character for Transportation Network Improvements.** **AES-3b Reduce Impacts on Visual Character for Development Projects.** **AES-4a Minimize Effects of Light and Glare for Transportation Network Improvements.** **AES-4b Minimize Effects of Light and Glare for Development Projects.** **BIO-2a Implement Design, Minimization, and Avoidance Measures for Special-Status Animal Species.**		
4.2 Agricultural and Forestry Resources			
AG-1 Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, or other agricultural lands to nonagricultural use Significant impact in 2035 and 2050.	**AG-1a Preserve Existing Agricultural Lands**. **AG-1b Reduce Transportation Network Improvement and Development Conflicts with Agricultural Operations.**	Significant and Unavoidable	Significant and Unavoidable
AG-2 Conflict with existing zoning for agricultural use or a Williamson Act contract Significant impact in 2035 and 2050.	**AG-1a Preserve Existing Agricultural Lands**. **AG-1b Reduce Transportation Network Improvement and Development Conflicts with Agricultural Operations.**	Significant and Unavoidable	Significant and Unavoidable
FR-1 Convert or result in the loss of "forest land" as defined in the California Forest Legacy Act of 2007 (PRC Section 12220[g]) Significant impact in 2035 and 2050.	**FR-1 Reduce Impacts on Forest Lands** **BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Communities and Regulated Aquatic Resources** **BIO-1b Provide Compensatory Mitigation** **BIO-1e Implement Best Management Practices to Avoid Indirect Impacts.**	Significant and Unavoidable	Significant and Unavoidable
C-AG-1 Make a cumulatively considerable contribution to adverse effects on agriculture and forestry resources Cumulatively considerable in 2035 and 2050.	**AG-1a Preserve Existing Agricultural Lands**. **AG-1b Reduce Transportation Network Improvement and Development Conflicts with Agricultural Operations** **FR-1 Reduce Impacts on Forest Lands** **BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Communities and Regulated Aquatic Resources** **BIO-1b Provide Compensatory Mitigation**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	BIO-1e Implement Best Management Practices to Avoid Indirect Impacts.		
4.3 Air Quality			
AQ-1 Conflict with or obstruct implementation of the Regional Air Quality Strategy, State Implementation Plan, and/or Community Emissions Reduction Plans Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
AQ-2 Result in an operations-related cumulatively considerable net increase in nonattainment or attainment criteria pollutant, including VOC, NOx, PM_{10}, $PM_{2.5}$, and SOx Significant impact in 2035 and 2050.	**AQ-2a Secure Incentive Funding.** **AQ-2b Regional Plan VMT Credit/Banking Program.** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.**	Significant and Unavoidable	Significant and Unavoidable
AQ-3 Result in Construction-related Emissions above Regional Mass Emission Thresholds Significant impact in 2035 and 2050.	**AQ-3a Implement Construction Best Management Practices for Fugitive Dust.** **AQ-3b Reduce Diesel Emissions During Construction From Off-Road Equipment.** **AQ-3c Reduce Diesel Emissions During Construction From On-Road Vehicles.** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.		
AQ-4 Expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations Significant impact in 2035 and 2050.	**AQ-2a Secure Incentive Funding.** **AQ-2b Regional Plan VMT Credit/Banking Program.** **AQ-4 Reduce Exposure to Localized Particulate and/or TAC Emissions.** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.**	Significant and Unavoidable	Significant and Unavoidable
AQ-5 Expose sensitive receptors to substantial TAC concentrations Significant impact in 2035 and 2050.	**AQ-2a Secure Incentive Funding** **AQ-2b Regional Plan VMT Credit/Banking Program.** **AQ-4 Reduce Exposure to Localized Particulate and/or TAC Emissions.** **AQ-5a Reduce Exposure to Localized Toxic Air Contaminant Emissions.** **AQ-5b Reduce Exposure to Localized Toxic Air Contaminant Emissions during Railway Design.** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.** **GHG-4c Establish Funding Programs for Zero-Emission Vehicle Infrastructure.**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects. **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.**		
AQ-6 Expose sensitive receptors to carbon monoxide hot spots Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
AQ-7 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
C-AQ-1 Make a cumulatively considerable contribution to adverse effects related to air quality Cumulatively considerable in 2035 and 2050.	**AQ-2a Secure Incentive Funding.** **AQ-2b Regional Plan VMT Credit/Banking Program.** **AQ-3a Implement Construction Best Management Practices for Fugitive Dust.** **AQ-3b Reduce Diesel Emissions During Construction from Off-Road Equipment.** **AQ-3c Reduce Diesel Emissions from On-Road Vehicles.** **AQ-4 Reduce Exposure to Localized Particulate and/or TAC Emissions.** **AQ-5a Reduce Exposure to Localized Toxic Air Contaminant Emissions.** **AQ-5b Reduce Exposure to Localized Toxic Air Contaminant Emissions during Railway Design.** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
4.4 Biological Resources			
BIO-1 Have a substantial adverse effect on any sensitive natural communities identified in local or regional plans, policies, regulations, or by CDFW or USFWS; or have a substantial adverse effect on state or federally regulated waters and wetlands through direct removal, filling, hydrological interruption, or other means Significant impact in 2035 and 2050.	**BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Vegetation Communities and Regulated Aquatic Resources.** **BIO-1b Provide Compensatory Mitigation.** **BIO-1c Prepare a Habitat Restoration Plan.** **BIO-1d Prepare Habitat/Long-Term Management Plans.** **BIO-1e Implement Best Management Practices to Avoid Indirect Impacts.**	Significant and Unavoidable	Significant and Unavoidable
BIO-2 Have a substantial adverse effect, either directly or indirectly, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or listed by CDFW or USFWS, including their federally designated critical habitat, or species that are considered sensitive in CEQA Guidelines Section 15380 Significant impact in 2035 and 2050.	**BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Vegetation Communities and Regulated Aquatic Resources.** **BIO-1b Provide Compensatory Mitigation.** **BIO-1c Prepare a Habitat Restoration Plan.** **BIO-1d Prepare Habitat / Long-Term Management Plans.** **BIO-2a Implement Design, Minimization, and Avoidance Measures for Special- Status Animal Species.** **BIO-2b Provide Compensatory Mitigation for Special-Status Plant Species.** **BIO-2c Provide Compensatory Mitigation for Special-Status Animal Species.**	Significant and Unavoidable	Significant and Unavoidable
BIO-3 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites Significant impact in 2035 and 2050.	**BIO-3a Facilitate Wildlife Movement.**	Significant and Unavoidable	Significant and Unavoidable
C-BIO-1 Make a cumulatively considerable contribution to adverse effects on biological resources Cumulatively considerable in 2035 and 2050.	**BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Vegetation Communities and Regulated Aquatic Resources.** **BIO-1b Provide Compensatory Mitigation.** **BIO-1c Prepare a Habitat Restoration Plan.** **BIO-1d Prepare Habitat / Long-Term Management Plans.** **BIO-1e Implement Best Management Practices to Avoid Indirect Impacts.** **BIO-2a Implement Design, Minimization, and Avoidance Measures for Special Status Animal Species.**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	BIO-2b Provide Compensatory Mitigation for Special-Status Plant Species. **BIO-2c Provide Compensatory Mitigation for Special-Status Animal Species.** **BIO-3a Facilitate Wildlife Movement.**		
4.5 Cultural Resources			
CULT-1 Cause a substantial adverse change in the significance of a historical resource or unique archaeological resource Significant impact in 2035 and 2050.	**CULT-1a Develop Project-Level Measures for Development Projects and Transportation Network Improvements.** **CULT-1b Implement Monitoring and Data Recovery Programs for Development Projects and Transportation Network Improvements.**	Significant and Unavoidable	Significant and Unavoidable
CULT-2 Disturb any human remains, including those interred outside of dedicated cemeteries, in violation of existing laws and regulations protecting human remains Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
C-CULT-1 Make a cumulatively considerable contribution to adverse effects on cultural resources Cumulatively considerable in 2035 and 2050.	**CULT-1a Develop Project-Level Measures for Development Projects and Transportation Network Improvements.** **CULT-1b Implement Monitoring and Data Recovery Programs for Development Projects and Transportation Network Improvements.**	Cumulatively Considerable	Cumulatively Considerable
4.6 Energy			
EN-1 Result in A potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy during project construction or operations Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
EN-2 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
C-EN-1 Make a cumulatively contribution to adverse effects on energy Not cumulatively considerable in 2035 and 2050.	Not applicable	Not Cumulatively Considerable	Not Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
4.7 Geology, Soils, and Paleontological Resources			
GEO-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving (a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based on other substantial evidence showing an earthquake fault is active; (b) Strong seismic ground shaking; (c) Seismic-related ground failure, including liquefaction; or (d) Landslides Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
GEO-2 Locate projects on a geologic unit or soil that is expansive or unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, creating substantial direct or indirect risks to life or property Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
GEO-3 Result in substantial soil erosion or the loss of topsoil Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
GEO-4 Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater, potentially causing adverse groundwater impacts Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
GEO-5 Directly or indirectly destroy a unique paleontological resource or site or unique geological feature Significant impact in 2035 and 2050.	**GEO-5a Identify the Potential for Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements.** **GEO-5b Impacts on Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements.**	Significant and Unavoidable	Significant and Unavoidable
C-GEO-1 Make a cumulative considerable contribution to adverse effects on geological and soil resources Not cumulatively considerable in 2035 and 2050.	Not applicable	Not Cumulatively Considerable	Not Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
C-PALEO-1 Make a cumulative considerable contribution to adverse effects on paleontological resources Cumulatively considerable in 2035 and 2050.	**GEO-5a Identify the Potential for Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements.** **GEO-5b Impacts on Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements.**	Cumulatively Considerable	Cumulatively Considerable
4.8 Greenhouse Gas Emissions			
GHG-1 Directly or indirectly result in an increase in GHG emissions compared to existing conditions (2022) Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
GHG-2 Conflict with the SANDAG region's achievement of SB 375 GHG emissions reduction targets for 2035 Less-than-significant impact in 2035.	Not applicable	Less than Significant	Less than Significant
GHG-3 Conflict with or impede the implementation of local plans adopted for the purpose of reducing GHG emissions Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
GHG-4 Be inconsistent with the state's ability to achieve the 2030 reduction target of SB 32 and 2045 reduction goal of AB 1279 Significant impact in 2030, 2045, and 2050.	**GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.** **AQ-3b Reduce Diesel Emissions During Construction From Off-Road Equipment.** **AQ-3c Reduce Diesel Emissions During Construction From On-Road Vehicles.** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.** **WS-1a Implement Water Conservation Measures for Transportation Network Improvements.** **WS-1b Implement Water Conservation Measures for Development Projects.**	Significant and Unavoidable (Year 2030)	Significant and Unavoidable (Years 2045 and 2050)

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
C-GHG-1 Make a Cumulatively Contribution to Adverse Effects Related to GHG Emissions Cumulatively considerable for 2030, 2035, 2045, and 2050.	**GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.** **AQ-3b Reduce Diesel Emissions During Construction From Off-Road Equipment.** **AQ-3c Reduce Diesel Emissions During Construction From On-Road Vehicles.** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.** **WS-1a Implement Water Conservation Measures for Transportation Network Improvements.** **WS-1b Implement Water Conservation Measures for Development Projects.**	Cumulatively considerable	Cumulatively considerable
4.9 Hazards and Hazardous Materials			
HAZ-1 Create a significant hazard to the public or the environment from the transport, use, disposal, or release of hazardous materials, including the release of contaminants from a Government Code Section 65962.5 hazardous materials site Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
HAZ-2 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
HAZ-3 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
HAZ-4 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or result in inadequate emergency access Significant impact in 2035 and 2050.	**HAZ-4: Demonstrate Consistency with Adopted Emergency Response or Evacuation Plans or Emergency Access.**	Significant and Unavoidable	Significant and Unavoidable
C-HAZ-1 Make a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plans and emergency access Cumulatively considerable in 2035 and 2050.	**HAZ-4: Demonstrate Consistency with Adopted Emergency Response or Evacuation Plans or Emergency Access.**	Cumulatively Considerable	Cumulatively Considerable
4.10 Hydrology and Water Quality			
HWQ-1 Substantially degrade surface water or groundwater quality, including in violation of any water quality standards or waste discharge requirements or in conflict with a water quality control plan or its implementation, or as a result of substantially altering the existing drainage pattern of the area in a manner which provides substantial additional sources of polluted runoff Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
HWQ-2 Substantially alter the existing drainage pattern of an area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off Site Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
HWQ-3 Substantially alter the existing drainage pattern of an area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would (i) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site or (ii) impede or redirect flood flows Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
HWQ-4 Substantially increase risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
C-HWQ-1 Make a cumulatively considerable contribution to adverse impacts related to hydrology and water quality Not cumulatively considerable in 2035 and 2050.	Not applicable	Not Cumulatively Considerable	Not Cumulatively Considerable
4.11 Land Use			
LU-1 Physically divide an established community Less-than-significant impact in 2035. Significant impact in 2050.	**LU-1a Provide Access and Connections for Transportation Network Improvements.**	Less than Significant	Significant and Unavoidable
LU-2 Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation (including, but not limited to, the general plan, local coastal program, or zoning ordinance) and result in a physical change to the environment not already addressed in the other resource chapters of this EIR Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
C-LU-1 Make a cumulatively considerable contribution to adverse impacts related to land use and planning Cumulatively considerable in 2050.	**LU-1a Provide Access and Connections for Transportation Network Improvements.**	Not Cumulatively Considerable	Cumulatively Considerable
4.12 Mineral Resources			
MR-1 Result in the loss of availability of known aggregate and mineral resources supply sites that would be of value to the region and the residents of the state, or result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan Significant impact in 2035 and 2050.	**MR-1a Conserve Aggregate and Mineral Resources During Planning and Design of Development Projects.** **MR-1b Conserve Aggregate and Mineral Resources During Planning and Design of Transportation Network Improvements.**	Significant and Unavoidable	Significant and Unavoidable
C-MR-1 Make a cumulatively considerable contribution to adverse effects related to mineral resources Cumulatively considerable in 2035 and 2050.	**MR-1a Conserve Aggregate and Mineral Resources During Planning and Design of Development Projects.** **MR-1b Conserve Aggregate and Mineral Resources During Planning and Design of Transportation Network Improvements.**	Cumulatively Considerable	Cumulatively Considerable
4.13 Noise and Vibration			
NOI-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or generate a substantial absolute increase in ambient noise	**NOI-1a Implement Construction Noise Reduction Measures for Development Projects and Transportation Network Improvements.** **NOI-1b Implement Operational Noise Reduction Measures for Transportation Network Improvements.**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
Significant impact in 2035 and 2050.	**NOI-1c Implement Operational Noise Reduction Measures for Development Projects.**		
NOI-2 Generation of excessive groundborne vibration or groundborne noise levels Significant impact in 2035 and 2050.	**NOI-2a Implement Construction Groundborne Vibration and Noise Reduction Measures.** **NOI-2b Implement Groundborne-Vibration and Noise Reduction Measures for Rail Operations.**	Significant and Unavoidable	Significant and Unavoidable
NOI-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public-use airport, the project would expose people residing or working in the project area to excessive noise levels Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
C-NOI-1 Make a cumulatively considerable contribution to adverse effects related to noise and vibration Cumulatively considerable in 2035 and 2050.	**NOI-1a Implement Construction Noise Reduction Measures for Development Projects and Transportation Network Improvements.** **NOI-1b Implement Operational Noise Reduction Measures for Transportation Network Improvements.** **NOI-1c Implement Operational Noise Reduction Measures for Development Projects.** **NOI-2a Implement Construction Groundborne Vibration and Noise Reduction Measures.** **NOI-2b Implement Groundborne Vibration and Noise-Reduction Measures for Rail Operations.**	Cumulatively Considerable	Cumulatively Considerable
4.14 Population and Housing			
POP-1 Induce substantial unplanned population growth to areas of the region either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., by extending roads and other infrastructure) Significant impact in 2035 and 2050.	**POP-1a Coordinate with Local Jurisdictions to Reduce Substantial Unplanned Population Growth.**	Significant and Unavoidable	Significant and Unavoidable
POP-2 Displace substantial numbers of people or housing units, which would necessitate the construction of replacement housing elsewhere Significant impact in 2035 and 2050.	**POP-2a Design Development Projects to Reduce Displacement.** **POP-2b Design Transportation Network Improvement Projects to Reduce Displacement.**	Significant and Unavoidable	Significant and Unavoidable
C-POP-1 Make a cumulatively considerable contribution to adverse effects related to population and housing Cumulatively considerable in 2035 and 2050.	**POP-1a Coordinate with Local Jurisdictions to Reduce Substantial Unplanned Population Growth.**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	POP-2a Design Development Projects to Reduce Displacement. **POP-2b Design Transportation Network Improvement Projects to Reduce Displacement.**		
4.15 Public Services, Recreation, and Utilities			
PS-1 Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered (i.e., expanded) public facilities, in order to maintain adequate fire and police protection, emergency services, schools, libraries, and recreation facilities Significant impact in 2035 and 2050.	**PS-1 Implement Mitigation Measures for New/Expanded Public Service Facilities**.	Significant and Unavoidable	Significant and Unavoidable
REC-1 Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated Significant impact in 2035 and 2050.	**REC-1 Implement Mitigation Measures for Parks and Other Recreational Facilities.**	Significant and Unavoidable	Significant and Unavoidable
U-1 Result in the expansion, relocation, or construction of wastewater collection and treatment, storm water drainage, electric power, natural gas, or telecommunications facilities to adequately meet projected capacity needs, the construction of which could cause significant environmental impacts Significant impact in 2035 and 2050.	**U-1a Implement Mitigation Measures for New/Expanded Wastewater, Storm Water, Electrical, Natural Gas, and Telecommunications Facilities Associated with Development Projects.** **U-1b Implement Mitigation Measures for New/Expanded Storm Water Facilities Associated with Transportation Network Improvements.**	Significant and Unavoidable	Significant and Unavoidable
U-2 Generate solid waste in excess of state or local standards or in excess of the capacity of local infrastructure; impair the attainment of solid waste reduction goals; or fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste Significant impact in 2035 and 2050.	**U-2a Implement Mitigation Measures for New/Expanded Solid Waste Facilities.** **U-2b Reduce Construction Waste.** **U-2c Reduce Operational Waste.**	Significant and Unavoidable	Significant and Unavoidable
C-PS-1 Make a cumulatively considerable contribution to adverse effects related to public services Cumulatively considerable in 2035 and 2050.	**PS-1 Implement Mitigation Measures for New/Expanded Public Service Facilities.**	Cumulatively Considerable	Cumulatively Considerable
C-U-1 Make a cumulatively considerable contribution to adverse effects related to utilities Cumulatively considerable in 2035 and 2050.	**U-1a Implement Mitigation Measures for New/Expanded Wastewater, Stormwater, Electrical, Natural Gas, and Telecommunications Facilities Associated with Development Projects.**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	U-1b Implement Mitigation Measures for New/Expanded Stormwater Facilities Associated with Transportation Network Improvements. **U-2a Implement Mitigation Measures for New/Expanded Solid Waste Facilities.** **U-2b Reduce Construction Waste.** **U-2c Reduce Operational Waste.**		
C-REC-1 Make a cumulatively considerable contribution to adverse effects related to recreational resources Cumulatively considerable in 2035 and 2050.	**REC-1 Implement Mitigation Measures for Parks and Other Recreational Facilities.**	Cumulatively Considerable	Cumulatively Considerable
4.16 Transportation			
TRA-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
TRA-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals Significant impact in 2030, 2035, 2045 and 2050.	**TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.** **AQ-2b Regional Plan VMT Credit/Banking Program** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.**	Significant and Unavoidable (2030 and 2035)	Significant and Unavoidable (2045 and 2050)
TRA-3 Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses. Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant
TRA-4 Lead to a lack of parking supply that would cause significant secondary environmental impacts not already analyzed in other resource chapters of this EIR. Less-than-significant impact in 2035 and 2050.	Not applicable	Less than Significant	Less than Significant

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
C-TRA-1 Make a cumulatively considerable contribution to adverse effects to transportation. Cumulatively considerable in 2030, 2035, 2045 and 2050	**TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects.** **AQ-2b Regional Plan VMT Credit/Banking Program.** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions.** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans.** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.**	Cumulatively Considerable (2030 and 2035)	Cumulatively Considerable (2045 and 2050)
4.17 Tribal Cultural Resources			
TCR-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is either (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or (2) determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 Significant impact in 2035 and 2050.	**TCR-1a Implement Tribal Cultural Resources Mitigation Measures for Development Projects and Transportation Network Improvements.** **TCR-1b Implement Monitoring and Mitigation Programs for Development Projects and Transportation Network Improvements.**	Significant and Unavoidable	Significant and Unavoidable
C-TCR-1 Make a cumulatively considerable contribution to adverse effects on tribal cultural resources Cumulatively considerable in 2035 and 2050.	**TCR-1a Implement Tribal Cultural Resources Mitigation Measures for Development Projects and Transportation Network Improvements.** **TCR-1b Implement Monitoring and Mitigation Programs for Development Projects and Transportation Network Improvements.**	Cumulatively Considerable	Cumulatively Considerable
4.18 Water Supply			
WS-1 Not have sufficient water supplies available to serve the projected regional demand during Single dry Year and multiple dry years. Significant impact in 2035 and 2050.	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements.** **WS-1b Implement Water Conservation Measures for Development Projects.**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
	WS-1c Ensure Adequate Water Supply for Development Projects.		
WS-2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the proposed Plan would impede sustainable management of groundwater basins or obstruct implementation of a sustainable groundwater management plan. Significant impact in 2035 and 2050.	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements.** **WS-1b Implement Water Conservation Measures for Development Projects.** **WS-2 Implement Groundwater Measures to Ensure Sustainable Yield for Development Projects.**	Significant and Unavoidable	Significant and Unavoidable
WS-3 Require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects. Significant impact in 2035 and 2050.	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements.** **WS-1b Implement Water Conservation Measures for Development Projects.** **WS-2 Implement Groundwater Measures to Ensure Sustainable Yield for Development Projects.** **WS-3 Implement Measures for New or Expanded Water Facilities.**	Significant and Unavoidable	Significant and Unavoidable
C-WS-1 Make a cumulatively considerable contribution to adverse effects to water supply Cumulatively considerable impact in 2035 and 2050.	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements.** **WS-1b Implement Water Conservation Measures for Development Projects.** **WS-1c Ensure Adequate Water Supply for Development Projects.** **WS-2 Implement Groundwater Measures to Ensure Sustainable Yield for Development Projects.** **WS-3 Implement Measures for New or Expanded Water Facilities.**	Cumulatively Considerable	Cumulatively Considerable
4.19 Wildfire			
WF-1 Increase risk of wildland fire ignition and directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires. Significant impact in 2035 and 2050.	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects.**	Significant and Unavoidable	Significant and Unavoidable
WF-2 Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Significant impact in 2035 and 2050.	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects.**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of significance after Mitigation 2035	Level of significance after Mitigation 2050
WF-3 Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Significant impact in 2035 and 2050.	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects.** **WF-3 Reduce Wildfire Risk Related to New or Expanded Infrastructure Required to Support Regional Growth and Land Use Development.**	Significant and Unavoidable	Significant and Unavoidable
WF-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Significant impact in 2035 and 2050.	**WF-4 Reduce Post-Fire Risks Related to Flooding, Landslides, Slope Instability, or Drainage Changes for Development and Transportation Projects.**	Significant and Unavoidable	Significant and Unavoidable
C-WF-1 Make a cumulatively considerable contribution to adverse effects related to wildfire Cumulatively considerable in 2035 and 2050.	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects.** **WF-3 Reduce Wildfire Risk Related to New or Expanded Infrastructure Required to Support Regional Growth and Land Use Development.** **WF-4 Reduce Post-Fire Risks Related to Flooding, Landslides, Slope Instability, or Drainage Changes for Development and Transportation Projects.**	Cumulatively Considerable	Cumulatively Considerable

ES.6 ALTERNATIVES TO THE PROPOSED PLAN

Chapter 5 in this EIR analyzes three alternatives to the proposed Plan in detail. The analysis determines the extent to which alternatives are capable of avoiding or substantially lessening the significant environmental effects of the proposed Plan. Chapter 5 also explains why other alternatives were considered but rejected from detailed consideration. The three alternatives analyzed in detail are listed below and summarized in Table ES-2:

- Alternative 1: No Project Alternative
- Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions
- Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit

The alternatives respond to public suggestions for alternatives that reduce vehicle miles traveled, air pollutants, and GHG emissions, while decreasing sprawl and the consumption of native habitat areas. The alternatives were developed based on public input from the NOP scoping period and during the development of the proposed Plan. The alternatives considered in detail partially or fully meet most of the basic Plan objectives with the exception of Alternative 1: No Project Alternative.

Alternative 2 is considered the environmentally superior alternative. As discussed in Chapter 5, although Alternative 2 would not reduce any of the proposed Plan's significant impacts to less than-significant levels, it would reduce many of the proposed Plan's significant impacts. Compared to the proposed Plan's significant impacts, Alternative 2 would have decreased impacts for one or more significance criteria for the following environmental resources: aesthetics and visual resources, agricultural and forestry resources, air quality, biological resources, cultural resources, energy, geology and soils, paleontological resources, greenhouse gas emissions, mineral resources, noise and vibration, public services, recreation, utilities, transportation, tribal cultural resources, water supply, and wildfire. Compared to the proposed Plan's significant impacts, Alternative 2 would have increased impacts for only a few significance criteria for the following resource areas land use, and population and housing.

Among the alternatives, Alternative 2 would achieve the greatest reductions of GHG emissions, VMT and air quality emissions as compared to the proposed Plan. Alternative 2 would result in a 24.6 percent per capita GHG reduction below 2005 levels in 2050, which would result in a greater reduction than the proposed Plan (19.51 percent below 2005 levels in 2050). In addition, Alternative 2 would result in an SB-743-based VMT per capita of 14.55 in 2050 compared to VMT per capita of 15.39 under the proposed Plan in 2050 (see Appendix M). SB-743 based VMT per capita reflects non-commercial VMT per resident in the region. In addition, Alternative 2 would result in an increase in SB 375- based total regionwide VMT of 959,729 vehicle miles per day in 2050 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 4,343,189 miles per day in 2050 under the proposed Plan (see Appendix M). Therefore, Alternative 2 would result in decreased impacts as it would achieve a higher VMT reduction than the proposed Plan. Because VMT reductions correlate to GHG reductions, Alternative 2 would result in decreased GHG impacts as compared to the proposed Plan. Alternative 2 would also result in a decrease in reactive organic gases (ROG), nitrous oxides (NO_X), carbon monoxide (CO), fine and respirable particulate matter ($PM_{2.5}$ and PM_{10}), and sulfur oxide (SO_X) emissions compared to the proposed Plan from onroad sources.

Table ES-2 Summary of Alternatives Considered in Detail

Components	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
Land Use Pattern	Amended 2021 Regional Plan	Focuses new growth in areas with available multimodal transportation	Focuses new growth in areas with available multimodal transportation
Transportation Network	"No Build" Projects	Same as proposed Plan	Same as proposed Plan
Parking Pricing	Amended 2021 Regional Plan	Increases parking costs by 100% compared to proposed Plan	Increases parking costs by 100% compared to proposed Plan
Managed Lane Pricing	Amended 2021 Regional Plan	Same as proposed Plan	Increases managed lane pricing by 100% compared to proposed Plan
Speed Reductions	No	Reduces speeds on arterials and freeways by 5 mph	No
Free Transit	No	No	Yes
Funding	Committed funding	Same as proposed Plan	Same as proposed Plan

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1 INTRODUCTION

This program environmental impact report (EIR) has been prepared by the San Diego Association of Governments (SANDAG) in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.), and the CEQA Guidelines (14 California Code of Regulations, Section 15000 et seq.). This EIR evaluates environmental impacts that would occur if the 2025 Regional Plan ("the proposed Plan") was adopted and implemented.

The proposed Plan is an update of the Amended 2021 Regional Plan for the San Diego region (SANDAG 2023).

SANDAG is a regional planning agency and metropolitan planning organization (MPO) composed of 18 cities and the county government within the San Diego region. SANDAG must prepare a regional transportation plan (RTP) every 4 years (Government Code Section 65080 et seq.; 23 US Code Section 134). The RTP must include a sustainable communities strategy (SCS) consisting of land use, housing, and transportation strategies that, if implemented, would allow the region to meet its regional targets for greenhouse gas emissions reductions from passenger vehicle use established by the California Air Resources Board (Sustainable Communities and Climate Protection Act of 2008, Senate Bill 375, Chapter 728, Statutes of 2008).

The proposed Plan, described in detail in Chapter 2, "Project Description," of this EIR, improves transportation, equity, and the environment for people in the greater San Diego region over the next several decades. It takes into account how the region is expected to grow and change and provides a blueprint for the regional transportation network, land use, housing, and more. It meets the requirements of federal and state transportation planning law, and also meets the requirements for the regional comprehensive plan for the San Diego region established by state law (AB 361, Chapter 508, Statutes of 2003).

1.1 PURPOSE OF THIS EIR

The purpose of an EIR is "to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided" (PRC Section 21002.1[a]). This EIR analyzes the significant environmental effects of the proposed Plan, identifies feasible mitigation measures to avoid or reduce these impacts, and presents alternatives to the proposed Plan that could avoid or reduce significant impacts. This EIR was prepared to disclose this information to decision makers, members of the public, and public agencies, so that decision makers can make informed decisions about the proposed Plan.

This EIR does not recommend to decision makers whether the proposed Plan should be approved. CEQA requires that decision makers make informed decisions on a project, considering the information presented in the EIR. CEQA allows for the proposed Plan to be approved even if there are significant and unavoidable environmental impacts. This can occur if decision makers find that social, economic, or other benefits outweigh the unavoidable significant impacts. In such a case, a "statement of overriding considerations" would be adopted, stating the specific reasons for approving the project, based on information contained in the EIR and other information in the record (CEQA Guidelines Section 15093).

1.2 SCOPE OF THIS EIR

This EIR for the proposed Plan is a program EIR, which CEQA Guidelines Section 15168(a) defines as an EIR that may be prepared on a series of actions that can be characterized as one large project and are related (1) geographically; (2) as logical parts in the chain of contemplated actions; (3) in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental impacts that can be mitigated in similar ways.

A program EIR can provide a comprehensive environmental review for a program of related projects, such as the proposed Plan, that are to be developed over a long period of time. This allows lead agencies to consider program-wide alternatives and cumulative impacts consistently and avoids unnecessary repetition of analysis in subsequent project-specific reviews (see CEQA Guidelines Section 15168[b]).

The degree of specificity in an EIR corresponds to the degree of specificity of the underlying activity being evaluated (CEQA Guidelines Section 15146). This EIR analyzes impacts of the proposed Plan at the same level of detail as the proposed Plan. This EIR provides a foundation for second-tier CEQA documents for subsequent projects but does not analyze the project-specific impacts of individual projects. Project-specific and site-specific details of subsequent transportation and land use projects will vary widely. When a first-tier program EIR is prepared, "leaving project-specific details to subsequent EIRs when specific projects are considered" is a proper approach to CEQA tiering (*In re Bay Delta* [2008] 43 Cal. 4th 1143, 1174).

Mitigation measures listed in the EIR are subject to the same rules of specificity and level of detail as the impact analysis. With a program EIR, detailed project-specific mitigation measures are properly deferred to future project-specific CEQA review (see *Koster v. County of San Joaquin* (1996) 47 Cal. App. 4th 29 and CEQA Guidelines Section 15168[b][4]).

The project-specific impacts and mitigation measures for individual projects will be addressed in future environmental reviews, carried out by the appropriate lead agency in accordance with state and federal law. For a description of the intended uses of this EIR, refer to Chapter 2, Section 2.6. For a detailed discussion of the content and approach to the analysis in this EIR, please see Chapter 4, "Environmental Impact Analysis Approach." The following 19 issue areas are analyzed in this EIR.

- aesthetics and visual resources;
- agriculture and forestry resources;
- air quality;
- biological resources;
- cultural resources;
- energy;
- geology, soils, and paleontological resources;
- greenhouse gas emissions;
- hazards and hazardous materials;
- hydrology and water quality;
- land use and planning;
- mineral resources;
- noise and vibration;
- population and housing;
- public services, recreation, and utilities;
- transportation;
- tribal cultural resources;
- water supply; and
- wildfire.

1.3 ORGANIZATION OF THIS EIR

This EIR begins with an executive summary, which is a condensed version of the EIR identifying the proposed Plan's significant impacts, mitigation measures, and alternatives that would reduce or avoid those impacts; known areas of controversy and issues to be resolved; and how to mitigate significant impacts. Chapter 1 is this introduction.

Chapter 2, "Project Description," describes the varied aspects of the proposed Plan in sufficient detail to support the impact analysis. The general physical characteristics of the natural and built environments of the San Diego region are described in Chapter 3, "Environmental Setting." Chapter 4 provides the impact analysis, beginning with a detailed explanation of the approach for the analysis, followed by analysis for 19 different resource areas in Sections 4.1 through 4.19, including analyses of cumulative impacts. Each resource area section describes existing conditions (which serve as the baseline for impact analysis), regulatory setting, significance criteria, impact analysis, and mitigation measures (where significant impacts are identified). Chapter 5 discusses and evaluates the

alternatives to the proposed Plan. Chapter 6 includes other considerations required by CEQA, including growth inducement, a maximum theoretical build-out scenario, and significant irreversible impacts. Chapter 7 provides the references consulted in preparing this EIR, and Chapter 8 lists the preparers of this environmental document.

Appendices include the notice of preparation (NOP) and written comments received during the NOP period and scoping meeting (Appendix A), as well as technical documents (Appendices B through M) that provide supporting data and information for this EIR.

In compliance with PRC Section 21081.6, a mitigation monitoring and reporting program (MMRP) will be prepared as a separate document that will be considered after certification of the final EIR, when the SANDAG Board of Directors (Board) considers whether to adopt the proposed Plan.

1.4 LEAD AND RESPONSIBLE AGENCIES

A lead agency is the public agency that has the principal responsibility for carrying out or approving a project (CEQA Guidelines Section 15367). Responsible agencies are other public agencies that propose to carry out or approve a project for which a lead agency is preparing an EIR, including all other agencies that have discretionary approval for a project (CEQA Guidelines Section 15381).

In the case of the proposed Plan and this EIR, SANDAG serves as the lead agency because it is required by federal and state law to prepare and adopt the proposed Plan. No responsible agencies for this EIR have been identified.

1.5 PUBLIC REVIEW AND PARTICIPATION PROCESS

Consistent with CEQA, SANDAG contacted affected agencies, organizations, and individuals who may have an interest in the proposed Plan and EIR. This consultation assisted in defining the scope of this EIR, which is described in Section 1.2.

1.5.1 Notice of Preparation

SANDAG initiated the EIR scoping process on January 4, 2023, through the circulation of a notice of preparation (NOP). Receipt of the NOP by the State Clearinghouse at the California Office of Land Use and Climate Innovation (formerly known as the California Governor's Office of Planning and Research) on January 4, 2023, initiated a 60-day comment period that ended March 6, 2023.

The NOP provided formal notification to all federal, state, and local agencies involved with funding and to other interested organizations and members of the public that an EIR will be prepared for the proposed Plan. The NOP was intended to encourage interagency communication concerning the proposed Plan and provide sufficient background information so that agencies, organizations, and individuals could respond to SANDAG with specific comments and questions on the scope and content of this EIR. Appendix A summarizes the issues raised in the NOP comments and identifies the EIR section(s) that address that issue or provides another response to the issue raised as appropriate. The NOP is provided in full in Appendix A-1. The written comments are provided in full in Appendix A-2.

1.5.2 Public Scoping

Consistent with CEQA (PRC Section 21083.9), SANDAG noticed and held two virtual public scoping meetings on January 12, 2023, and February 15, 2023. The purpose was to receive perspective and input from agencies, organizations, and individuals on the scope and content of the environmental information to be addressed in the EIR.

1.5.3 Comments on the Draft EIR

The Draft EIR for the proposed Plan was released to the public on August 26, 2025, and will be available for a 49-day public review period, as required by CEQA. The public review period will end on October 13, 2025. SANDAG published a notice of availability (NOA) for the Draft EIR in local newspapers on August 26, 2025, and mailed the NOA to an extensive distribution list. SANDAG also filed a notice of completion (NOC) with the State Clearinghouse to indicate the availability of the Draft EIR for public review and comment on August 26, 2025. In accordance with CEQA Guidelines Section 15204, reviewers should "focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated."

The Draft EIR and all appendices are available for review online at https://www.sandag.org/regional-plan/2025-regional-plan and at SANDAG offices located at 1011 Union Street; San Diego, California 92101. The Draft EIR will be distributed to the agencies, organizations, and individuals that provided written comments on the NOP, the Board, SANDAG member agencies, the San Diego Central Library (which is capable of transferring the document to other local libraries), and other interested parties and stakeholders.

Agencies, organizations, and individuals are invited to provide written comments on the Draft EIR during the public review period from August 26 to October 10, 2025. Written comments that are e-mailed should be sent with subject line "Regional Plan EIR" to: RegionalPlanEIR@sandag.org. Written comments that are mailed should be addressed and sent to:

San Diego Regional Plan EIR
c/o Kirsten Uchitel, Senior Regional Planner
1011 Union Street, Suite 400
San Diego, CA 92101

Comments can also be submitted using a comment form at: www.sandag.org/RegionalPlanEIRComments.

Following the public review period, SANDAG will prepare written responses to significant environmental concerns raised in comments on the Draft EIR. The Final EIR will include revisions to the Draft EIR, comments received on the Draft EIR either verbatim or in summary, and SANDAG responses to significant environmental concerns raised in the public comments. Certification of the Final EIR and adoption of the proposed Plan are anticipated to be considered by the SANDAG Board of Directors on December 12, 2025.

2 PROJECT DESCRIPTION

2.1 Introduction

Every 4 years the San Diego Association of Governments (SANDAG) is responsible for preparing an updated regional plan in collaboration with the 18 cities and County of San Diego, along with regional, state, and federal partners. The Regional Plan consists of the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) for the San Diego region and the Regional Comprehensive Plan (RCP). The most recently adopted regional plan, the 2021 Regional Plan, was approved in December 2021 and subsequently amended in October 2023 by the SANDAG Board of Directors (the Amended 2021 Regional Plan).

The project evaluated in this environmental impact report (EIR) is the proposed Plan (the proposed Plan) (SANDAG 2025a), which is an update to the Amended 2021 Regional Plan for the San Diego Region (SANDAG 2023). The project location is the San Diego region, shown on Figure 2-1. The San Diego region is coterminous with San Diego County.

This EIR analyzes the environmental impacts resulting from the proposed Plan.

2.1.1 EIR Project Objectives

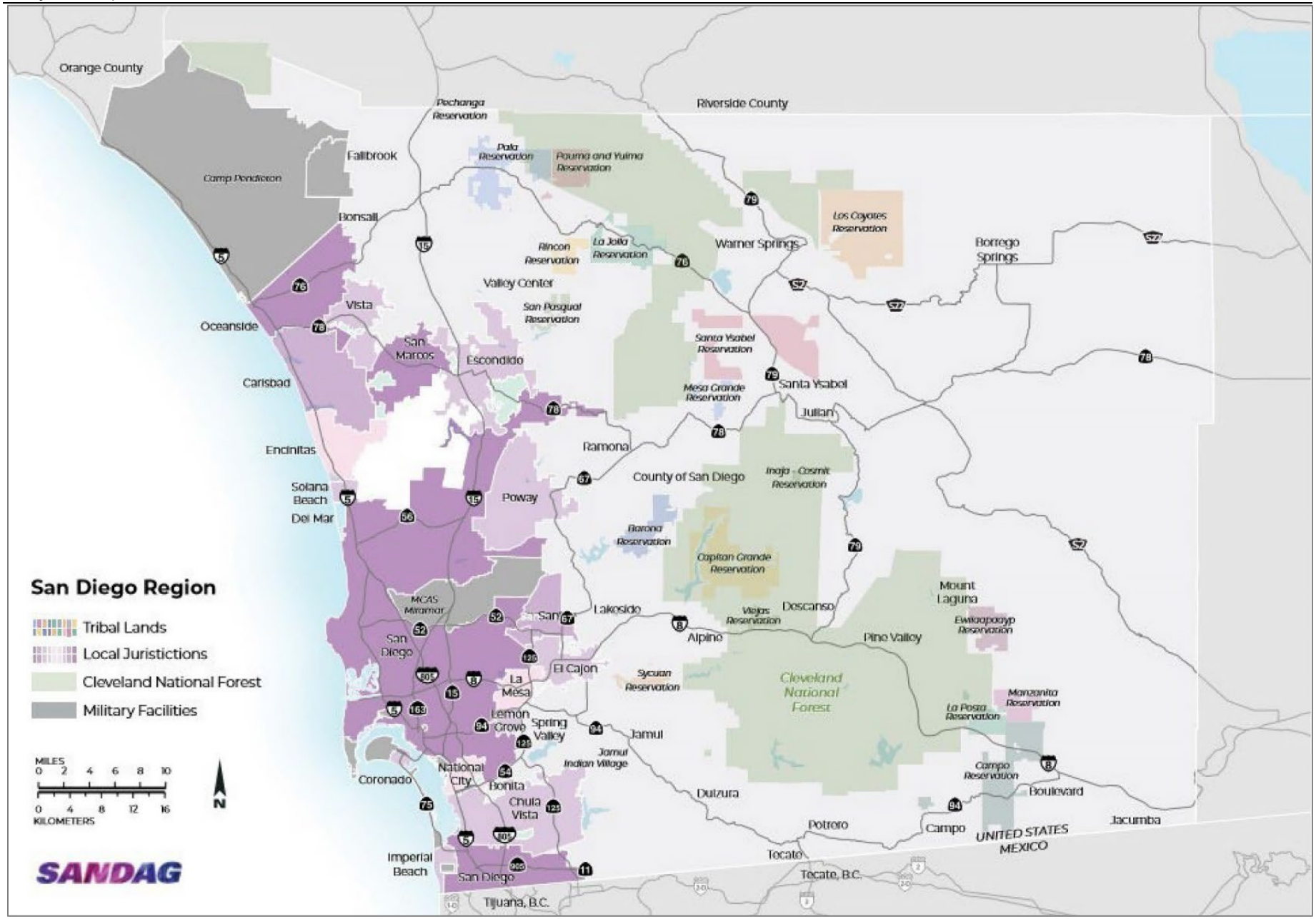
The underlying purpose of the project is to develop a regional plan that meets federal and state planning requirements and addresses the regional transportation needs of both the population of today and the population of the future. These transportation needs impact the quality of life in the San Diego region, including ensuring access to economic opportunities, remedying historical social inequities, planning for climate change, and prioritizing public health and safety. The proposed Plan envisions a sustainable and resilient future for the region and economy supported by a transportation network that is convenient, equitable, healthy, and safe.

To accomplish this purpose, the objectives of the proposed Plan are:

- Focus population and employment growth to protect sensitive habitat and natural resource areas.
- Provide transportation investments that support compact land development patterns and reduce vehicle miles traveled.
- Meet greenhouse gas emissions targets established for the San Diego region by the California Air Resources Board.
- Provide transportation investments and a land use pattern that promotes social equity.
- Provide transportation investments and a land use pattern that improves air quality.
- Provide multimodal access to employment centers and key destinations for all communities.
- Enhance the efficiency of the transportation network for moving people and goods through the deployment of new technologies.

2.1.2 Intended Uses of the EIR

The basic purposes of the California Environmental Quality Act (CEQA) are to inform government decision makers and the public about significant environmental impacts of projects, identify ways the impacts can be reduced or avoided, and prevent significant avoidable environmental damage through alternatives and mitigation. SANDAG is the lead agency for the proposed Plan and this EIR.



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-1 San Diego Region

Subsequent activities implementing the proposed Plan will be examined in light of this EIR to determine whether additional environmental documentation, if any, is necessary under CEQA. Where subsequent activities are "within the scope" of the Program EIR, no further CEQA documentation would be required.

2.1.3 Agencies Expected to Use the EIR

Lead agencies implementing land use or transportation projects can use this EIR to focus project-specific CEQA documents on project-specific analyses. These include but are not limited to cities, the County of San Diego, the California Department of Transportation, and transportation project sponsors.

In addition, CEQA provides several opportunities for further CEQA streamlining for infill projects consistent with the RTP/SCS. These include opportunities provided by:

- SB 375 (Public Resources Code Section 21155 et seq.)
- SB 226 of 2011 (Public Resources Code Section 15183.3 et seq.)
- SB 743 of 2013 (Public Resources Code Sections 21099 et seq. and Section 21155.4)

2.1.4 List of Permits or Other Approvals to Implement the Proposed Plan

Pursuant to 176(c) of the federal Clean Air Act (42 U.S. Code 7506[c]), SANDAG and the U.S. Department of Transportation (USDOT), in consultation with the U.S. Environmental Protection Agency (EPA), must make a determination that the RTP and the Regional Transportation Improvement Program (RTIP) conform to the State Implementation Plan (SIP) for air quality. See Appendix C of the proposed Plan for the conformity analysis.

2.1.5 Environmental Review and Consultation Requirements

Preparation of the proposed Plan met both federal and Senate Bill (SB) 375 consultation requirements. See Appendices E, I, and J of the proposed Plan for documentation.

Federal consultation requirements (23 Code of Federal Regulations [CFR] Part 450.316) consist of (1) a process involving the metropolitan planning organization (MPO), state and local air quality planning agencies, state and local transportation agencies, EPA, and USDOT; and (2) a proactive public involvement process that provides opportunity for public review and comment by, at a minimum, providing reasonable public access to technical and policy information considered by the agency.

SB 375 (Government Code Section 65080) requires consultation with interested parties, including affordable housing advocates, transportation advocates, neighborhood and community groups, environmental advocates, homebuilder representatives, broad-based business organizations, landowners, commercial property interests, homeowners associations, congestion management agencies, transportation agencies, local agency formation commissions, and members of city councils and boards of supervisors.

2.2 PROJECT BACKGROUND

2.2.1 Legislation Influencing Development of the Proposed Plan

Development of the proposed Plan was guided by federal and state laws and regulations, as well as extensive engagement with the public.

FEDERAL REQUIREMENTS

To be eligible for federal transportation funding, USDOT requires every MPO, such as SANDAG, to conduct long-range transportation planning and develop RTPs. Each MPO must develop a 20-year vision and goals plan matched to the unique characteristics of its region. MPOs in areas designated as "nonattainment" or "maintenance" for federal air quality standards must update their RTP every 4 years rather than every 5 years.

Consistent with Federal Highway Administration (FHWA) regulations (23 CFR 450.324, et seq., Development and content of metropolitan transportation plan), an RTP must identify "transportation facilities (including major roadways, public transportation facilities, intercity bus facilities, multimodal and intermodal facilities, nonmotorized transportation facilities, and intermodal connectors) that should function as an integrated metropolitan transportation system, giving emphasis to those facilities that serve important national and regional transportation functions" (23 USC 134[i][2]). RTP transportation network improvements must be "revenue constrained" (23 CFR 450.324[f][11]), meaning that the MPO has specified the public and private funds that are reasonably expected to be available and that are needed to implement the proposed transportation plan.

FHWA federal consultation requirements (23 CFR 450.316) for the proposed Plan include (1) a process involving the MPO, state and local air quality planning agencies, state and local transportation agencies, EPA, and USDOT; and (2) a proactive public involvement process that provides opportunity for public review and comment by, at a minimum, providing reasonable public access to technical and policy information considered by the agency. Under 176(c) of the federal Clean Air Act (42 USC 7506[c]), SANDAG and USDOT, in consultation with EPA, must determine that the RTP and RTIP conform to the SIP for air quality. The air quality conformity analysis for the proposed Plan is provided in Appendix C of the proposed Plan. See the proposed Plan's Appendices C, E, J, L, O, and P for documentation of federal consultation requirements.

CALIFORNIA REQUIREMENTS

In addition to USDOT requirements, the proposed Plan is guided by several California statutory requirements consisting of but not limited to the regulations described in the sections that follow.

California Regional Transportation Plan Guidelines

The state statutory requirements for RTPs are found in Government Code Section 65080 et seq., which states that an RTP must contain the following elements:

- A Policy Element that reflects the mobility goals, policies and objectives of the region.
- A Sustainable Communities Strategy that achieves the greenhouse gas emissions reductions target set by the California Air Resources Board, and an Alternative Planning Strategy if those targets can't be achieved.
- An Action Element that identifies programs and actions to implement the RTP.
- A Financial Element that summarizes the cost of implementing the projects in the RTP in a financially constrained environment.

The California Transportation Commission (CTC) has issued RTP guidelines (CTC 2024) to clarify the planning practices needed to meet state statutory requirements for RTPs.

California Global Warming Solutions Act of 2006

The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32, Chapter 488, Statutes of 2006) requires CARB to develop and enforce regulations for reporting, verifying, and reducing statewide GHG emissions to 1990 levels by 2020. The law requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

AB 32 requires that CARB develop a climate change scoping plan (Scoping Plan) consisting of the main strategies California will implement to reduce statewide GHG emissions to 1990 levels by 2020. It must be updated every 5 years. CARB released its initial Scoping Plan in 2008, with updates in 2014, 2017, and 2022. The 2022 Scoping Plan

identifies how California can achieve carbon neutrality and an 85 percent reduction in GHG emissions from 1990 levels no later than 2045, consistent with AB 1279 (Chapter 337, Statutes of 2022).

Sustainable Communities and Climate Protection Act of 2008

To help implement AB 32, the California Legislature passed the Sustainable Communities and Climate Protection Act of 2008 (SB 375, Chapter 728, Statutes of 2008), one of several steps the state has taken to implement AB 32. SB 375 required CARB to set regional targets for reducing GHG emissions from passenger vehicle use. In 2018, CARB established targets for 2020 and 2035 for each region in California governed by an MPO. SANDAG is the MPO for the San Diego region. SANDAG's state-mandated target is to reduce regional emissions of GHGs from cars and light trucks by 15 percent per capita by 2020, compared with a 2005 baseline. By 2035, a 19 percent reduction is required. The Sustainable Communities Act does not require CARB to establish post-2035 targets.

To achieve the targets, SANDAG and other MPOs are required to develop an SCS as a component of the RTP. The SCS is required by Government Code Section 65080(b)(2)(B) to:

- Identify the general location of uses, residential densities, and building intensities within the region.
- Identify areas within the region sufficient to house all the population of the region, including all economic segments of the population.
- Identify areas within the region sufficient to house an 8-year projection of the regional housing need for the region.
- Identify a transportation network to serve the transportation needs of the region.
- Gather and consider the best practically available scientific information regarding resource areas and farmland in the region.
- Consider specified state housing goals.
- Set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the GHG emissions from automobiles and light trucks, to achieve, if there is a feasible way to do so, the GHG emission reduction targets approved by CARB.
- Allow the RTP to comply with federal Clean Air Act requirements related to air quality conformity.

Under SB 375, an SCS cannot be interpreted to supersede the land use authority of cities and counties within the region. Chapter 2 of the proposed Plan focuses on the SCS; however, components of the SCS are integrated throughout the Regional Plan chapters and appendices.

Appendix B of the proposed Plan documents compliance with SCS requirements and provides SCS-related background information.

Regional Housing Needs Assessment

The Regional Housing Needs Assessment (RHNA), required by state law (Government Code Section 65584[a]), quantifies the need for housing in the region and informs land use planning in addressing identified existing and future housing needs resulting from population, employment, and household growth.

As a council of governments, SANDAG is responsible for overseeing the RHNA process for the San Diego region. SANDAG, in consultation with the California Department of Housing and Community Development (HCD), assessed the region's housing needs in four income categories: very low, low, moderate, and above moderate. SANDAG and its member agencies developed a methodology for allocating a share of the RHNA Determination to each jurisdiction. SB 375 requires the SCS accommodate the RHNA for the region.

Regional Comprehensive Plan for the San Diego Region

California law (AB 361, Chapter 508, Statutes of 2003) governs the contents and process for updates of the RCP for the San Diego region. Under AB 361, the RCP must be based on local general and regional plans and integrate

land uses, transportation systems, infrastructure needs, and public investment strategies, within a regional framework, in cooperation with member agencies and the public. The RCP must be updated as necessary and be consistent with the RTP. Beginning with the 2015 Regional Plan, the RCP requirements have been integrated with the RTP/SCS in the Regional Plan.

Public Involvement Program for the Proposed Plan

To support the development of the proposed Plan, SANDAG implemented a comprehensive public outreach and involvement program consistent with state and federal requirements. Early in the proposed Plan development process, SANDAG developed a public involvement plan (PIP) to guide the public outreach program. It describes how to connect with hard to reach communities, such as tribal nations and low-income and minority populations. The PIP identifies public engagement techniques to involve the public and collect input based on the PIP, such as public meetings, social media, visualizations, and other means. A detailed description of the PIP can be found in Appendix J of the proposed Plan.

2.2.2 San Diego Regional Growth Forecast

Table 2-1 summarizes the existing and forecasted growth in the region through 2050.

Table 2-1 Series 15 San Diego Regional Growth Forecast, SCS Land Use Pattern

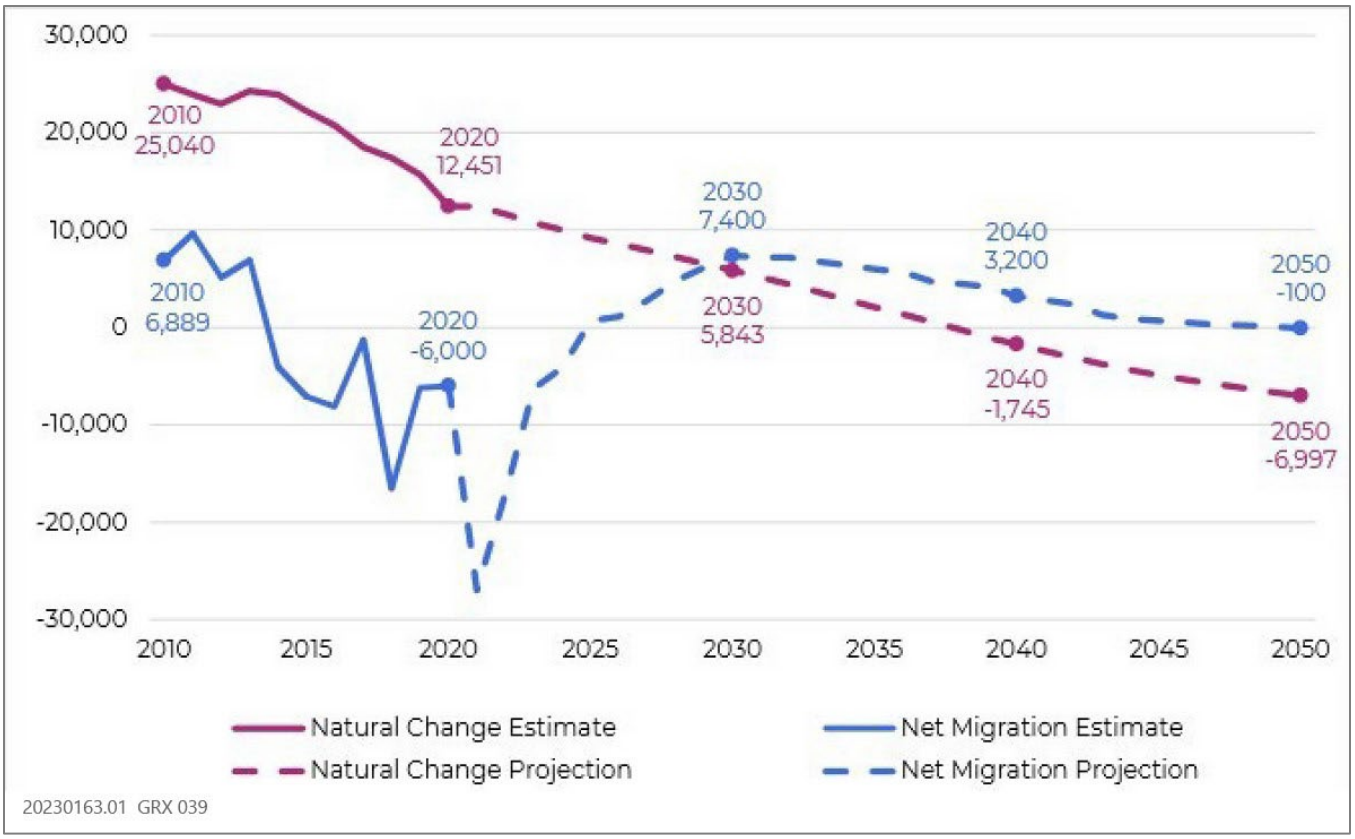
Year	Population	Housing Units	Jobs
2022	3,287,306	1,235,642	1,611,632
2035	3,404,362	1,372,884	1,678,929
2050	3,400,250	1,438,461	1,782,389
Change from 2022–2050	112,944	202,819	170,757
Percent change 2022–2050	3.4%	16.4%	10.6%

Source: SANDAG 2025b.

POPULATION

The Series 15 Regional Growth Forecast (Series 15 Forecast) projects a slower population growth rate compared to previous forecasts. The population forecast also highlights the shift in the drivers of population growth. Historically, natural change (births minus deaths) was the primary contributor to regional population increases, but this trend has been slowing. As Figure 2-2 illustrates, both natural change and net migration (the difference between in-migrants and out-migrants) have been declining since 2010. By 2030, natural change is projected to drop below net migration, meaning that net migration will become the primary driver of population growth. These trends reflect broader national patterns of lower birth rates and aging populations. As regional employment rises, vacancy rates fall, and the state's population increases, net migration for the region is projected to climb through the mid-years of the forecast. Over time, as these trends slow, and with the state's population growth expected to turn negative, net migration is forecasted to decrease, ultimately turning negative by the forecast's horizon.

The slowing population growth can be attributed to a combination of declining natural growth (births minus deaths) and fluctuating net migration. Although net migration initially increases, it begins to decline around 2030 and cannot fully compensate for the continued decrease in natural growth. As a result, the population forecast reflects a smaller starting population due to pandemic-related losses and aligns with slower-growth expectations in both state and national projections from the California Department of Finance and U.S. Census Bureau, respectively.



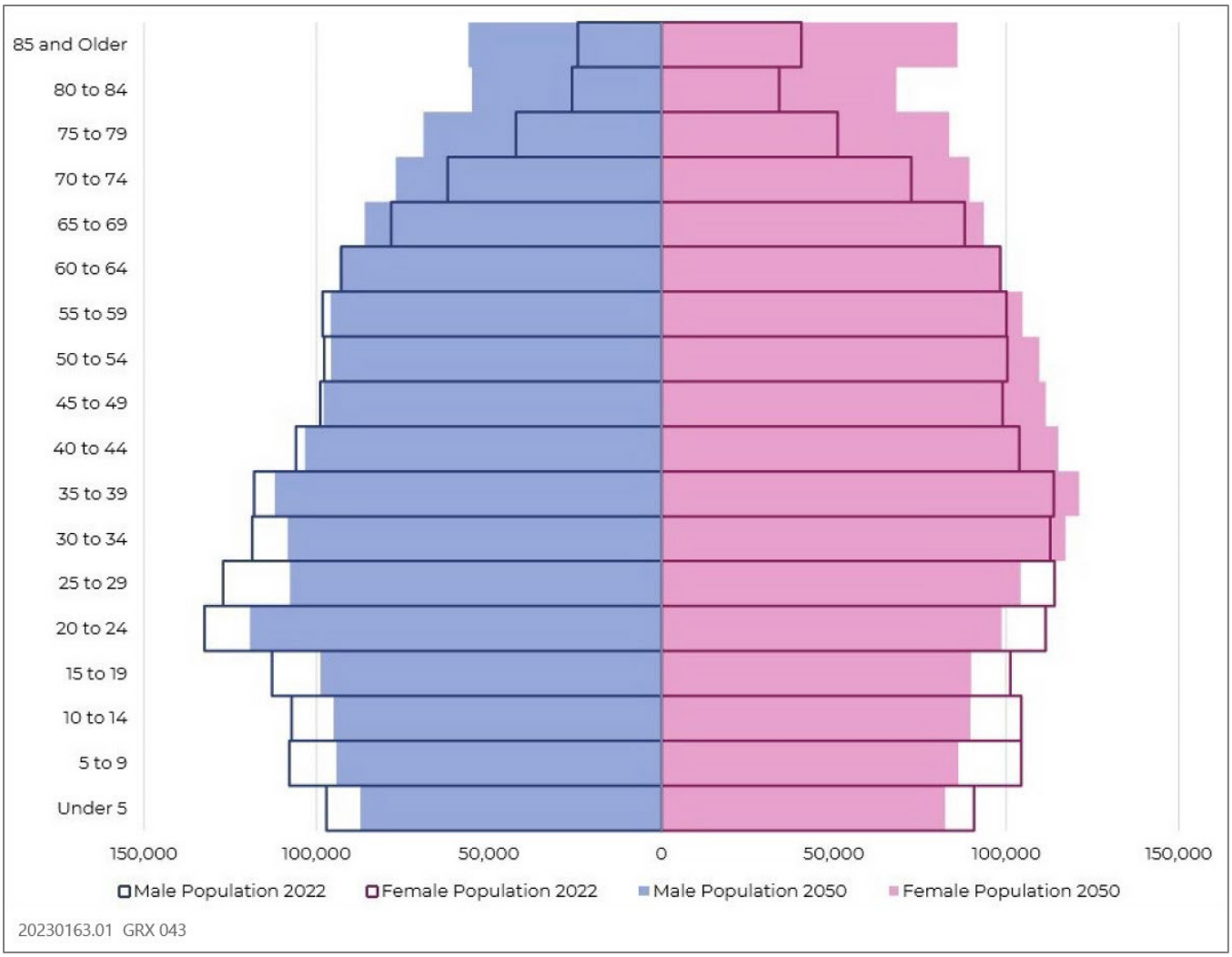
Source Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-2 Components of Population Change, San Diego Region 2010–2050

This slower-growth trajectory not only affects the overall population size but also contributes to an aging demographic profile. Combined with improvements in life expectancy, these trends indicate that a growing proportion of the population will be aged 65 and older in the future. By 2030, when the last of the baby boomer generation reaches age 65, about one in every six residents in the United States will be of retirement age, a trend reflected in San Diego's projections as well. Figure 2-3 depicts how the region's age and sex composition will shift from 2022 to 2050, showing growth in the older adult population (65+), stability in the prime working-age groups (18–64), and a decline in the under-18 population. Life expectancy improvements will lead to higher survival rates among older adults.

HOUSING AND JOBS

The housing forecast is developed using a household formation model that applies headship and vacancy rates. The forecast assumes that headship rates will gradually return to historical levels, specifically those observed between 2005 and 2009, by 2050. Vacancy rates are assumed to stabilize at healthy levels, with 5% for renters and 2% for homeowners. These assumptions lead to a projection of 202,819 additional housing units by 2050, surpassing the 6th cycle Regional Housing Needs Assessment (RHNA) Determination of 171,685 units. This faster housing growth relative to population growth is expected to help reduce overcrowding in the region and aligns with housing trends observed in statewide forecasts. Additionally, the forecast assumes smaller household sizes due to shifting demographics and increased housing availability.



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-3 Population by Age and Sex, San Diego Region 2022 and 2050

The jobs forecast was developed using the Regional Economic Models Inc. (REMI) framework, which integrates national, state, and local economic trends. One notable update to the jobs model is the inclusion of nonwage and salary jobs, which include gig economy, that have grown in importance over the past several years. These jobs, often outside of traditional employment structures, are becoming a significant part of the region's labor market. The population inputs from the CCM feed directly into the REMI model's job growth projections, illustrating how changes in population size and composition influence employment trends. As a result, the jobs forecast anticipates higher employment growth through 2050 compared to previous forecasts, reflecting both traditional wage employment and the increasing impact of the gig economy.

See Chapter 2 and Appendix F of the proposed Plan for additional discussion of the population, housing and jobs forecasts.

2.3 CONTENT AND ORGANIZATION OF THE PROPOSED PLAN

The proposed Plan envisions a sustainable and resilient future for the San Diego region and the economic supported by a transportation network that would achieve:

- Convenient and reliable movement of people and goods,

- Equitable access to essential needs and opportunities,
- Healthy communities and environment for everyone, and
- Safe transportation network for all users.

The proposed Plan consists of four chapters and a series of appendices with supporting information. The major contents of each chapter are summarized below.

- **Chapter 1: Regional Plan Overview.** Describes the region's challenges, discusses anticipated growth in the San Diego region, and outlines the proposed Plan's vision and goals.
- **Chapter 2: Sustainable Communities Strategies.** Describes the SCS—the package of projects, policies, land use strategies, and programs that will achieve the vision and goals of the proposed Plan.
- **Chapter 3: Implementation Actions.** Describes the near-term and continuing actions that SANDAG will undertake to support implementation of the proposed Plan.
- **Chapter 4: Finance Plan.** Describes the planning, investments, actions, and partnerships needed to implement the proposed Plan, and the metrics that will be used to monitor implementation and performance over time.

2.4 PROJECT CHARACTERISTICS

2.4.1 SB 375 Sustainable Communities Strategy

GHG REDUCTION TARGETS

In accordance with SB 375, the proposed Plan must include an SCS that demonstrates that the San Diego region will reduce GHG emissions (GHG emissions for SB 375 compliance are calculated using carbon dioxide [CO_2] emissions) from automobiles and light-duty trucks to achieve, if there is a feasible way to do so, the GHG emission reduction targets approved by CARB. Targets are expressed as percent change in per capita GHG emissions relative to 2005. Consistent with the targets established by CARB, the targets for the San Diego region are a 15 percent per capita reduction in passenger vehicle GHG emissions by 2020 and a 19 percent per capita reduction by 2035. The proposed Plan would meet the GHG emission reduction targets for 2020 and 2035 established by CARB, as shown in Table 2-2.

Table 2-2 Proposed Plan Estimated SB 375 Greenhouse Gas Emissions Reductions for Cars and Light Trucks

Target Year	CARB Target	Proposed Plan
2020	15%	17.9%
2035	19%	19.3%

Source: SANDAG 2025c.

LAND USE PATTERN

SB 375 requires the SCS to include a pattern for forecasted growth and development that accomplishes the following:

- Achieves the regional GHG reduction targets when combined with the transportation network.
- Accommodates the RHNA Determination.
- Utilizes the most recent planning assumptions.

The proposed Plan envisions a pattern of regional growth and development that reflects smart growth, transit-oriented development, preserving natural resources and agricultural lands, and building communities that are resilient to the effects of climate change and other environmental changes.

The SCS land use pattern identifies areas in the region sufficient for housing for the required 8-year projection of the regional housing need. The proposed SCS land use pattern is derived from jurisdictions' general plans, those general plan amendments pending at the time of SCS land use pattern development, and more specifically the most recent adopted housing elements approved by HCD.

Evolving local plans continue to shape the growth patterns in the San Diego region. Since the early 2000s, more than three-quarters of the region's 19 jurisdictions have updated their general plans, emphasizing higher-density, mixed-use developments. The Series 15 Forecast and proposed SCS land use pattern reflect a move toward more sustainable urban growth models. Figures 2-4 and 2-5 show the proposed 2035 and proposed 2050 SCS land use pattern, respectively.

Chapter 2 and Appendix F of the proposed Plan contain more information about the SCS land use pattern.

ENVIRONMENT

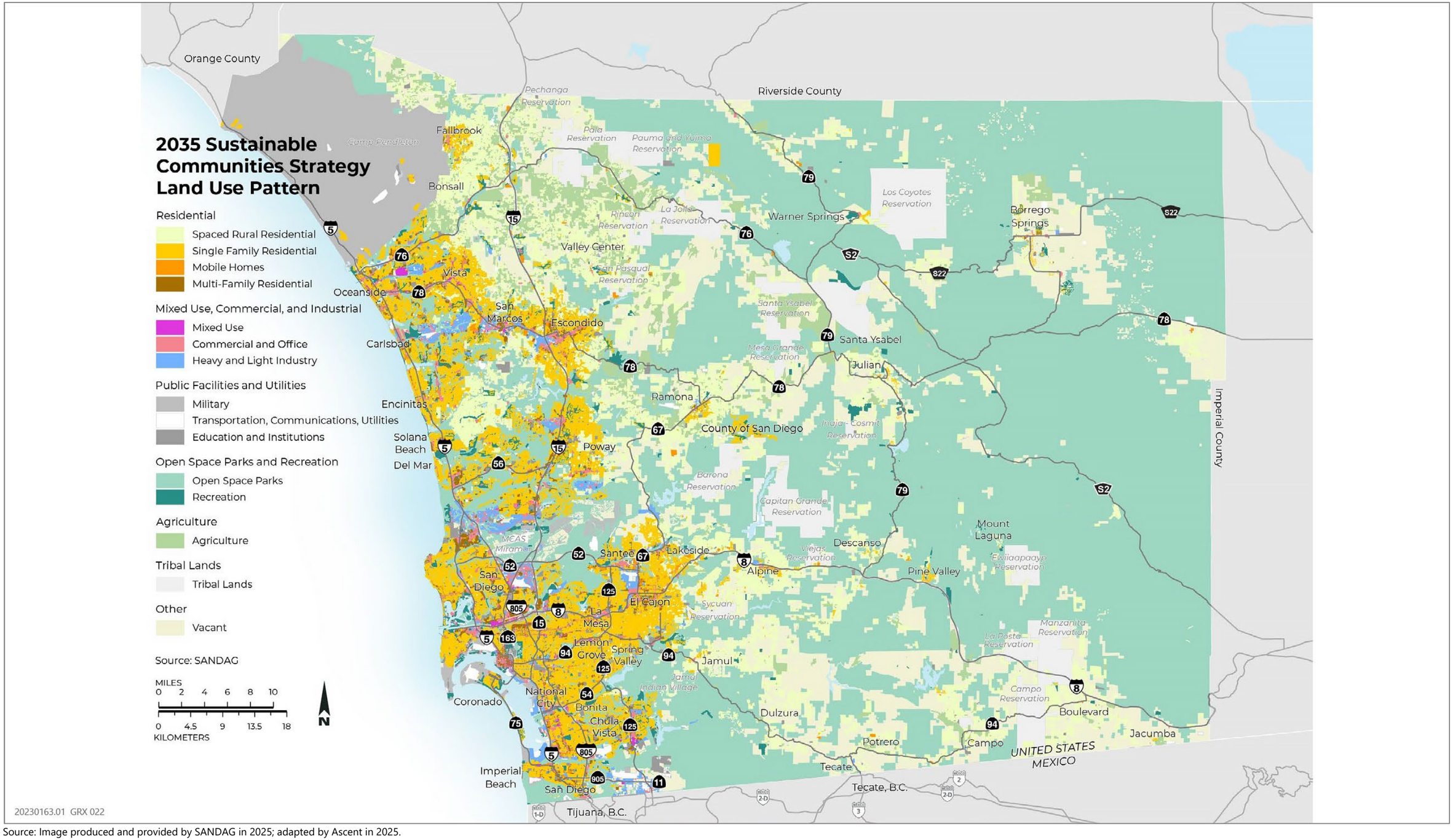
The San Diego region is one of the richest biodiversity areas in the United States. The region's diverse topography, geology, and moderate climate, allow the most rare, threatened, and endangered species in the continental United States to live here. The Regional Habitat Conservation Vision addresses challenges posed by degradation and loss of habitat, invasive species, and other changes that are driving many species to the precipice of extinction at an increasing rate. The vision sets goals and objectives to protect sensitive habitats and species in San Diego for future generations. Appendix Q of the proposed Plan describes the history and status of the habitat conservation planning efforts in the region and sets forth a vision for future implementation. It also covers the overall goals of the California State Wildlife Action Plan.

Shoreline preservation plays a crucial role in enhancing both our environment and economy, and it is recognized as a resource of national importance. Each coastal city within the region, including sections of shoreline that are owned and managed by state and federal authorities, has been impacted by erosion over the past several decades. This ongoing erosion has heightened concerns regarding the anticipated trends of escalating beach loss and property damage in the future. It has become increasingly evident that California's shorelines are experiencing gradual erosion, exacerbated by development that has reduced the natural sand supply essential for maintaining our beaches. SANDAG remains committed to providing guidance on shoreline fill policies, beach nourishment, structural stabilization, and other strategies designed to ensure the vitality of our beaches.

2.4.2 Transportation Network Improvements

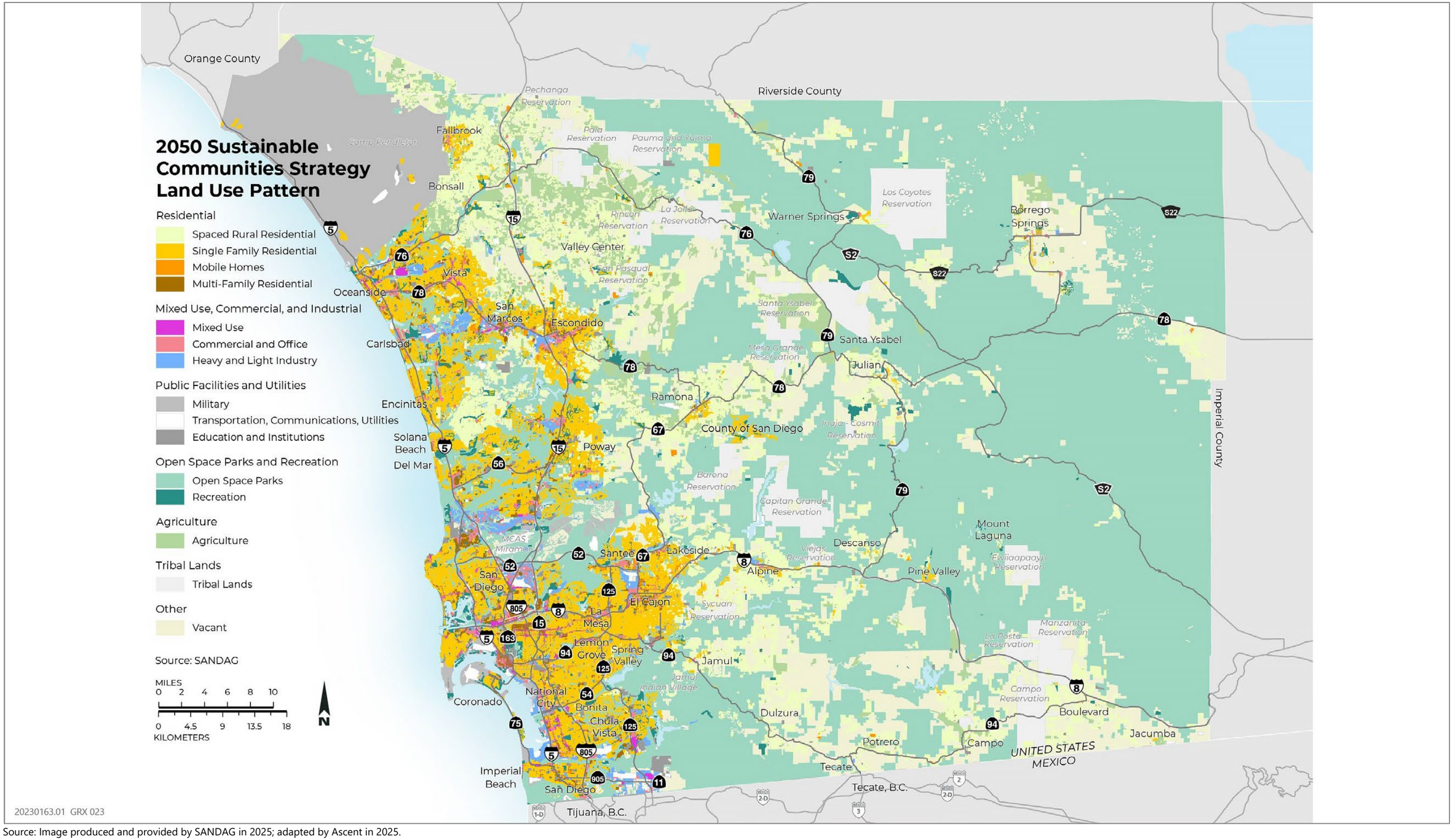
The proposed Plan's transportation network builds on and refines what was identified in the Amended 2021 Regional Plan to chart a course for a transportation network that will make travel safer and more efficient, while offering people more alternatives to driving alone—including more transit options, more Flexible Fleet options, and more opportunities for biking, walking, and other forms of active transportation, as described in greater detail below.

These transportation improvements are informed by recent and historical data trends, as well as input from regional stakeholders, to address evolving travel demands and needs. The proposed Plan relies on data-driven insights to evaluate the best investments for meeting current and future regional needs. For instance, while the Series 15 Forecast projects an aging population and a decrease in total population in the later years of the proposed Plan, housing shortages will continue to drive demand for housing and job opportunities. Additionally, although job growth is anticipated, many positions may be filled by commuters from outside the region. These demographic and economic shifts influence travel demands and inform the vision for the region's future transportation system.



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-4 2035 Sustainable Communities Land Use Pattern



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-5 2035 Sustainable Communities Land Use Pattern

Data also reveals that approximately one-quarter of regional transit trips are linked to shopping, dining, or visiting attractions, while one-third of all travel in the region is dedicated to these activities. This underscores the importance of a well-connected transportation network to support the needs of all travelers, whether residents or visitors.

ACTIVE TRANSPORTATION

The updated active transportation network in the proposed Plan goes beyond biking and represents a significant increase in investment in safety and mobility for people who travel the region by foot, bike, scooter, transit, or other means outside of a car. The planned and prioritized projects reflect the best available standards and guidelines by adhering to an average network density of approximately 1 mile to ensure the most important cycling connections between regional centers, schools, residential areas, places of employment, and transit stops are provided with infrastructure composed of elements that are proven safety countermeasures for users of all ages and abilities. Regional active transportation projects include both on- and off-street improvements to create safe and comfortable paths for walking and biking. These improvements may include upgrading or retrofitting existing streets and roadways to meet the mobility needs of users of all ages and abilities.

Proposed active transportation projects are listed in Section 2.4.5 by subregion and year of implementation. Figure 2-6 depicts the existing active transportation network for the entire region in 2022. Figures 2-7 and 2-8 depict the proposed active transportation network for the entire region in years 2035 and 2050, respectively. See Chapter 2 and Appendices A and K of the proposed Plan for additional discussion of the Active Transportation Network.

COMPLETE CORRIDORS

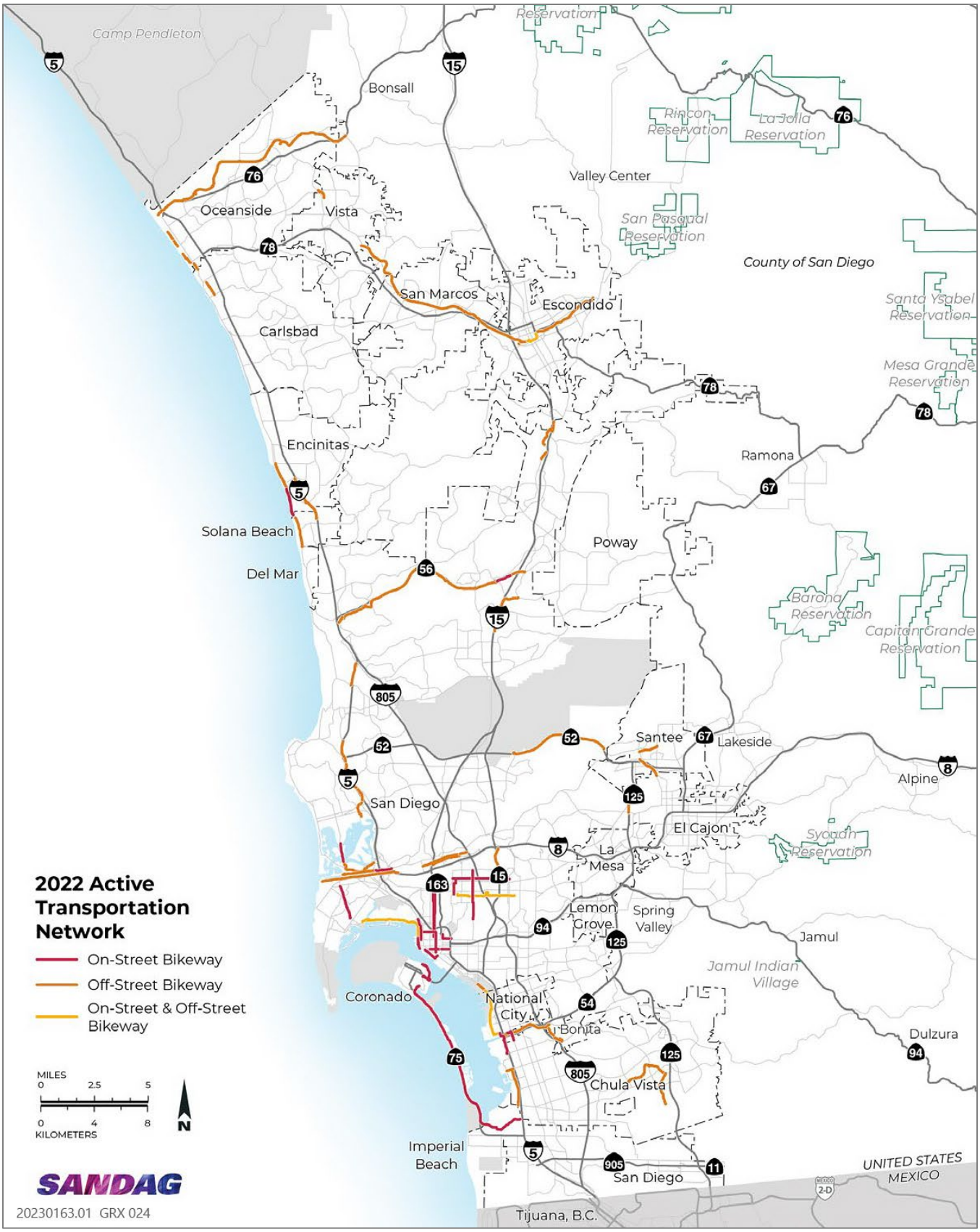
Complete Corridors incorporate various transportation improvements to enhance connectivity, including managed lanes, connectors and direct access ramps for managed lanes, transportation technology and Smart Intersection Systems (SIS), and goods movement to be implemented on freeways, highways, and rural corridors. The proposed Plan includes Managed lanes (MLs), which offer priority access to people using transit, carpooling, riding motorcycles, or vanpooling along with emergency vehicles and some low-emission vehicles with appropriate decals. In the proposed Plan, MLs are expanded by adding new travel lanes or repurposing shoulders or existing travel lanes, as feasible. The maps and tables below use descriptions of MLs to indicate the number of MLs in addition to the freeway lanes included in the total configuration for that phase. For example, a freeway segment labeled "8F+2ML" would represent eight freeway lanes plus two MLs on that segment. Many of the MLs will be fully built by 2035.

The proposed Plan also includes ML connectors and direct access ramps (DARs). ML connectors connect MLs, and DARs are freeway on-ramps that connect a local road directly to a ML on the freeway. DAR improvements could take the form of a carpool or transit-only lane, grade-separated or direct ramp, or technology enhancement. Additional projects that connect two intersecting facilities are included in the proposed Plan as interchange and arterial operational improvements.

Rural corridors, located mostly in the eastern two-thirds of the region, provide access to jobs, education, and health care, as well as needed infrastructure for the movement of goods, deliveries, and emergency vehicles. The proposed Plan includes physical safety improvements, including evacuation routing, shoulder widening, and curve straightening.

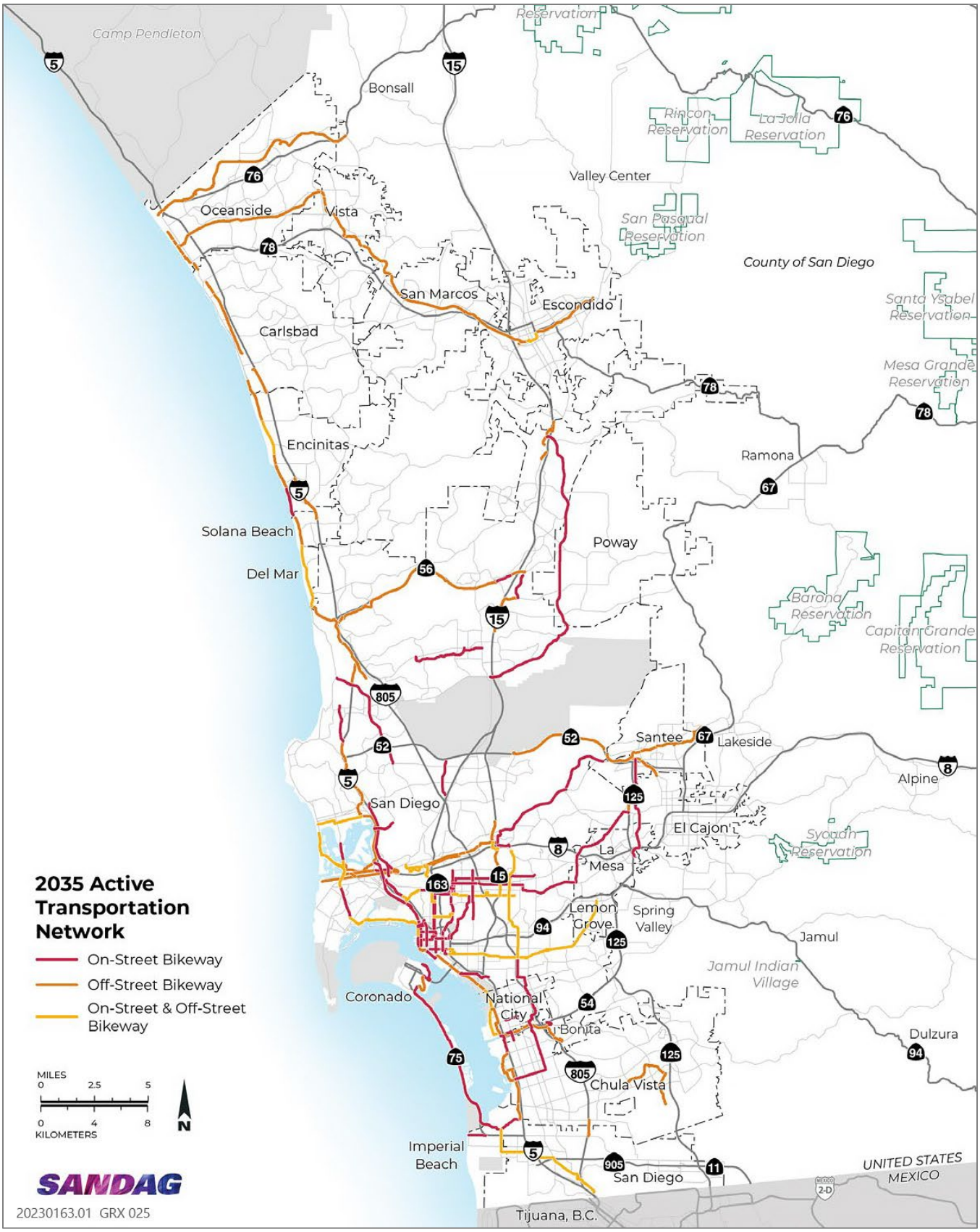
Projects in the goods movement category support goods movement improvements at freight gateways (land border crossings, maritime terminals, and air cargo terminals), on rail lines, and on roadways. Goods movement supportive projects are sometimes aligned with ML or other Complete Corridor and transit projects and are indicated in the tables below; others are stand-alone projects for goods movement improvements.

The proposed Plan also includes transportation technology and SIS, which use technology and data to reduce congestion and improve roadway safety. transportation technology can include a wide range of elements, such as traffic signal upgrades, ramp metering, changeable message signs, queue warning systems, and freeway fiber communications. SIS technologies may include vulnerable road user (VRU) detection system, transit and freight signal priority, adaptive signal timing, and more.



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-6 Active Transportation Network (2022)



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-7 Active Transportation Network (2035)



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-8 Active Transportation Network (2050)

Transportation system management is the use of data and technology to coordinate and integrate operations across the transportation network. Transportation system management is envisioned as a digital platform that synthesizes information, coordinates operations, houses critical data, and powers transportation networks on the ground. Transportation system management can use data from passenger vehicles, buses, ridesharing vehicles, delivery trucks, bikes, and scooters to improve how transportation is planned, operated, and experienced.

The proposed Plan includes several pricing strategies for Complete Corridors, which are reflected in Table 2-3 below. Proposed Complete Corridors projects are listed in Section 2.4.5 by subregion and year of implementation. Figure 2-9 depicts existing Complete Corridors projects for the entire region as of 2022. Figures 2-10 and 2-11 depict proposed Complete Corridors projects for the entire region in 2035 and 2050, respectively. See Chapter 2 and Appendix K of the proposed Plan for additional discussion of Complete Corridors.

Table 2-3 Complete Corridors Pricing Strategies

Strategy	2035	2050
HOV and toll assumptions	Vehicles of three or more persons are allowed and pay no toll for use. SOVs and two-person vehicles that pay a toll are permitted to use the facility. 50% discount for HOV2.	Vehicles of three or more persons are allowed and pay no toll for use. SOVs and two-person vehicles that pay a toll are permitted to use the facility. 50% discount for HOV2.
Managed Lane/HOT rates	ML: $0.30/mile	ML: $0.30/mile
SR 11 Toll rates	Northbound: $2 for cars $15 for trucks; Southbound: $1.25 for cars, $10 trucks	Northbound: $2 for cars $15 for trucks; Southbound: $1.25 for cars, $10 trucks

Note: SOV = single-occupancy vehicle; HOV = high-occupancy vehicle.

Source: SANDAG 2025d.

TRANSIT AND FLEXIBLE FLEETS

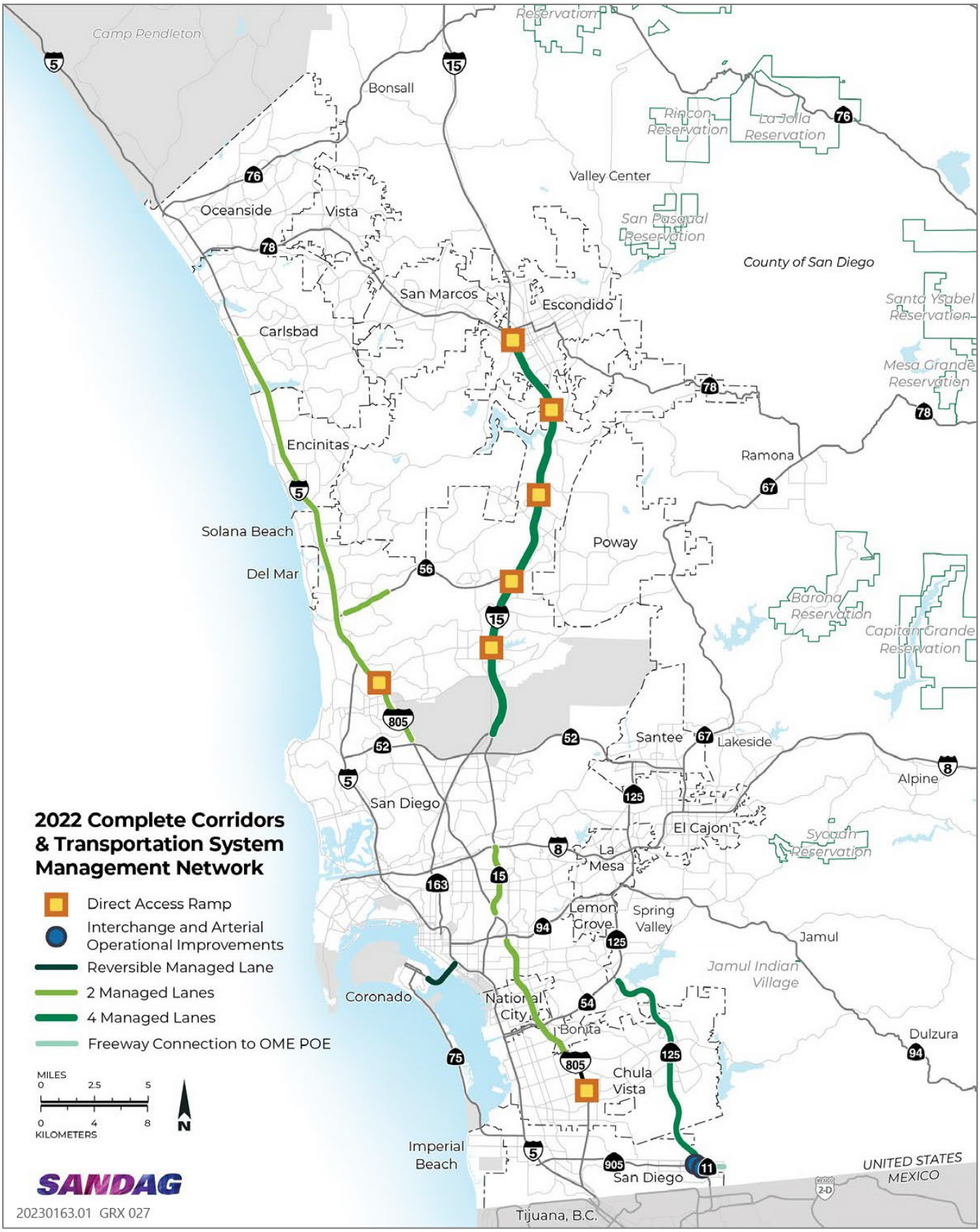
The proposed Plan includes transit improvements that make public transit a compelling option to driving—fast, convenient, and safe. Improvements include regional rail; light rail; streetcar; a variety of bus options, including Rapid, express, local, local circulator, rural; and an Airport Transit Connection.

Next Generation Rapid is a bus network using special technology and infrastructure to get around traffic. All of the Rapid routes included in the proposed Plan are planned to start operation by 2035. Regional rail in the proposed Plan includes significantly upgraded rail service with higher-speed trains that are fast and convenient, especially for longer trips. Light rail transit (LRT) includes improvements to existing light rail services and new light rail or streetcar routes. Many of the existing bus and rail services will have increases to their frequencies.

Flexible Fleets are on-demand, shared services that provide different mobility options and vehicles for all types of trips, reducing the need to own a car. Flexible Fleets in the proposed Plan can provide first- and last-mile connections to transit and major destinations (e.g., work, health care, school, etc.), improve mobility in areas that are difficult to serve with other transportation options, reduce private vehicle dependence for short trips, and complement or replace underperforming fixed-route buses.

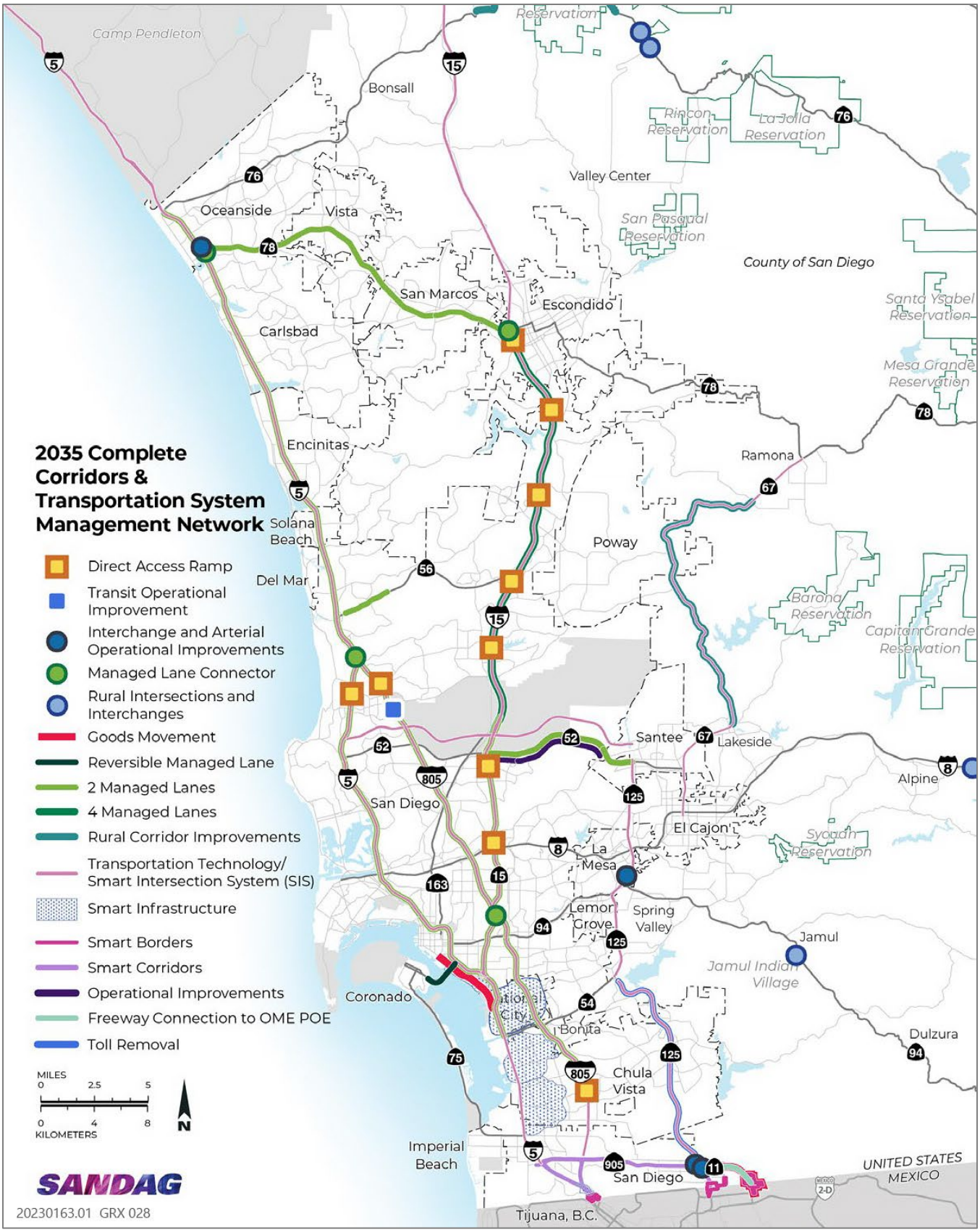
Flexible Fleets includes both microtransit and neighborhood electric vehicles (NEVs). Microtransit serves a range of 1.5-4.5 miles carrying up to 15 passengers, and NEVs typically have a service range of 0.5 to 2 miles, carry up to six passengers, and are permitted to operate on streets with speed limits of 35 miles per hour or less. Both microtransit and NEVs are typically requested with a smartphone app and pickup and drop-off activities occur anywhere within a defined service area, at designated locations, or a hybrid of the two.

Microtransit and NEV service areas in the proposed Plan reflect ridership/demand based on population and employment density, mobility needs for people with no access to vehicles, mobility needs for minority populations, low-income households, and seniors, proximity to transit, short trip density, limited transit access, and parking districts that could help support NEV services. There are 15 NEV service areas and 21 microtransit service areas identified throughout the county. Some of the services have already begun and will continue, while others are planned to start by 2035 contingent on jurisdictional support.



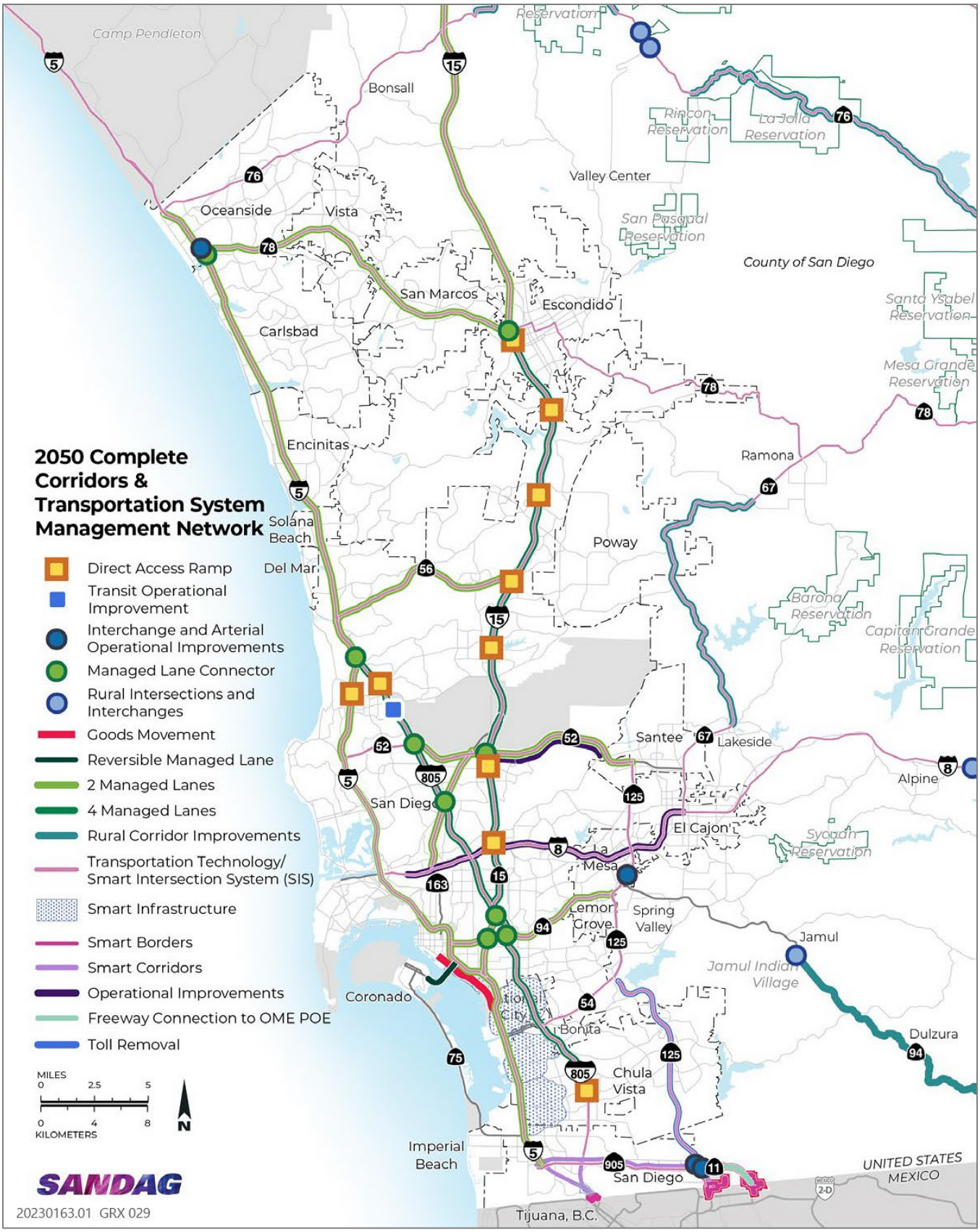
Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-9 Complete Corridors Network (2022)



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-10 Complete Corridors Network (2035)



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-11 Complete Corridors Network (2050)

The proposed Plan includes several pricing strategies for transit and Flexible Fleets, which are reflected in Table 2-4 below. One of these strategies is paid parking, where prices vary by time of day, location, and other factors. Parking pricing strategies help manage the number of spots available in high-demand areas while generating funding for city and county transportation projects, including Flexible Fleets. Proposed transit and Flexible Fleets projects are listed in Section 2.3.5 by subregion and year of implementation. Figure 2-12 depicts existing transit and Flexible Fleets projects for the entire region as of 2022. Figures 2-13 and 2-14 depict proposed transit and Flexible Fleets projects for the entire region in 2035 and 2050, respectively.

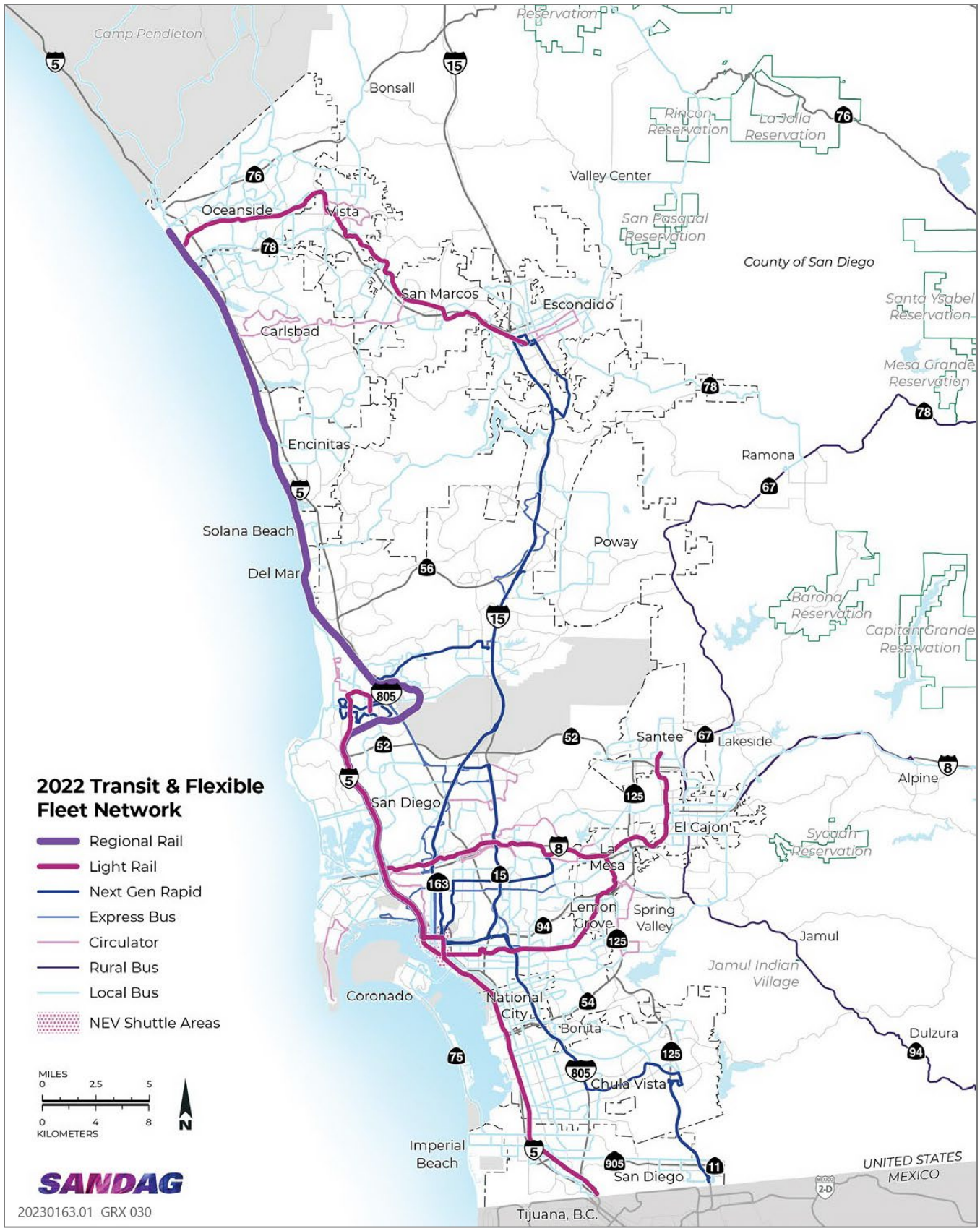
Table 2-4 Transit, Flexible Fleets, and Parking Pricing Strategies

Strategies	2035	2050
Local bus, Arterial Rapid, Some non-Express Freeway Rapids, Express Bus, Trolley, SPRINTER, Microtransit/NEV	$1.25 one way/$3 day	$1.25 one way/$3 day
Express Freeway Rapid	$2.50 one way/$6 day	$2.50 one way/$6 day
Commuter Rail	$3 one way/$6 day	$3 one way/$6 day
COASTER Connection	Free	Free
Ridehail Company service feeridehail) fee (single)	Fixed: $1.25/trip	Fixed: $1.25/trip
Ridehail Company service fee (shared)	Fixed: $0.65/trip	Fixed: $0.65/trip
Parking in High Demand Areas of Urban Shed, Major Employment Centers, U.S.–Mexico Border	Hourly: $3.25 Daily: $23.26 Monthly: $323.58	Hourly: $5.06 Daily: $36.24 Monthly: $504.13
Parking in High Demand Areas of Coastal Communities	Hourly: $2.29 Daily: $15.25 Monthly: $234.94	Hourly: $3.84 Daily: $23.76 Monthly: $366.03
Parking in High Demand Areas of Suburban Communities	Hourly: $1.53 Daily: $11.71 Monthly: $146.31	Hourly: $2.56 Daily: $18.24 Monthly: $227.95

Source: SANDAG 2025d.

2.4.3 Supporting Policies and Programs

Program investments in the proposed Plan include Climate, Digital Infrastructure, Fix It First, Habitat, Health, Housing and Land Use, Pricing Strategies, Transportation Demand Management, Transportation Technology and Operational Improvements, and Vision Zero. These investments complement the capital and operational investments of the transportation system, encourage sustainable growth and development, and implement innovative demand strategies. Local programs include grants and resources to support capital and planning activities for the cities and County of San Diego. Regional programs support habitat conservation and management, adoption of new technologies, and incentivizing transportation alternatives to driving alone. Table 2-5 lists the programs and costs associated with these supporting policies and programs. For more information on program and policy costs see Appendix H to the proposed Plan, "Cost Estimation Methodology."



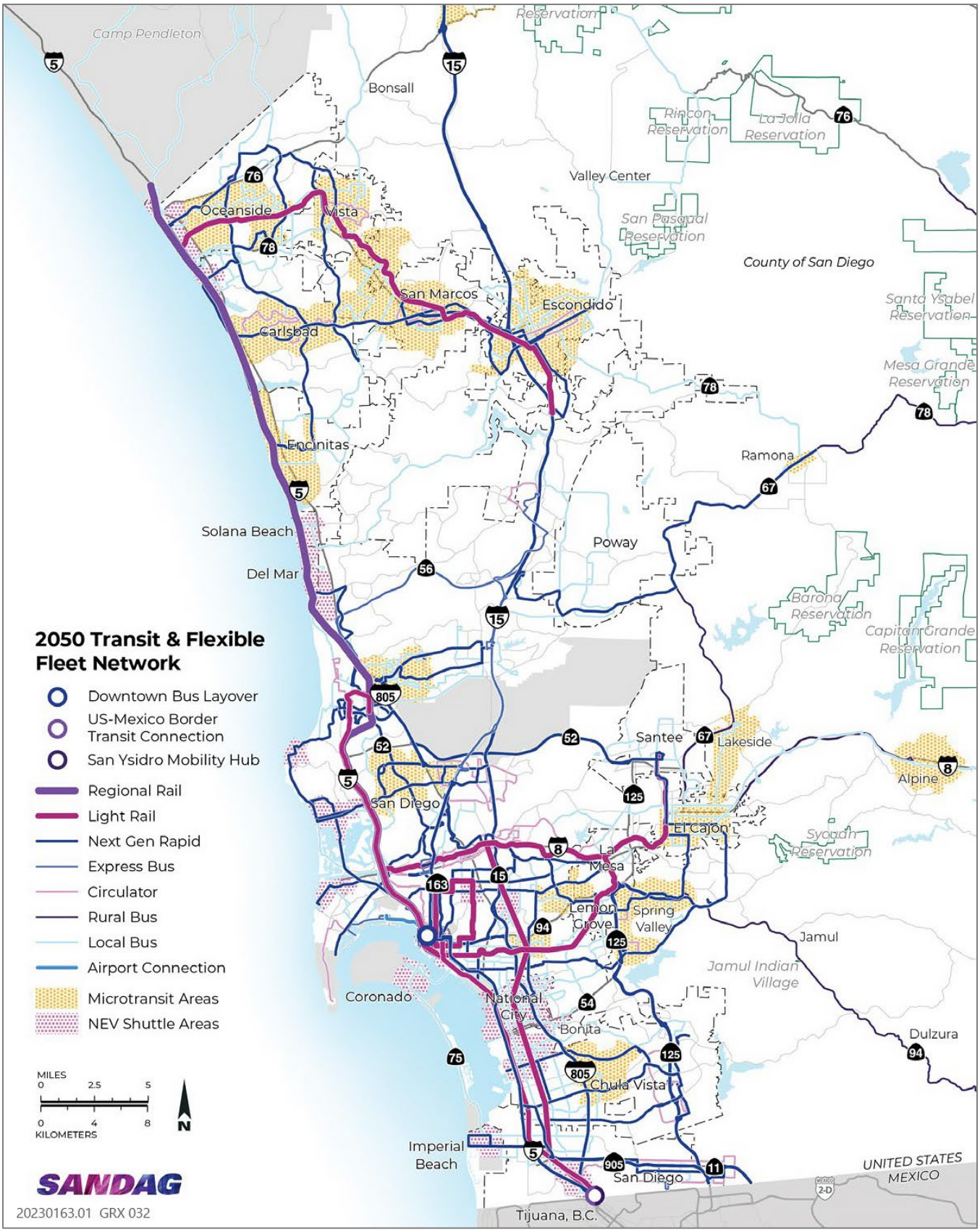
Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-12 Transit & Flexible Fleet Network (2022)



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-13 Transit and Flexible Fleet Network (2035)



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-14 Transit & Flexible Fleet Network (2050)

Table 2-5 Policy and Program Assumptions

Policy and Program Assumptions	Cost ($2024) Millions
Climate	$1,365
Digital Infrastructure	N/A
Fix It First	N/A
Habitat	$1,500
Health	N/A
Housing and Land Use	$449
Pricing Strategies	N/A
Transportation Demand Management	$255
Transportation Technology and Operational Improvements	N/A
Vision Zero	$258

Source: SANDAG 2025e.

2.4.4 Systemwide Investments

In addition to the policies, programs, and capital projects, there are also several other supporting services that make up the breadth of the transportation investments included in the proposed Plan.

These systemwide support services are:

- **Transit Operations Costs:** Based on vehicle revenue hours and service spans by service type
- **Transit Frequency Enhancements:** Increases in frequency to support more robust local bus service on select corridors
- **Bus and Rail Maintenance Facilities:** Maintenance facilities to enable the operations of the additional bus and rail routes identified in the system
- **Transit Fare Subsidies:** Subsidies to reduce the fares paid by transit riders
- **Transit Station Amenities:** Amenities located at certain transit stations including shade, wayfinding, landscaping, public restrooms, Wi-Fi, and ongoing associated operations, maintenance, and security.
- **Regional Transportation System Management Program:** Program to enhance Data Hub, Curb & Access Parking, Transit Optimization, Mobility as a Service, Smart Intersection Systems, Smart Corridors, and Smart Borders projects.
- **Reconnecting Communities Program:** Regionwide program advancing transportation equity and creating green spaces, public plazas, and transit-oriented development to repurpose land for community benefit and create buffers from pollution.

In addition to the projects and investments listed above, there are also other systemwide costs associated with the Local Streets and Roads Program, Highway Maintenance and Operations, and Debt Service that are incurred by the region. All proposed systemwide programs and services are shown in Table 2-6.

Table 2-6 Systemwide Investments

Project ID	Phase Year	Project Name	Cost ($2024) Millions
TL310	2035	Transit Vehicles	$1,058
TL311	2050	Transit Vehicles	$3,235
TL300	2035	Transit Operations	$6,907
TL301	2050	Transit Operations	$16,834
TL320	2035	Transit Fare Subsidies	$346
TL321	2050	Transit Fare Subsidies	$2,092
TL401	2035	Transit Amenities	$247
TL402	2050	Transit Amenities	$617
TL058	2035	Transit Maintenance Facilities	$330
TL059	2050	Transit Maintenance Facilities	$907
NO04	2050	Regional Transportation System Management Program	$225
HMO1	2035	Highway Maintenance and Operations	$1,470
HMO2	2050	Highway Maintenance and Operations	$3,854
LSRP1	2035	Local Streets and Roads Program	$6,543
LSRP2	2050	Local Streets and Roads Program	$8,287
DS1	2035	Debt Service	$1,380
DS2	2050	Debt Service	$1,216
RC1	2050	Reconnecting Communities Program	$100

Source: SANDAG 2025e.

2.4.5 Implementation Actions

The proposed Plan identifies the following near-term and continuing actions that SANDAG will undertake to support implementation of the proposed Plan:

Near-Term Actions

- Develop the remaining three Comprehensive Multimodal Corridor Plans (CMCP) in partnership with Caltrans, agency partners, and local governments
- Complete the Concept of Operations and System Requirements for Managed Lanes
- Develop a phased implementation strategy for the regional Managed Lanes system in partnership with Caltrans
- Complete the California-Baja California Border Resiliency Plan to strengthen regional coordination on climate adaptation and environmental issues in the border region
- Complete the Regional Habitat Conservation Assessment
- Update SANDAG coastal resilience policies and strategies, and initiate a beach sand replenishment project to protect critical coastal infrastructure
- Advance implementation of the Harbor Drive 2.0 and Vesta Bridge projects
- Deliver the Otay Mesa East Port of Entry project and a Regional Border Management System to improve cross border travel
- Develop partnerships and assess opportunities to strengthen freight resiliency in the region

- Support the cities and county with designating truck routes under California Assembly Bill 98 and update the region's FHWA Critical Urban and Rural Freight Corridor designations
- Analyze and pilot Public Private Partnerships and alternative delivery methods that can reduce costs and time for delivering critical projects
- Complete a regional Reconnecting Communities Study to identify projects that can improve safety, accessibility and mobility for the most impacted communities
- Advance implementation of the regional Vision Zero Action Plan (VZAP)
- Complete regional bike projects in active construction
- Continue assessing feasibility of a vehicle miles traveled (VMT) mitigation bank that can provide funding for transit and Flexible Fleets
- Administer the Flexible Fleets grant program to pilot new Flexible Fleet services in the region and sustain existing services that have proven successful
- Identify sustainable funding to continue the Youth Opportunity Pass (YOP)
- Complete a comprehensive update of the Coordinated Plan and seek funding opportunities to expand specialized transportation services for older adults and people with disabilities
- Implement near-term improvements that better connect transit to the airport
- Continue the design, engineering, and environmental clearance for six Rapid routes
- Develop a strategy for implementing grade separation projects that improve safety and rail operations
- Complete the Blue Line Trolley study to assess the ability of operating express and 24-hour service along the corridor
- Advance design and environmental clearance for station improvements at the San Ysidro Transit Center
- Study the feasibility of extending the LOSSAN corridor to the U.S.-Mexico border
- Continue implementing LOSSAN Rail Corridor improvement projects
- Develop feasibility studies analyzing the potential for TOD within the MTS and NCTD service areas
- Complete design and environmental for two tribal priority projects: I-8 at West Willows Road and realignment to SR-76
- Partner with Tribes to seek funding to implement priority projects in the Intraregional Tribal Transportation Strategy

Continuing Actions

- Collaborate with local, regional, and state agencies to advance clean transportation programs
- Continue to support Climate Action Plan (CAP) implementation and monitoring
- Partner with federal and state resource agencies, land managers, local jurisdictions, and the environmental science community to implement the Regional Habitat Vision as described in Appendix Q of the proposed Plan
- Advance regional partnerships and seek funding for projects that improve goods movement
- Continue advancing projects in the regional sustainable freight strategy
- Advance pavement and bridge condition monitoring following Fix It First best practices
- Continue SANDAG's Housing Acceleration Program (HAP) to support local jurisdictions with accelerating housing production

- Continue to grow participation in SANDAG's Sustainable Transportation Services program by providing regional rideshare services, employer outreach, bike education, and secure bike parking at transit stations
- Continue seeking sustainable funding for transit operations and Flexible Fleets in partnership with MTS and NCTD
- Continue to incentivize local Complete Streets and Smart Growth projects through SANDAG grant programs
- Continue to support local jurisdictions with advancing regional bike projects
- Continue to coordinate with Caltrans to advance Managed Lanes projects
- Continue partnering with community-based organizations across the region to support implementation of the proposed Plan
- Continue to coordinate with agencies in Imperial County, Riverside County, and Orange County on interregional planning efforts, and collaborate with partner agencies in Mexico to improve border infrastructure
- Continue to coordinate with the region's tribal nations on shared issues, including transportation, housing, energy, conservation planning and data sharing
- Continue to implement performance-based planning for federal performance measures related to safety; infrastructure condition; and system performance, freight, and congestion mitigation and air quality
- Use the intergovernmental review process to evaluate consistency of development projects with the SCS

Additional information about the implementation actions can be found in Chapter 3 of the proposed Plan.

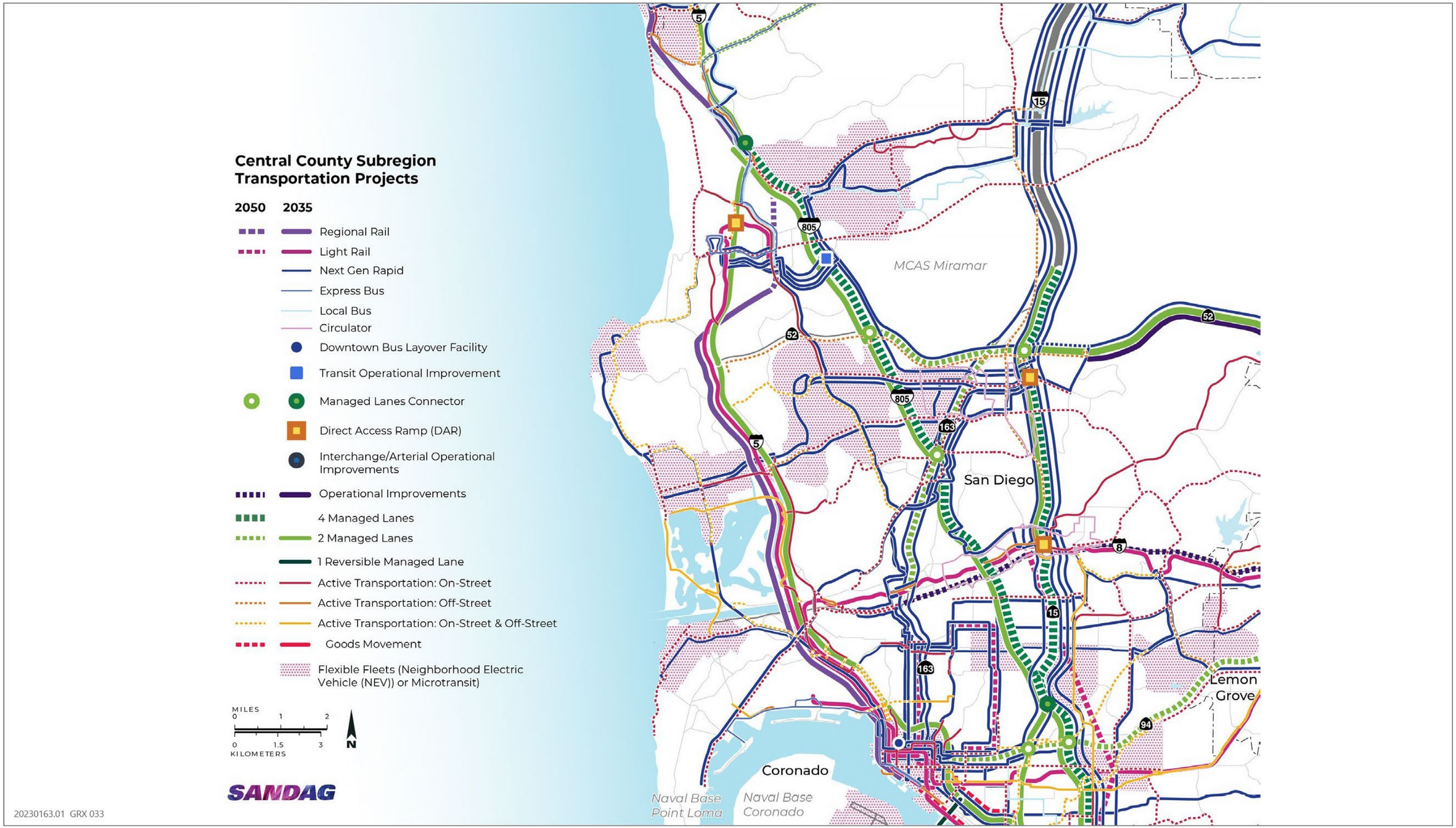
2.4.6 Proposed Project List

Regional transportation projects and improvements are grouped by four distinct subregions, including rural areas: Central County Subregion, East County Subregion and Rural Areas, North County Subregion, and South County Subregion. Proposed projects in each subregion are listed below. These proposed projects are categorized by type and organized by phasing periods: 2035 and 2050 within each project type. Arterial projects proposed by the local jurisdictions are provided below following the subregion information.

CENTRAL COUNTY SUBREGION

The Central County Subregion spans from the downtown core of the City of San Diego, extending north to the Torrey Pines area and west of Lemon Grove. Major transportation routes such as Interstate (I) 5, I-805, I-15, State Route (SR) 163, I-8, SR 52, and SR 94 connect San Diego's diverse neighborhoods and key destinations, from coastal areas, like La Jolla and Pacific Beach, to inland areas, like Kearny Mesa and the College Area. Central San Diego is home to Downtown San Diego, the third-largest employment center in the region, as well as the San Diego Convention Center, Petco Park, and the San Diego International Airport. This area is also a crucial trade and travel gateway, serving as a major connection point to the Port of San Diego. The area's transit infrastructure includes the Trolley network, the COASTER regional rail, many local and Rapid bus routes, and local NEV shuttles.

Proposed projects located in or partially within the Central County Subregion are listed in Figure 2-15 and Table 2-7 below. The proposed projects are categorized by type and organized by phasing periods: 2035 and 2050 within each project type.



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-15 Central County Subregion Projects

Table 2-7 Central County Subregion Projects

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT003	2035	Active Transportation: Off-Street Bikeway	Bayshore Bikeway: Barrio Logan Segment (Beardsley Street to Park Boulevard)	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$6
AT020	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail San Diego - Carmel Valley to Roselle via Sorrento	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$28
AT021	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail San Diego - Del Mar to Sorrento via Carmel Valley	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Upgrade Existing Bikeway	$11
AT022	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail San Diego - Mission Bay (Clairemont to Tecolote)	Early Action Program (Tier 2), Comprehensive Multimodal Corridor Plan, Safety Focus Network, Upgrade Existing Bikeway	$22
AT043	2035	Active Transportation: Off-Street Bikeway	North Mission Bay Drive to Rose Creek Bike Path	Early Action Program (Tier 2), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Upgrade Existing Bikeway	$15
AT052	2035	Active Transportation: Off-Street Bikeway	San Diego River Trail - Bridge connection (Sefton Field to Mission Valley YMCA)	Early Action Program (Tier 2), Local Bike Plan	$8
AT054	2035	Active Transportation: Off-Street Bikeway	San Diego River Trail - I-805 to Fenton Parkway	Early Action Program (Tier 1), Local Bike Plan, Comprehensive Multimodal Corridor Plan	$7
AT167	2035	Active Transportation: Off-Street Bikeway	Bayshore Bikeway Segment 1	Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$4
AT059	2050	Active Transportation: Off-Street Bikeway	I-15 Bikeway - Murphy Canyon Road to Affinity Court	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$135
AT084	2050	Active Transportation: Off-Street Bikeway	SR 52 Bikeway - I-5 to Santo Road	Regional Bike Plan, Local Bike Plan	$143
AT087	2050	Active Transportation: Off-Street Bikeway	Bayshore Bikeway: Harbor Drive	Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$14
AT120	2050	Active Transportation: Off-Street Bikeway	Hillcrest - El Cajon Corridor: Fletcher Gap	Comprehensive Multimodal Corridor Plan, Systemic Safety Network	$24
AT016	2035	Active Transportation: On-Street & Off-Street Bikeway	City Heights/Fairmount Corridor	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$43

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT018	2035	Active Transportation: On-Street & Off-Street Bikeway	Coastal Rail Trail Del Mar	Early Action Program (Tier 2), Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT029	2035	Active Transportation: On-Street & Off-Street Bikeway	El Prado: Cross-Park	Early Action Program (Tier 1), Safety Focus Network, Upgrade Existing Bikeway	$8
AT031	2035	Active Transportation: On-Street & Off-Street Bikeway	Harbor Drive (Downtown to Ocean Beach)	Early Action Program (Tier 2), Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$6
AT033	2035	Active Transportation: On-Street & Off-Street Bikeway	I-15 Bikeway - Camino del Rio South to Rancho Mission Road: Off-Street	Early Action Program (Tier 2), Regional Bike Plan, Comprehensive Multimodal Corridor Plan	$11
AT040	2035	Active Transportation: On-Street & Off-Street Bikeway	Lemon Grove to Imperial Bikeway	Early Action Program (Tier 2), Systemic Safety Network, Upgrade Existing Bikeway	$36
AT046	2035	Active Transportation: On-Street & Off-Street Bikeway	Ocean Beach to Mission Bay	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$27
AT047	2035	Active Transportation: On-Street & Off-Street Bikeway	Pacific Beach to East Mission Bay	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$17
AT004	2050	Active Transportation: On-Street & Off-Street Bikeway	Balboa Transit Center Connector Bikeway	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$27
AT023	2050	Active Transportation: On-Street & Off-Street Bikeway	Chollas Creek Bikeway: South Fork	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$65
AT051	2050	Active Transportation: On-Street & Off-Street Bikeway	San Diego River Bikeway Connections	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$14
AT096	2050	Active Transportation: On-Street & Off-Street Bikeway	Central Coast Corridor: Pacific Beach to La Jolla	Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$40
AT099	2050	Active Transportation: On-Street & Off-Street Bikeway	Chollas Creek Bikeway: North Fork	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$77

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT102	2050	Active Transportation: On-Street & Off-Street Bikeway	Clairemont Mesa to Linda Vista Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$42
AT119	2050	Active Transportation: On-Street & Off-Street Bikeway	Golden Hill to Fairmount Park	Local Bike Plan	$14
AT138	2050	Active Transportation: On-Street & Off-Street Bikeway	Midway to Pacific Beach Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$30
AT143	2050	Active Transportation: On-Street & Off-Street Bikeway	Montezuma Mesa Bikeway	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT145	2050	Active Transportation: On-Street & Off-Street Bikeway	North Coast Bike Trail	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$58
AT169	2050	Active Transportation: On-Street & Off-Street Bikeway	Pacific Highway Coastal Rail Trail Airport Connections (PACTAC)	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$40
AT002	2035	Active Transportation: On-Street Bikeway	Uptown: Mission Hills and Old Town Bikeways	Early Action Program (Tier 1), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Upgrade Existing Bikeway	$11
AT005	2035	Active Transportation: On-Street Bikeway	Coastal Rail Trail San Diego - Pacific Highway (W. Washington Street to Fiesta Island Road)	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$25
AT009	2035	Active Transportation: On-Street Bikeway	Morena Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$27
AT011	2035	Active Transportation: On-Street Bikeway	South Bay to Southeastern San Diego	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$53
AT015	2035	Active Transportation: On-Street Bikeway	San Diego River Trail - SDSU Mission Valley to Fairmount	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$4
AT027	2035	Active Transportation: On-Street Bikeway	Downtown to Southeast	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Safety Focus Network	$3
AT030	2035	Active Transportation: On-Street Bikeway	Genesee Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$35

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT032	2035	Active Transportation: On-Street Bikeway	Hillcrest to Balboa Park	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$1
AT037	2035	Active Transportation: On-Street Bikeway	Kearny Mesa to Beaches Corridor - Clairemont Drive (Mission Bay Drive to Burgener Boulevard)	Early Action Program (Tier 2), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$7
AT042	2035	Active Transportation: On-Street Bikeway	Mira Mesa Neighborhood Bikeway	Early Action Program (Tier 2), Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$24
AT044	2035	Active Transportation: On-Street Bikeway	North Park | Mid-City: Monroe Bikeway	Early Action Program (Tier 1), Local Bike Plan, Comprehensive Multimodal Corridor Plan	$9
AT045	2035	Active Transportation: On-Street Bikeway	North Park to Downtown	Early Action Program (Tier 1), Safety Focus Network, Upgrade Existing Bikeway	$4
AT048	2035	Active Transportation: On-Street Bikeway	Robinson Central Hillcrest Connector	Early Action Program (Tier 1), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Upgrade Existing Bikeway	$5
AT049	2035	Active Transportation: On-Street Bikeway	Rolando to Grossmont/La Mesa	Early Action Program (Tier 2), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$31
AT050	2035	Active Transportation: On-Street Bikeway	San Diego River Bikeway - Camino Del Rio North to Father Junipero Serra Trail (Roadway ALT)	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$26
AT053	2035	Active Transportation: On-Street Bikeway	San Diego River Trail - Father Junipero Serra Trail to West Hills Parkway	Early Action Program (Tier 2), Regional Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT058	2035	Active Transportation: On-Street Bikeway	Uptown: Park Boulevard Bikeway	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Upgrade Existing Bikeway	$1
AT073	2035	Active Transportation: On-Street Bikeway	Pomerado Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$94
AT014	2050	Active Transportation: On-Street Bikeway	Central Coast Corridor: La Jolla to Del Mar	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$36
AT038	2050	Active Transportation: On-Street Bikeway	La Mesa Bikeway	Early Action Program (Tier 1), Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$13

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT060	2050	Active Transportation: On-Street Bikeway	Chollas Valley Bikeway	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT061	2050	Active Transportation: On-Street Bikeway	Golden Hill to Logan Heights	Early Action Program (Tier 1), Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$12
AT062	2050	Active Transportation: On-Street Bikeway	Hotel Circle Connection	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$25
AT065	2050	Active Transportation: On-Street Bikeway	La Jolla to Scripps Ranch	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$50
AT068	2050	Active Transportation: On-Street Bikeway	Market Street Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$34
AT069	2050	Active Transportation: On-Street Bikeway	Midway to Sunset Cliffs	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$31
AT070	2050	Active Transportation: On-Street Bikeway	Mission Gorge to Clairemont Mesa Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$53
AT074	2050	Active Transportation: On-Street Bikeway	Rosecrans Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$28
AT081	2050	Active Transportation: On-Street Bikeway	Sweetwater to Skyline Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$26
AT083	2050	Active Transportation: On-Street Bikeway	Encanto to Barrio Logan Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$30
AT089	2050	Active Transportation: On-Street Bikeway	Black Mountain Bikeway	Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$52
AT095	2050	Active Transportation: On-Street Bikeway	Carmel Valley Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$24
AT098	2050	Active Transportation: On-Street Bikeway	Chollas Creek Bikeway to Otay	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT103	2050	Active Transportation: On-Street Bikeway	Clairemont Mesa to Tierrasanta Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$29
AT106	2050	Active Transportation: On-Street Bikeway	Gilman Connector	Regional Bike Plan, Safety Focus Network, Upgrade Existing Bikeway	$9

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT110	2050	Active Transportation: On-Street Bikeway	College Avenue Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$13
AT111	2050	Active Transportation: On-Street Bikeway	Collwood to Euclid Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$28
AT113	2050	Active Transportation: On-Street Bikeway	El Cajon Boulevard Bus-Bike Lane	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$14
AT118	2050	Active Transportation: On-Street Bikeway	Golden Hill to Bayshore Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$10
AT131	2050	Active Transportation: On-Street Bikeway	Kearny Mesa to Beaches Corridor - Clairemont Drive to Genesee Avenue	Regional Bike Plan, Local Bike Plan	$15
AT132	2050	Active Transportation: On-Street Bikeway	Kearny Mesa to Beaches Corridor - Genessee Avenue to Linda Vista Road	Regional Bike Plan, Local Bike Plan	$9
AT133	2050	Active Transportation: On-Street Bikeway	Kearny Mesa to Beaches Corridor - Linda Vista Road to I-15 Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$15
AT134	2050	Active Transportation: On-Street Bikeway	Kearny Mesa to Mission Valley Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$26
AT135	2050	Active Transportation: On-Street Bikeway	Linda Vista Road to Clairemont Mesa Boulevard	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$18
AT136	2050	Active Transportation: On-Street Bikeway	Logan Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network	$4
AT139	2050	Active Transportation: On-Street Bikeway	Mira Mesa Corridor – I-805 to Scranton Road	Regional Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$3
AT140	2050	Active Transportation: On-Street Bikeway	Mira Mesa Corridor - Scranton Road to I-15 Bikeway	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$33
AT141	2050	Active Transportation: On-Street Bikeway	Mira Mesa Corridor - Sorrento Valley Boulevard to Mira Mesa Boulevard	Regional Bike Plan, Upgrade Existing Bikeway	$8
AT142	2050	Active Transportation: On-Street Bikeway	Mira Mesa to Miramar	Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$15

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT147	2050	Active Transportation: On-Street Bikeway	Pacific Beach Bikeway	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network	$9
AT148	2050	Active Transportation: On-Street Bikeway	Valencia Bikeway	Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$7
AT149	2050	Active Transportation: On-Street Bikeway	Poway Loop	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$46
AT152	2050	Active Transportation: On-Street Bikeway	San Carlos to College and Grantville Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$60
AT157	2050	Active Transportation: On-Street Bikeway	South Park to Downtown	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$13
AT163	2050	Active Transportation: On-Street Bikeway	University Central Hillcrest Connector	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Upgrade Existing Bikeway	$3
AT164	2050	Active Transportation: On-Street Bikeway	Uptown to Kensington-Talmadge Connector	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Upgrade Existing Bikeway	$22
AT170	2050	Active Transportation: On-Street Bikeway	Mission Boulevard Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Upgrade Existing Bikeway	$12
CC003	2035	Complete Corridors: 2 MLs	I-5 MLs	SR 15 to Pacific Highway, 8F to 6F+2ML	$61
CC004	2035	Complete Corridors: 2 MLs	I-5 MLs	Pacific Highway to SR 52, 8F to 6F+2ML	$110
CC005	2035	Complete Corridors: 2 MLs	I-5 MLs	SR 52 to I-805, 8F to 6F+2ML	$61
CC006	2035	Complete Corridors: 2 MLs	I-5 MLs	I-805 to SR 78, 8F+2HOV to 8F+2ML	$271
CC008	2035	Complete Corridors: 2 MLs	SR 15 MLs	I-5 to I-805, 6F to 6F+2ML	$130
CC010	2035	Complete Corridors: 2 MLs	I-15 MLs	I-8 to SR 163, 8F to 8F+2ML	$297
CC014	2035	Complete Corridors: 2 MLs	I-805 MLs	Palomar Street to SR 94, 8F+2HOV to 8F+2ML	$110
CC016	2035	Complete Corridors: 2 MLs	I-805 MLs	SR 94 to SR 15, 8F to 8F+2ML	$55
CC018	2035	Complete Corridors: 2 MLs	I-805 MLs	SR 15 to SR 52, 8F to 8F+2ML	$432
CC020	2035	Complete Corridors: 2 MLs	I-805 MLs	SR 52 to I-5, 8F+2HOV to 8F+2ML	$62

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
CC023	2035	Complete Corridors: 2 MLs	SR 52 MLs	I-15 to Mast Boulevard, 6F to 4F+2ML+1 Reversible Transit Lane	$131
CC022	2050	Complete Corridors: 2 MLs	SR 52 MLs	I-805 to I-15, 6F to 4F+2ML	$210
CC025	2050	Complete Corridors: 2 MLs	SR 94 MLs	I-5 to I-15, 6F/8F to 6F+2ML	$80
CC026	2050	Complete Corridors: 2 MLs	SR 94 MLs	I-15 to I-805, 8F to 6F+2ML+Operational Improvements	$41
CC027	2050	Complete Corridors: 2 MLs	SR 94 MLs	I-805 to SR 125, 8F to 6F+2ML	$75
CC028	2050	Complete Corridors: 2 MLs	SR 56 MLs	I-5 to Carmel Valley Road, 4F/6F+2HOV to 4F/6F+2ML	$41
CC033	2050	Complete Corridors: 2 MLs	SR 163 MLs	I-8 to I-805, 8F to 6F+2ML	$41
CC034	2050	Complete Corridors: 2 MLs	SR 163 MLs	I-805 to SR 52, 8F to 6F+2ML	$34
CC009	2050	Complete Corridors: 4 MLs	SR 15 MLs	I-805 to I-8, 8F+2TL to 6F+2TL+2ML	$42
CC011	2050	Complete Corridors: 4 MLs	I-15 MLs	I-8 to SR 163, 8F+2ML to 6F+4ML	$80
CC015	2050	Complete Corridors: 4 MLs	I-805 MLs	Palomar Street to SR 94, 8F+2ML to 6F+4ML	$110
CC017	2050	Complete Corridors: 4 MLs	I-805 MLs	SR 94 to SR 15, 8F+2ML to 6F+4ML	$16
CC019	2050	Complete Corridors: 4 MLs	I-805 MLs	SR 15 to SR 52, 8F+2ML to 6F+4ML	$117
CC021	2050	Complete Corridors: 4 MLs	I-805 MLs	SR 52 to I-5, 8F+2ML to 6F+4ML	$62
CC037	2035	Complete Corridors: Reversible Managed Lane	SR 75 Coronado Bridge	4F+1 Reversible to 4F+1 Managed Lane HOV	$22
CC038	2050	Complete Corridors: Reversible Managed Lane	SR 75 Coronado Bridge	4F+1 Reversible to 4F+1 Managed Lane HOT	$22
CC041	2035	Complete Corridors: Operational Improvements	SR 52 Operational Improvements	Westbound Mast to Santo Road truck climbing lane	$78
CC039	2050	Complete Corridors: Operational Improvements	I-8 Operational Improvements	Street J/Hotel Circle N/Hotel Circle S to SR 67	$220
CC069	2035	Complete Corridors: Managed Lane Connector	I-5/I-805 ML Connector	North to North and South to South	$290

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
CC076	2035	Complete Corridors: Managed Lane Connector	I-15/I-805 ML Connector	North to North and South to South	$290
CC072	2050	Complete Corridors: Managed Lane Connector	I-15/SR 52 ML Connector	West to North and South to East	$290
CC073	2050	Complete Corridors: Managed Lane Connector	I-15/SR 52 ML Connector	North to West and East to South	$290
CC074	2050	Complete Corridors: Managed Lane Connector	I-15/SR 52 ML Connector	North to East and West to South	$290
CC075	2050	Complete Corridors: Managed Lane Connector	I-15/SR 52 ML Connector	South to West and East to North	$290
CC077	2050	Complete Corridors: Managed Lane Connector	SR 94/I-805 ML Connector	North to West, East to South	$300
CC078	2050	Complete Corridors: Managed Lane Connector	SR 52/I-805 ML Connector	West to North and South to East	$290
CC079	2050	Complete Corridors: Managed Lane Connector	I-805/SR 163 ML Connector	North to North and South to South	$290
CC080	2050	Complete Corridors: Managed Lane Connector	I-15/SR 94 ML Connector	South to West, East to North	$800
CC083	2035	Complete Corridors: DAR	I-15 at Clairemont Mesa Boulevard DAR	North and South	$85
CC084	2035	Complete Corridors: DAR	I-5 at Voigt DAR	North and South	$85
CC085	2035	Complete Corridors: DAR	I-15 at SDSU Mission Valley DAR	North and South	$85
CC086	2035	Complete Corridors: Transit Operational Improvement	I-805/Nobel Drive Transit Operational Improvement	North and South	$85
CC087	2035	Complete Corridors: Transportation Technology	I-5	Transportation technology	$482
CC089	2035	Complete Corridors: Transportation Technology	I-805	Transportation technology	$284
CC091	2035	Complete Corridors: Transportation Technology	I-15	Transportation technology	$362

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
CC099	2035	Complete Corridors: Transportation Technology	SR 52	Transportation technology	$193
CC093	2050	Complete Corridors: Transportation Technology	I-8	Transportation technology	$363
CC097	2050	Complete Corridors: Transportation Technology	SR 56	Transportation technology	$68
CC101	2050	Complete Corridors: Transportation Technology	SR 94	Transportation technology	$305
CC105	2050	Complete Corridors: Transportation Technology	SR 163	Transportation technology	$113
CC088	2035	Complete Corridors: SIS	I-5	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$87
CC090	2035	Complete Corridors: SIS	I-805	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$47
CC092	2035	Complete Corridors: SIS	I-15	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$69
CC100	2035	Complete Corridors: SIS	SR 52	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$37
CC094	2050	Complete Corridors: SIS	I-8	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$119
CC098	2050	Complete Corridors: SIS	SR 56	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$20
CC102	2050	Complete Corridors: SIS	SR 94	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$92
CC106	2050	Complete Corridors: SIS	SR 163	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$24
GM06	2035	Complete Corridors: Goods Movement	Harbor Drive 2.0	Designated Freight Route: Dedicated lanes (where feasible) and signal priority for truck freight along Harbor Drive between Marine Terminals and connections to I-5. Includes freight signal prioritization, queue jumps, delineators and signage	$177
GM01	2050	Complete Corridors: Goods Movement	I-5 Working Waterfront Access	I-5 Working Waterfront Access Bottleneck Relief between SR 94 and SR 54	$120

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
GM05	2050	Complete Corridors: Goods Movement	Harbor Drive Multimodal Corridor Improvements	Improvements at intersections between marine terminals; pedestrian crossings; various truck improvements; bikeway accommodations; streetscape, safety, and parking improvements	$242
TL001	2035	Transit: Airport Connection	Airport Transit Connection	Airport to Downtown	$3,186
TL003	2035	Transit: Regional Rail	Regional Rail 398	Oceanside to Downtown San Diego (Double tracking, bridge replacements, realignment in Del Mar, new platform at Fairgrounds)	$4,324
TL098	2035	Transit: Regional Rail	Regional Rail 598	Pacific Surfliner Rail2Rail (LOSSAN)	N/A**
TL004	2050	Transit: Regional Rail	Regional Rail 398	Camp Pendleton to Downtown San Diego (Grade separations, curve straightening, Miramar Tunnel, new station at Camp Pendleton and UTC)	$9,144
TL099	2050	Transit: Regional Rail	Regional Rail 598	Pacific Surfliner Rail2Rail (LOSSAN)	N/A**
TL007	2035	Transit: Light Rail	Blue Line (San Ysidro to UTC)	Grade separations	$239
TL009	2035	Transit: Light Rail	Orange Line (El Cajon to Downtown)	Grade separations	$112
TL011	2035	Transit: Light Rail	Green Line (Santee to Downtown)	Grade separations	$113
TL002	2050	Transit: Light Rail	Light Rail 582	Mission Valley to U.S.–Mexico Border via City Heights, National City, Chula Vista	$11,314
TL008	2050	Transit: Light Rail	Blue Line (San Ysidro to UTC)	Grade separations	$957
TL010	2050	Transit: Light Rail	Orange Line (El Cajon to Downtown)	Grade separations	$530
TL012	2050	Transit: Light Rail	Green Line (Santee to Downtown)	Grade separations	$788
TL013	2050	Transit: Light Rail	Streetcar	Balboa Park Perimeter Streetcar: Downtown to Logan Heights, Golden Hill, South Park, North Park, University Heights, Hillcrest	$1,060
TL014	2035	Transit: Next Gen Rapid	Arterial Rapid Route 120	Kearny Mesa to Downtown via Mission Valley	$106
TL015	2035	Transit: Next Gen Rapid	Arterial Rapid Route 207	Balboa Avenue Trolley to Kearny Mesa via Balboa Avenue	$52
TL017	2035	Transit: Next Gen Rapid	Arterial Rapid Route 210	La Mesa to Ocean Beach via Mid-City, Hillcrest, Old Town	$179
TL018	2035	Transit: Next Gen Rapid	Arterial Rapid Route 211	SDSU to Downtown via Adams Avenue	$101
TL019	2035	Transit: Next Gen Rapid	Arterial Rapid Route 212	Spring Valley to Downtown via Southeast San Diego	$137
TL020	2035	Transit: Next Gen Rapid	Arterial Rapid Route 215	SDSU to Downtown via El Cajon Boulevard	$71
TL021	2035	Transit: Next Gen Rapid	Mixed Rapid Route 225	Otay Mesa Transit Center to Downtown San Diego via Chula Vista, I-805	$3

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
TL023	2035	Transit: Next Gen Rapid	Arterial Rapid Route 228	Point Loma to Kearny Mesa via Old Town, Linda Vista	$127
TL024	2035	Transit: Next Gen Rapid	Arterial Rapid Route 229	Pacific Beach to Convention Center via Ingraham Street, Sports Arena Boulevard, Pacific Highway	$117
TL025	2035	Transit: Next Gen Rapid	Arterial Rapid Route 230	Balboa Station to UTC via Pacific Beach, La Jolla, UTC	$132
TL026	2035	Transit: Next Gen Rapid	Mixed Rapid Route 235	Escondido to Downtown San Diego via I-15	$9
TL027	2035	Transit: Next Gen Rapid	Arterial Rapid Route 237	UC San Diego to Rancho Bernardo via Sorrento Valley and Mira Mesa	$77
TL028	2035	Transit: Next Gen Rapid	Arterial Rapid Route 238	UC San Diego to Rancho Bernardo via Sorrento Valley and Carroll Canyon	$88
TL029	2035	Transit: Next Gen Rapid	Arterial Rapid Route 241	UC San Diego Medical Center - Hillcrest to UTC/UC San Diego via Linda Vista and Clairemont	$132
TL030	2035	Transit: Next Gen Rapid	Arterial Rapid Route 243	Pacific Beach to Kearny Mesa via Clairemont Mesa	$71
TL031	2035	Transit: Next Gen Rapid	Arterial Rapid Route 255	Tram Rapid (precursor to Tram 555) Downtown to Logan Heights, Golden Hill, South Park, North Park, University Heights, Hillcrest	$72
TL032	2035	Transit: Next Gen Rapid	Arterial Rapid Route 256	SDSU to Rancho San Diego/Cuyamaca College via College Grove and Spring Valley	$67
TL033	2035	Transit: Next Gen Rapid	Arterial Rapid Route 259	El Cajon Transit Center to Lemon Grove Depot via Washington Avenue, Avocado Avenue, Campo Road, Bancroft Drive	$122
TL034	2035	Transit: Next Gen Rapid	Mixed Rapid Route 265	Otay Mesa POE to SDSU Mission Valley via SR 125, I-805, I-15	$34
TL035	2035	Transit: Next Gen Rapid	Freeway Rapid Route 280	Downtown San Diego to Escondido	$12
TL036	2035	Transit: Next Gen Rapid	Freeway Rapid Route 290	Downtown San Diego to Rancho Bernardo Transit Station	$13
TL039	2035	Transit: Next Gen Rapid	Arterial Rapid Route 295	South Bay to Clairemont via La Mesa and Kearny Mesa	$149
TL043	2035	Transit: Next Gen Rapid	Arterial Rapid Route 493	Oceanside to Solana Beach to UTC/UC San Diego via Highway 101 Coastal Communities, Carmel Valley	$367
TL047	2035	Transit: Next Gen Rapid	Mixed Rapid Route 484	Commuter Express: Carlsbad to Kearny Mesa via I-15; Palomar Airport Road, SR 78, I-15 Rancho Bernardo Transit Center	$144
TL050	2035	Transit: Next Gen Rapid	Arterial Rapid Route 625	SDSU to Palomar Station via East San Diego, Southeast San Diego, National City	$199
TL051	2035	Transit: Next Gen Rapid	Freeway Rapid Route 630	Iris Trolley/Palomar to Kearny Mesa via I-5/SR 163 and City College	$62
TL053	2035	Transit: Next Gen Rapid	Arterial Rapid Route 637	North Park to 32nd Street Trolley Station via Golden Hill	$80
TL055	2035	Transit: Next Gen Rapid	Freeway Rapid Route 640	San Ysidro to Santa Fe Depot via I-5 and City College	$18

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
TL056	2035	Transit: Next Gen Rapid	Freeway Rapid Route 688	San Ysidro to UTC via I-805, Kearny Mesa, UTC (stops at Palomar Street, H Street, Plaza Boulevard, 47th Street, El Cajon Boulevard, University Avenue, SDSU Mission Valley, Clairemont Mesa Boulevard, UTC)	$57
TL057	2035	Transit: Next Gen Rapid	Freeway Rapid Route 880	El Cajon to UC San Diego via Santee, SR 52, Kearny Mesa, I-805, UTC	$143
TL092	2035	Transit: Next Gen Rapid	Mixed Rapid Route 277	Ramona to Sabre Springs Transit Station	$186
TL090	2050	Transit: Next Gen Rapid	Mixed Rapid Route 225	Otay Mesa Transit Center to Downtown San Diego via Chula Vista, I-805 (Inline station at SR 94 and 28th Street)	$23
TL091	2050	Transit: Next Gen Rapid	Mixed Rapid Route 235	Escondido to Downtown San Diego via I-15 (Inline station at SR 94 and 28th Street)	$23
TL060	2035	Transit: Downtown Bus Layover	Bus Layover	Downtown Bus Layover	$70
TL111	2035	Transit: Express Bus	Express Bus 246	Rancho Bernardo to UC San Diego via SR 56 (Rancho Bernardo and Sabre Springs to UTC/UC San Diego)	N/A*
TL112	2035	Transit: Express Bus	Express Bus 247	Escondido to UC San Diego via SR 56 (Escondido Transit Center and Del Lago to UTC/UC San Diego)	N/A*
TL113	2035	Transit: Express Bus	Express Bus 993	Shelter Island to Convention Center	N/A*
TL182	2035	Transit: Circulator	Circulator 647	Mission Valley Loop via Friars Road, Fenton Parkway, and Camino Del Rio South	N/A*
TL183	2035	Transit: Circulator	Circulator 648	Mission Valley Loop via Grantville, Camino Del Rio South, and Fenton Parkway	N/A*
TL184	2035	Transit: Circulator	Circulator 649	Kearny Mesa Loop via Balboa Avenue, Ruffner Street, Copley Park Place, and Overland Avenue	N/A*
TL186	2035	Transit: Circulator	Circulator 668	Kearny Mesa Loop via Ruffin Road, Aero Drive, Murphy Canyon Road, and Chesapeake Drive	N/A*
TL142	2035	Transit: Local Bus	Local Bus 89	Solana Beach to UTC (via Del Mar Heights Road)	N/A*
TL149	2035	Transit: Local Bus	Local Bus 197	8th Street Trolley to 32nd Street Trolley via 40th Street/38th Street/32nd Street	N/A*
TL202	2035	Transit: Local Bus	Local Bus 842	Poway Business Route (Mira Mesa Transit Center to Poway Business to Sabre Springs Transit Center)	N/A*
TL248	2035	Transit: Local Bus	Local Bus 984	Miramar College Transit Station to Sorrento Valley via Carroll Canyon/Miramar Road Business Parks	N/A*
TL067	2035	Flexible Fleets: Microtransit Areas	Southeastern San Diego	Microtransit Operations	$45
TL068	2035	Flexible Fleets: Microtransit Areas	Eastern San Diego	Microtransit Operations	$38
TL071	2035	Flexible Fleets: Microtransit Areas	Clairemont Mesa	Microtransit Operations	$25

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
TL072	2035	Flexible Fleets: Microtransit Areas	Sorrento Valley	Microtransit Operations	$25
TL073	2035	Flexible Fleets: Microtransit Areas	Kearny Mesa Convoy	Microtransit Operations	$38
FF02	2035	Flexible Fleets: NEV Shuttle Areas	Coronado	NEV Operations	$17
FF03	2035	Flexible Fleets: NEV Shuttle Areas	Del Mar	NEV Operations	$10
FF06	2035	Flexible Fleets: NEV Shuttle Areas	La Jolla	NEV Operations	$10
FF09	2035	Flexible Fleets: NEV Shuttle Areas	Ocean Beach	NEV Operations	$10
FF11	2035	Flexible Fleets: NEV Shuttle Areas	Pacific Beach	NEV Operations	$17
FF14	2035	Flexible Fleets: NEV Shuttle Areas	Downtown/Little Italy	NEV Operations	$17
FF15	2035	Flexible Fleets: NEV Shuttle Areas	North Park/City Heights	NEV Operations	$17
NO01	2035	Transportation System Management: Smart Infrastructure	Advancing Border Connectivity (SIS)	SIS Implementation at Harbor Drive, Chula Vista (National City Boulevard and H Street) and San Ysidro Border District to enhance safety, transit optimization, and smoother goods movement.	$3

Notes: I = Interstate; SR = State Route; SDSU = San Diego State University; DAR = direct access ramp; N= north; S = south; HOT = high occupancy toll; HOV = high-occupancy vehicle; ML = Managed Lane; NEV = neighborhood electric vehicle; UTC = University Town Center.

*New local, express, and circulator transit routes are assumed to operate on existing roads with minimal capital costs. Vehicle and operations costs for new and existing routes are reflected in TL300 through TL311 as Systemwide Investments in Table A.6.

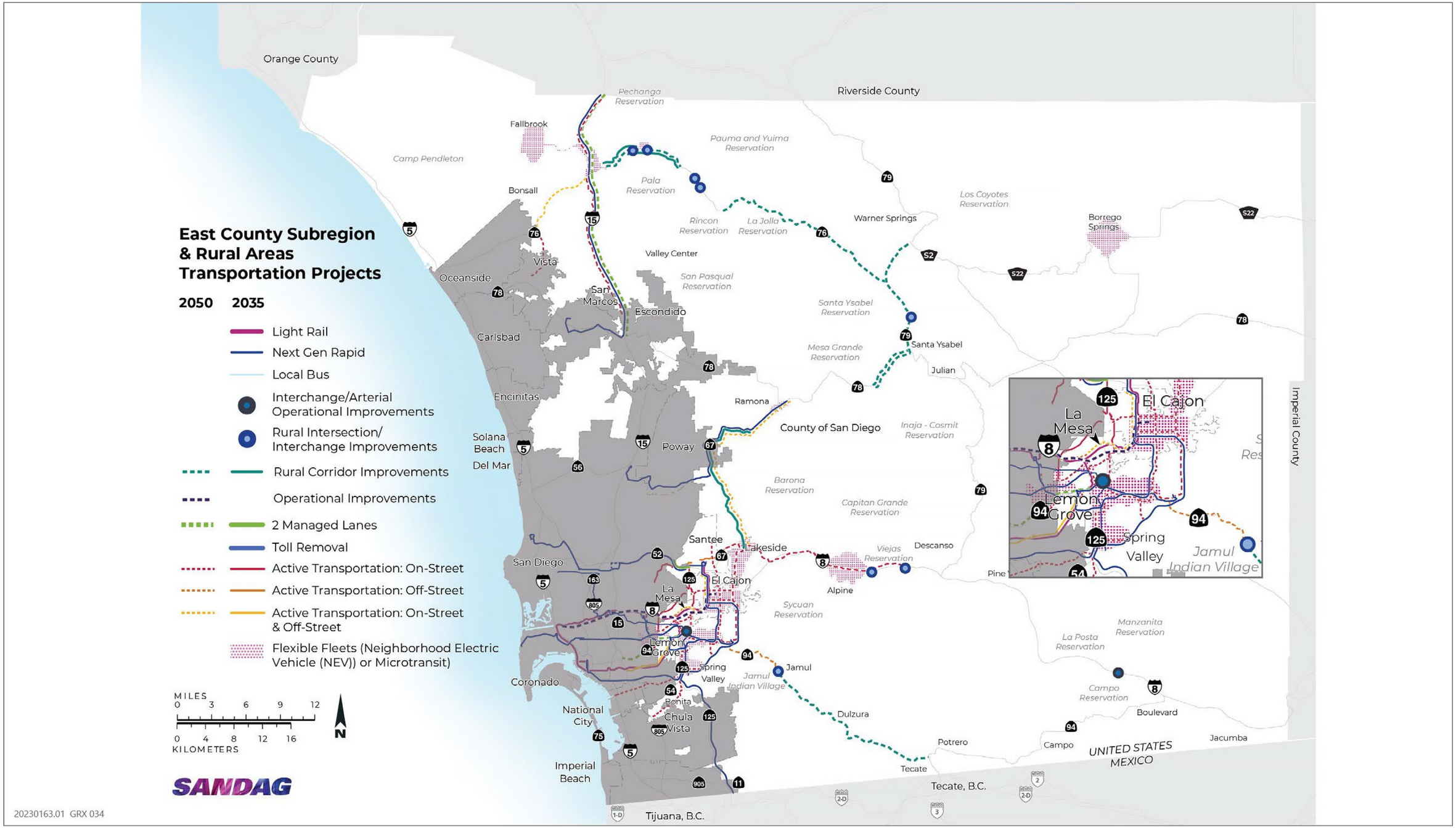
**Pacific Surfliner Rail2Rail is a program that allows passengers with certain passes to ride either COASTER or Pacific Surfliner trains. Pacific Surfliner Rail2Rail service will benefit from planned LOSSAN upgrades reflected in projects TL003 and TL004.

Source: SANDAG 2025e.

EAST COUNTY SUBREGION AND RURAL AREAS

The East County Subregion (East County) and Rural Areas generally cover the eastern two-thirds of the county, spanning east of I-15, from Lemon Grove extending to El Cajon and Santee and to the eastern edges of the county. Major transportation routes, such as SR 94, SR 67, I-8, SR 125, and SR 52, connect East County cities and communities with the urban core, job centers to the north and west, and the South County Subregion. SR 94 connects the region to central San Diego and links the subregion to major north–south routes, like I-15 and I-805, providing access to key destinations and employment hubs across the region. Similarly, SR 67 and SR 52 help connect communities within East County to recreational areas, Marine Corps Air Station Miramar, local universities, and shopping centers. Existing transit options, such as the Orange, Green, and Copper Line Trolleys and various local bus routes, help residents connect to employment centers, schools, and vital services.

Proposed projects located in or partially within East County Subregion and rural areas are shown in Figure 2-16 and Table 2-8 below. The proposed projects are categorized by type and organized by phasing periods: 2035 and 2050 within each project type.



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-16 East County and Rural Areas Projects

Table 2-8 East County Subregion and Rural Areas Projects

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT055	2035	Active Transportation: Off-Street Bikeway	San Diego River Trail - Mast Park to Lakeside Baseball Park	Early Action Program (Tier 2), Upgrade Existing Bikeway	$38
AT056	2035	Active Transportation: Off-Street Bikeway	Santee - El Cajon Corridor - Forester Creek Connection	Early Action Program (Tier 2), Regional Bike Plan	$6
AT168	2035	Active Transportation: Off-Street Bikeway	San Diego River Trail: Carlton Oaks Segment	Early Action Program (Tier 1)	$17
AT079	2050	Active Transportation: Off-Street Bikeway	SR 94 Multi-Use Pathway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$79
AT120	2050	Active Transportation: Off-Street Bikeway	Hillcrest - El Cajon Corridor: Fletcher Gap	Comprehensive Multimodal Corridor Plan, Systemic Safety Network	$24
AT040	2035	Active Transportation: On-Street & Off-Street Bikeway	Lemon Grove to Imperial Bikeway	Early Action Program (Tier 2), Systemic Safety Network, Upgrade Existing Bikeway	$36
AT082	2050	Active Transportation: On-Street & Off-Street Bikeway	San Luis Rey River Trail	Regional Bike Plan, Upgrade Existing Bikeway	$95
AT107	2050	Active Transportation: On-Street & Off-Street Bikeway	East County Loop Bikeway: Santee - El Cajon - La Mesa	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network	$41
AT158	2050	Active Transportation: On-Street & Off-Street Bikeway	SR 67 Bikeway - Lakeside to Ramona	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network (Cost distributed with CC050)	$25
AT010	2035	Active Transportation: On-Street Bikeway	SR 125 Corridor - Grossmont College to Santee - El Cajon Corridor	Early Action Program (Tier 2), Regional Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$15
AT039	2035	Active Transportation: On-Street Bikeway	La Mesa Corridor - SR 125 Corridor to East County Northern Loop	Early Action Program (Tier 2), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$20
AT049	2035	Active Transportation: On-Street Bikeway	Rolando to Grossmont/La Mesa	Early Action Program (Tier 2), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$31
AT053	2035	Active Transportation: On-Street Bikeway	San Diego River Trail - Father Junipero Serra Trail to West Hills Parkway	Early Action Program (Tier 2), Regional Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT028	2050	Active Transportation: On-Street Bikeway	East County Loop Bikeway: Valle De Oro	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$38

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT034	2050	Active Transportation: On-Street Bikeway	El Cajon Main Street Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Safety Focus Network	$16
AT038	2050	Active Transportation: On-Street Bikeway	La Mesa Bikeway	Early Action Program (Tier 1), Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$13
AT041	2050	Active Transportation: On-Street Bikeway	Lemon Grove to La Mesa Connector	Early Action Program (Tier 2), Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$24
AT057	2050	Active Transportation: On-Street Bikeway	SR 52 Bikeway - SR 52/Mast Drive to San Diego River Trail	Regional Bike Plan, Upgrade Existing Bikeway	$8
AT060	2050	Active Transportation: On-Street Bikeway	Chollas Valley Bikeway	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT066	2050	Active Transportation: On-Street Bikeway	Lakeside to Rancho San Diego	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$76
AT075	2050	Active Transportation: On-Street Bikeway	Santee to El Cajon	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$42
AT076	2050	Active Transportation: On-Street Bikeway	Spring Valley to Bayshore Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$40
AT077	2050	Active Transportation: On-Street Bikeway	Spring Valley to Sweetwater Bikeway	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$38
AT110	2050	Active Transportation: On-Street Bikeway	College Avenue Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$13
AT122	2050	Active Transportation: On-Street Bikeway	I-15 Bikeway - Country Club Lane to Rainbow Valley Boulevard	Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$143
AT124	2050	Active Transportation: On-Street Bikeway	I-8 Corridor - Lake Jennings Park Road to Dunbar Lane	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Upgrade Existing Bikeway	$26
AT125	2050	Active Transportation: On-Street Bikeway	I-8 Corridor - Alpine Boulevard to Willows Road	Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$61

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT126	2050	Active Transportation: On-Street Bikeway	I-8 Corridor - San Diego River Trail to Olde Highway 80	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$33
AT160	2050	Active Transportation: On-Street Bikeway	SR 125 Corridor - East County Southern Loop to La Mesa/Lemon Grove/El Cajon connections	Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$36
AT162	2050	Active Transportation: On-Street Bikeway	Sweetwater to National City	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$29
AT165	2050	Active Transportation: On-Street Bikeway	Vista Transit Center Connector	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$31
AT178	2050	Active Transportation: On-Street Bikeway	El Cajon - Fletcher and Broadway Bikeways	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$25
CC024	2035	Complete Corridors: 2 MLs	SR 52 MLs	Mast Boulevard to SR 125, 4F to 4F+2ML	$37
CC012	2050	Complete Corridors: 2 MLs	I-15 MLs	SR 78 to SR 76, 8F to 6F+2ML	$194
CC013	2050	Complete Corridors: 2 MLs	I-15 MLs	SR 76 to County Line, 8F to 6F+2ML	$103
CC027	2050	Complete Corridors: 2 MLs	SR 94 MLs	I-805 to SR 125, 8F to 6F+2ML	$75
CC039	2050	Complete Corridors: Operational Improvements	I-8 Operational Improvements	Street J/Hotel Circle N/Hotel Circle S to SR 67	$220
CC082	2035	Complete Corridors: Interchange and Arterial Operational Improvements	SR 94/SR 125 Interchange/Arterial Improvements	South to East connector	$134
CC050	2035	Complete Corridors: Rural Corridor Improvements	SR 67	Rural: Mapleview to Dye Road, Multimodal operational improvements with shoulder widening for enhanced emergency access	$1,200
CC051	2035	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Rice Canyon Road to Pala Reservation, Straightening	$76
CC061	2035	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Pala Casino to Rice Canyon Road, Facility Improvements	$2
CC064	2035	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Pala Reservation Western Boundary to Pala Reservation Eastern Boundary, Safety - Widen shoulders along SR 76 to enhance safety for emergency response vehicles	$6
CC053	2050	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: West Reservation Boundary to East Reservation Boundary, Shoulder Widening for adding bike lanes	$50
CC054	2050	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: SR 79 to Valley Center Road, Facility Improvements	$874

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
CC055	2050	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Harolds Road to Pauma Rancho, Straightening	$27
CC056	2050	Complete Corridors: Rural Corridor Improvements	SR 78	Rural: SR 79 to Deer Canyon Drive, Intersection Improvements	$5
CC062	2050	Complete Corridors: Rural Corridor Improvements	SR 79	Rural: Deer Canyon Drive to San Felipe Road, Shoulder Widening	$286
CC065	2050	Complete Corridors: Rural Corridor Improvements	SR 94	Rural: Jamul Reservation to Tecate Road, Shoulder Widening/Straightening	$318
CC052	2035	Complete Corridors: Rural Intersection and Interchange Improvements	I-8	Rural: Interchange improvements at Crestwood Road/I-8 interchange, Interchange Improvements	$16
CC057	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 to Pala Mission Road, Intersection Improvements	$1
CC058	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 to Cole Grade Road, Intersection Improvements	$1
CC059	2035	Complete Corridors: Rural Intersection and Interchange Improvements	I-8	Rural: I-8 to East Willows Road, Interchange Improvements	$14
CC060	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 to Pauma Reservation Road, Intersection Improvements	$2
CC063	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 79	Rural: SR 79 to Schoolhouse Canyon Road, Intersection Improvements	$1
CC066	2035	Complete Corridors: Rural Intersection and Interchange Improvements	I-8	Rural: I-8 to West Willows Road, Interchange Improvements	$14
CC067	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 94	Rural: SR 94 to Melody Road/Daisy Drive, Intersection Improvements	$10
CC068	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 near I-15, Safety - Add dynamic message sign on SR 76 near I-15 to improve emergency response and evacuation routes	$6
CC091	2035	Complete Corridors: Transportation Technology	I-15	Transportation technology	$362
CC099	2035	Complete Corridors: Transportation Technology	SR 52	Transportation technology	$193
CC107	2035	Complete Corridors: Transportation Technology	SR 125	Transportation technology	$224
CC111	2035	Complete Corridors: Transportation Technology	SR 67	Transportation technology	$92
CC093	2050	Complete Corridors: Transportation Technology	I-8	Transportation technology	$363

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
CC095	2050	Complete Corridors: Transportation Technology	SR 78	Transportation technology	$483
CC101	2050	Complete Corridors: Transportation Technology	SR 94	Transportation technology	$305
CC103	2050	Complete Corridors: Transportation Technology	SR 54	Transportation technology	$90
CC113	2050	Complete Corridors: Transportation Technology	SR 76	Transportation technology	$198
CC115	2050	Complete Corridors: Transportation Technology	SR 79	Transportation technology	$50
CC092	2035	Complete Corridors: SIS	I-15	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$69
CC100	2035	Complete Corridors: SIS	SR 52	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$37
CC108	2035	Complete Corridors: SIS	SR 125	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$43
CC112	2035	Complete Corridors: SIS	SR 67	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$32
CC094	2050	Complete Corridors: SIS	I-8	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$119
CC096	2050	Complete Corridors: SIS	SR 78	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$140
CC102	2050	Complete Corridors: SIS	SR 94	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$92
CC104	2050	Complete Corridors: SIS	SR 54	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$20
CC114	2050	Complete Corridors: SIS	SR 76	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$69
CC116	2050	Complete Corridors: SIS	SR 79	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$18
TL009	2035	Transit: Light Rail	Orange Line (El Cajon to Downtown)	Grade separations	$112
TL011	2035	Transit: Light Rail	Green Line (Santee to Downtown)	Grade separations	$113
TL010	2050	Transit: Light Rail	Orange Line (El Cajon to Downtown)	Grade separations	$530

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
TL012	2050	Transit: Light Rail	Green Line (Santee to Downtown)	Grade separations	$788
TL017	2035	Transit: Next Gen Rapid	Arterial Rapid Route 210	La Mesa to Ocean Beach via Mid-City, Hillcrest, Old Town	$179
TL019	2035	Transit: Next Gen Rapid	Arterial Rapid Route 212	Spring Valley to Downtown via Southeast San Diego	$137
TL032	2035	Transit: Next Gen Rapid	Arterial Rapid Route 256	SDSU to Rancho San Diego/Cuyamaca College via College Grove and Spring Valley	$67
TL033	2035	Transit: Next Gen Rapid	Arterial Rapid Route 259	El Cajon Transit Center to Lemon Grove Depot via Washington Avenue, Avocado Avenue, Campo Road, Bancroft Drive	$122
TL037	2035	Transit: Next Gen Rapid	Mixed Rapid Route 292	El Cajon to Otay Mesa via El Cajon, Jamacha, and Otay Lakes	$124
TL039	2035	Transit: Next Gen Rapid	Arterial Rapid Route 295	South Bay to Clairemont via La Mesa and Kearny Mesa	$149
TL046	2035	Transit: Next Gen Rapid	Mixed Rapid Route 483	Commuter Express: Riverside (Temecula) to Palomar College via I-15, SR 78, CSUSM	$61
TL057	2035	Transit: Next Gen Rapid	Freeway Rapid Route 880	El Cajon to UC San Diego via Santee, SR 52, Kearny Mesa, I-805, UTC	$143
TL092	2035	Transit: Next Gen Rapid	Mixed Rapid Route 277	Ramona to Sabre Springs Transit Station	$186
TL068	2035	Flexible Fleets: Microtransit Areas	Eastern San Diego	Microtransit Operations	$38
TL069	2035	Flexible Fleets: Microtransit Areas	Casa De Oro/Spring Valley	Microtransit Operations	$18
TL070	2035	Flexible Fleets: Microtransit Areas	Lakeside	Microtransit Operations	$18
TL079	2035	Flexible Fleets: Microtransit Areas	Ramona	Microtransit Operations	$18
TL080	2035	Flexible Fleets: Microtransit Areas	Fallbrook-Pala	Microtransit Operations	$29
TL081	2035	Flexible Fleets: Microtransit Areas	El Cajon	Microtransit Operations	$18
TL082	2035	Flexible Fleets: Microtransit Areas	Alpine	Microtransit Operations	$18
TL083	2035	Flexible Fleets: Microtransit Areas	Borrego Springs	Microtransit Operations	$18
FF07	2035	Flexible Fleets: NEV Shuttle Areas	La Mesa	NEV Operations	$10

Notes: I = Interstate; SR = State Route; POE = port of entry; SDSU = San Diego State University; DAR = direct access ramp; N= north; S = south; HOT = high occupancy toll; HOV = high-occupancy vehicle; ML = Managed Lane; NEV = neighborhood electric vehicle; UTC = University Town Center.

*New local, express, and circulator transit routes are assumed to operate on existing roads with minimal capital costs. Vehicle and operations costs for new and existing routes are reflected in TL300 through TL311 as Systemwide Investments in Table A.6.

**Pacific Surfliner Rail2Rail is a program that allows passengers with certain passes to ride either COASTER or Pacific Surfliner trains. Pacific Surfliner Rail2Rail service will benefit from planned LOSSAN upgrades reflected in projects TL003 and TL004.

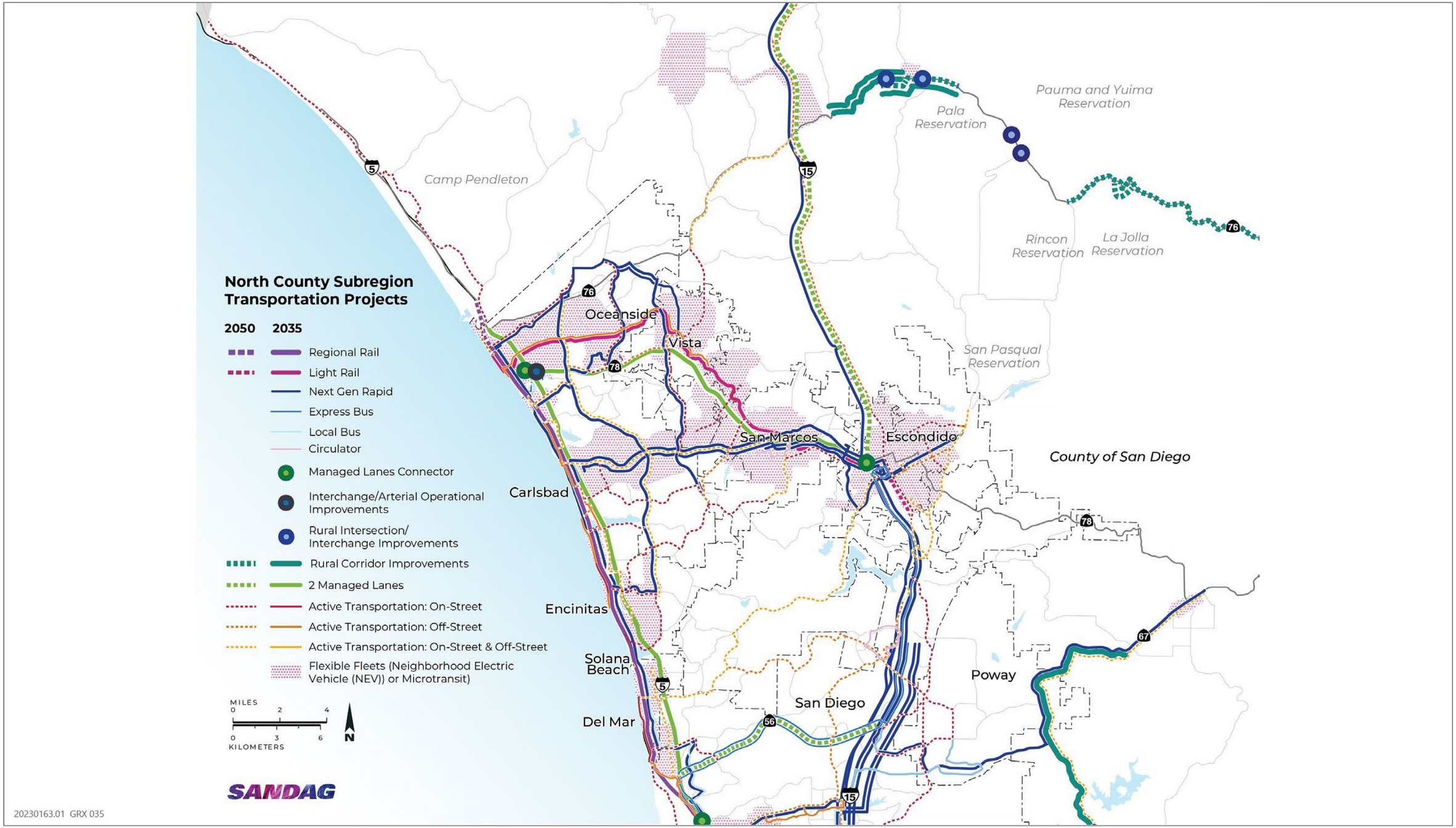
Source: SANDAG 2025e.

NORTH COUNTY SUBREGION

The North County Subregion (North County) extends from Oceanside down the coast to Del Mar, east to Poway and Escondido, and north to the communities of Fallbrook and Pala. Major transportation routes serving the area include I-15, SR 78, SR 76, SR 56, and I-5. I-15 connects North County to inland communities and extends north to Riverside County's Inland Empire. I-5 links North County's coastal communities, extending north to Orange County and south to central San Diego, while also providing access to the LOSSAN Rail Corridor, which supports the COASTER regional rail, interregional Amtrak services, and freight traffic. The SPRINTER and SR 78 provide east–west connectivity, with SPRINTER offering transit options and SR 78 serving as a highway route. SR 56 connects Carmel Valley with Sorrento Valley, the region's largest employment center.

Proposed projects located in or partially within North County are included in Figure 2-17 and Table 2-9 below. The proposed projects are categorized by type and organized by phasing periods: 2035 and 2050 within each project type.

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Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-17 North County Subregion Projects

Table 2-9 North County Subregion Projects

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT001	2035	Active Transportation: Off-Street Bikeway	Inland Rail Trail: Phase 4	Early Action Program (Tier 1)	$25
AT019	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail Oceanside	Early Action Program (Tier 2), Local Bike Plan	$6
AT020	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail San Diego - Carmel Valley to Roselle via Sorrento	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$28
AT021	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail San Diego - Del Mar to Sorrento via Carmel Valley	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Upgrade Existing Bikeway	$11
AT025	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail: Carlsbad	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan	$40
AT026	2035	Active Transportation: Off-Street Bikeway	Coastal Rail Trail: Encinitas to Carlsbad	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$27
AT036	2035	Active Transportation: Off-Street Bikeway	Inland Rail Trail: Vista to Oceanside	Early Action Program (Tier 2), Regional Bike Plan, Safety Focus Network	$98
AT059	2050	Active Transportation: Off-Street Bikeway	I-15 Bikeway - Murphy Canyon Road to Affinity Court	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$135
AT063	2050	Active Transportation: Off-Street Bikeway	I-15 Bikeway - Poway Road interchange to Carmel Mountain Road	Regional Bike Plan, Upgrade Existing Bikeway	$60
AT123	2050	Active Transportation: Off-Street Bikeway	I-15 Bikeway - Rancho Bernardo Community Park	Regional Bike Plan, Local Bike Plan	$6
AT006	2035	Active Transportation: On-Street & Off-Street Bikeway	Coastal Rail Trail Encinitas	Early Action Program (Tier 1), Regional Bike Plan, Systemic Safety Network	$16
AT018	2035	Active Transportation: On-Street & Off-Street Bikeway	Coastal Rail Trail Del Mar	Early Action Program (Tier 2), Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT017	2050	Active Transportation: On-Street & Off-Street Bikeway	Coastal Rail Trail Connections	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$3
AT064	2050	Active Transportation: On-Street & Off-Street Bikeway	I-15 Bikeway - Via Rancho Parkway to Citracado Parkway	Regional Bike Plan, Upgrade Existing Bikeway	$13
AT082	2050	Active Transportation: On-Street & Off-Street Bikeway	San Luis Rey River Trail	Regional Bike Plan, Upgrade Existing Bikeway	$95
AT088	2050	Active Transportation: On-Street & Off-Street Bikeway	Bear Valley Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$77

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT091	2050	Active Transportation: On-Street & Off-Street Bikeway	Camp Pendleton Trail	Regional Bike Plan, Safety Focus Network, Upgrade Existing Bikeway	$135
AT093	2050	Active Transportation: On-Street & Off-Street Bikeway	Carlsbad - San Marcos Corridor	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$68
AT105	2050	Active Transportation: On-Street & Off-Street Bikeway	Coastal Rail Trail - Carlsbad Village (Reach 1)	Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$7
AT137	2050	Active Transportation: On-Street & Off-Street Bikeway	Mid-County Bikeway - Coastal Rail Trail to Inland Rail Trail	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$119
AT145	2050	Active Transportation: On-Street & Off-Street Bikeway	North Coast Bike Trail	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$58
AT146	2050	Active Transportation: On-Street & Off-Street Bikeway	North County Inland Bikeway: El Camino Real	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$126
AT154	2050	Active Transportation: On-Street & Off-Street Bikeway	San Marcos Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$66
AT158	2050	Active Transportation: On-Street & Off-Street Bikeway	SR 67 Bikeway - Lakeside to Ramona	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network (Cost distributed with CC050)	$25
AT042	2035	Active Transportation: On-Street Bikeway	Mira Mesa Neighborhood Bikeway	Early Action Program (Tier 2), Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$24
AT073	2035	Active Transportation: On-Street Bikeway	Pomerado Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$94
AT014	2050	Active Transportation: On-Street Bikeway	Central Coast Corridor: La Jolla to Del Mar	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$36
AT089	2050	Active Transportation: On-Street Bikeway	Black Mountain Bikeway	Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$52
AT092	2050	Active Transportation: On-Street Bikeway	Cannon Road Bikeway	Upgrade Existing Bikeway	$2
AT094	2050	Active Transportation: On-Street Bikeway	Carlsbad Village Drive Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$12
AT095	2050	Active Transportation: On-Street Bikeway	Carmel Valley Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$24
AT097	2050	Active Transportation: On-Street Bikeway	Centre City to Bear Valley Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network	$21

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT104	2050	Active Transportation: On-Street Bikeway	Coastal Rail Trail - Carlsbad (Reach 6 On-Street)	Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$12
AT108	2050	Active Transportation: On-Street Bikeway	Coastal Rail Trail - Oceanside Segment 1 ALT	Local Bike Plan, Safety Focus Network, Upgrade Existing Bikeway	$7
AT109	2050	Active Transportation: On-Street Bikeway	Coastal Rail Trail Connections--Solana Beach	Regional Bike Plan, Upgrade Existing Bikeway	$1
AT112	2050	Active Transportation: On-Street Bikeway	CSUSM Bikeway	Upgrade Existing Bikeway	$19
AT114	2050	Active Transportation: On-Street Bikeway	El Norte Bikeway	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$25
AT115	2050	Active Transportation: On-Street Bikeway	Encinitas to San Marcos Corridor - Encinitas Boulevard to El Camino Real	Regional Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$12
AT116	2050	Active Transportation: On-Street Bikeway	Encinitas Community Connector	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$13
AT117	2050	Active Transportation: On-Street Bikeway	Encinitas to San Marcos Corridor - El Camino Real to San Elijo Road	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$24
AT121	2050	Active Transportation: On-Street Bikeway	I-15 Bikeway - Citracado Parkway to Country Club Lane	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$34
AT122	2050	Active Transportation: On-Street Bikeway	I-15 Bikeway - Country Club Lane to Rainbow Valley Boulevard	Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$143
AT140	2050	Active Transportation: On-Street Bikeway	Mira Mesa Corridor - Scranton Road to I-15 Bikeway	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$33
AT142	2050	Active Transportation: On-Street Bikeway	Mira Mesa to Miramar	Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$15
AT149	2050	Active Transportation: On-Street Bikeway	Poway Loop	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$46
AT150	2050	Active Transportation: On-Street Bikeway	Rancho Bernardo - Via De La Valle Bikeway	Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$60
AT151	2050	Active Transportation: On-Street Bikeway	Rose Street Bikeway	Local Bike Plan	$15
AT153	2050	Active Transportation: On-Street Bikeway	San Luis Rey River to Coast	Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$35
AT161	2050	Active Transportation: On-Street Bikeway	SR 78 Bikeway	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$40
AT165	2050	Active Transportation: On-Street Bikeway	Vista Transit Center Connector	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$31

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
AT166	2050	Active Transportation: On-Street Bikeway	Melrose Drive Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$32
AT171	2050	Active Transportation: On-Street Bikeway	Carlsbad to San Marcos Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network	$49
AT172	2050	Active Transportation: On-Street Bikeway	College Boulevard Bikeway	Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$35
AT173	2050	Active Transportation: On-Street Bikeway	La Costa Bikeway	Systemic Safety Network, Upgrade Existing Bikeway	$16
AT175	2050	Active Transportation: On-Street Bikeway	Ted Williams Bikeway	Systemic Safety Network, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$15
AT176	2050	Active Transportation: On-Street Bikeway	Vista to Buena Creek Station Connector	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$20
AT177	2050	Active Transportation: On-Street Bikeway	Washington Avenue Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$4
CC006	2035	Complete Corridors: 2 MLs	I-5 MLs	I-805 to SR 78, 8F+2HOV to 8F+2ML	$271
CC007	2035	Complete Corridors: 2 MLs	I-5 MLs	SR 78 to SR 76, 8F to 8F+2ML	$131
CC030	2035	Complete Corridors: 2 MLs	SR 78 MLs	I-5 to College Boulevard, 6F to 6F+2ML	$162
CC031	2035	Complete Corridors: 2 MLs	SR 78 MLs	College Boulevard to Twin Oaks, 6F to 6F+2ML	$460
CC032	2035	Complete Corridors: 2 MLs	SR 78 MLs	Twin Oaks to I-15, 6F to 6F+2ML	$174
CC012	2050	Complete Corridors: 2 MLs	I-15 MLs	SR 78 to SR 76, 8F to 6F+2ML	$194
CC013	2050	Complete Corridors: 2 MLs	I-15 MLs	SR 76 to County Line, 8F to 6F+2ML	$103
CC028	2050	Complete Corridors: 2 MLs	SR 56 MLs	I-5 to Carmel Valley Road, 4F/6F+2HOV to 4F/6F+2ML	$41
CC029	2050	Complete Corridors: 2 MLs	SR 56 MLs	Carmel Valley Road to I-15, 4F to 4F+2ML	$240
CC069	2035	Complete Corridors: Managed Lane Connector	I-5/I-805 ML Connector	North to North and South to South	$290
CC070	2035	Complete Corridors: Managed Lane Connector	I-5/SR 78 ML Connector	South to East and West to North, North to East and West to South	$300
CC071	2035	Complete Corridors: Managed Lane Connector	I-15/SR 78 ML Connector	East to South and North to West	$361

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
CC081	2035	Complete Corridors: Interchange and Arterial Operational Improvements	I-5/SR 78 Interchange/Arterial Improvements	South to East and West to South	$444
CC050	2035	Complete Corridors: Rural Corridor Improvements	SR 67	Rural: Mapleview to Dye Road, Multimodal operational improvements with shoulder widening for enhanced emergency access	$1,200
CC051	2035	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Rice Canyon Road to Pala Reservation, Straightening	$76
CC061	2035	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Pala Casino to Rice Canyon Road, Facility Improvements	$2
CC064	2035	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Pala Reservation Western Boundary to Pala Reservation Eastern Boundary, Safety - Widen shoulders along SR 76 to enhance safety for emergency response vehicles	$6
CC053	2050	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: West Reservation Boundary to East Reservation Boundary, Shoulder Widening for adding bike lanes	$50
CC054	2050	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: SR 79 to Valley Center Road, Facility Improvements	$874
CC055	2050	Complete Corridors: Rural Corridor Improvements	SR 76	Rural: Harolds Road to Pauma Rancho, Straightening	$27
CC057	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 to Pala Mission Road, Intersection Improvements	$1
CC058	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 to Cole Grade Road, Intersection Improvements	$1
CC060	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 to Pauma Reservation Road, Intersection Improvements	$2
CC068	2035	Complete Corridors: Rural Intersection and Interchange Improvements	SR 76	Rural: SR 76 near I-15, Safety - Add dynamic message sign on SR 76 near I-15 to improve emergency response and evacuation routes	$6
CC087	2035	Complete Corridors: Transportation Technology	I-5	Transportation technology	$482

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
CC091	2035	Complete Corridors: Transportation Technology	I-15	Transportation technology	$362
CC111	2035	Complete Corridors: Transportation Technology	SR 67	Transportation technology	$92
CC095	2050	Complete Corridors: Transportation Technology	SR 78	Transportation technology	$483
CC097	2050	Complete Corridors: Transportation Technology	SR 56	Transportation technology	$68
CC113	2050	Complete Corridors: Transportation Technology	SR 76	Transportation technology	$198
CC088	2035	Complete Corridors: SIS	I-5	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$87
CC092	2035	Complete Corridors: SIS	I-15	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$69
CC112	2035	Complete Corridors: SIS	SR 67	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$32
CC096	2050	Complete Corridors: SIS	SR 78	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$140
CC098	2050	Complete Corridors: SIS	SR 56	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$20
CC114	2050	Complete Corridors: SIS	SR 76	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$69
TL003	2035	Transit: Regional Rail	Regional Rail 398	Oceanside to Downtown San Diego (Double tracking, bridge replacements, realignment in Del Mar, new platform at Fairgrounds)	$4,324
TL098	2035	Transit: Regional Rail	Regional Rail 598	Pacific Surfliner Rail2Rail (LOSSAN)	N/A**
TL004	2050	Transit: Regional Rail	Regional Rail 398	Camp Pendleton to Downtown San Diego (Grade separations, curve straightening, Miramar Tunnel, new station at Camp Pendleton and UTC)	$9,144
TL099	2050	Transit: Regional Rail	Regional Rail 598	Pacific Surfliner Rail2Rail (LOSSAN)	N/A**
TL005	2035	Transit: Light Rail	SPRINTER (Oceanside to Escondido)	Double-tracking and grade separations	$796
TL006	2050	Transit: Light Rail	SPRINTER (Oceanside to Escondido)	Double-tracking and grade separations; Extension to North County Mall	$1,950

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
TL026	2035	Transit: Next Gen Rapid	Mixed Rapid Route 235	Escondido to Downtown San Diego via I-15	$9
TL027	2035	Transit: Next Gen Rapid	Arterial Rapid Route 237	UC San Diego to Rancho Bernardo via Sorrento Valley and Mira Mesa	$77
TL028	2035	Transit: Next Gen Rapid	Arterial Rapid Route 238	UC San Diego to Rancho Bernardo via Sorrento Valley and Carroll Canyon	$88
TL035	2035	Transit: Next Gen Rapid	Freeway Rapid Route 280	Downtown San Diego to Escondido	$12
TL036	2035	Transit: Next Gen Rapid	Freeway Rapid Route 290	Downtown San Diego to Rancho Bernardo Transit Station	$13
TL040	2035	Transit: Next Gen Rapid	Arterial Rapid Route 440	Carlsbad to Escondido Transit Center via Palomar Airport Road	$79
TL042	2035	Transit: Next Gen Rapid	Arterial Rapid Route 491	Nordahl Marketplace to East Escondido via Downtown Escondido	$107
TL043	2035	Transit: Next Gen Rapid	Arterial Rapid Route 493	Oceanside to Solana Beach to UTC/ UC San Diego via Highway 101 Coastal communities, Carmel Valley	$367
TL044	2035	Transit: Next Gen Rapid	Arterial Rapid Route 494	Oceanside to Vista via Mission Avenue/ Santa Fe Road Corridor	$155
TL045	2035	Transit: Next Gen Rapid	Arterial Rapid Route 497	Carlsbad Village to SR 76 via College Boulevard, Plaza Camino Real	$127
TL046	2035	Transit: Next Gen Rapid	Mixed Rapid Route 483	Commuter Express: Riverside (Temecula) to Palomar College via I-15, SR 78, CSUSM	$61
TL047	2035	Transit: Next Gen Rapid	Mixed Rapid Route 484	Commuter Express: Carlsbad to Kearny Mesa via I-15; Palomar Airport Road, SR 78, I-15 Rancho Bernardo Transit Center	$144
TL048	2035	Transit: Next Gen Rapid	Arterial Rapid Route 485	Oceanside to Encinitas via El Camino Real	$225
TL049	2035	Transit: Next Gen Rapid	Arterial Rapid Route 486	Oceanside to Carlsbad/San Marcos via Melrose Drive	$146
TL092	2035	Transit: Next Gen Rapid	Mixed Rapid Route 277	Ramona to Sabre Springs Transit Station	$186
TL091	2050	Transit: Next Gen Rapid	Mixed Rapid Route 235	Escondido to Downtown San Diego via I-15 (Inline station at SR 94 and 28th Street)	$23
TL111	2035	Transit: Express Bus	Express Bus 246	Rancho Bernardo to UC San Diego via SR 56 (Rancho Bernardo and Sabre Springs to UTC/UC San Diego)	N/A*
TL112	2035	Transit: Express Bus	Express Bus 247	Escondido to UC San Diego via SR 56 (Escondido Transit Center and Del Lago to UTC/UC San Diego)	N/A*
TL181	2035	Transit: Circulator	Circulator 449	Palomar College to New Development via Twin Oaks Valley Road and West Barham Drive	N/A*
TL187	2035	Transit: Circulator	Circulator 675	Rancho Bernardo Business Park Loop	N/A*
TL142	2035	Transit: Local Bus	Local Bus 89	Solana Beach to UTC (via Del Mar Heights Road)	N/A*

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Million
TL202	2035	Transit: Local Bus	Local Bus 842	Poway Business Route (Mira Mesa Transit Center to Poway Business to Sabre Springs Transit Center)	N/A*
TL248	2035	Transit: Local Bus	Local Bus 984	Miramar College Transit Station to Sorrento Valley via Carroll Canyon/Miramar Road Business Parks	N/A*
TL072	2035	Flexible Fleets: Microtransit Areas	Sorrento Valley	Microtransit Operations	$25
TL074	2035	Flexible Fleets: Microtransit Areas	Carlsbad Poinsettia	Microtransit Operations	$40
TL075	2035	Flexible Fleets: Microtransit Areas	Buena Creek	Microtransit Operations	$25
TL076	2035	Flexible Fleets: Microtransit Areas	San Marcos	Microtransit Operations	$40
TL077	2035	Flexible Fleets: Microtransit Areas	Oceanside Eastern Core	Microtransit Operations	$38
TL078	2035	Flexible Fleets: Microtransit Areas	Vista	Microtransit Operations	$40
TL079	2035	Flexible Fleets: Microtransit Areas	Ramona	Microtransit Operations	$18
TL080	2035	Flexible Fleets: Microtransit Areas	Fallbrook-Pala	Microtransit Operations	$29
TL084	2035	Flexible Fleets: Microtransit Areas	Encinitas	Microtransit Operations	$25
TL085	2035	Flexible Fleets: Microtransit Areas	Oceanside El Corazon	Microtransit Operations	$25
TL086	2035	Flexible Fleets: Microtransit Areas	Escondido	Microtransit Operations	$25
FF01	2035	Flexible Fleets: NEV Shuttle Areas	Carlsbad Village	NEV Operations	$10
FF03	2035	Flexible Fleets: NEV Shuttle Areas	Del Mar	NEV Operations	$10
FF10	2035	Flexible Fleets: NEV Shuttle Areas	Oceanside	NEV Operations	$17
FF13	2035	Flexible Fleets: NEV Shuttle Areas	Solana Beach	NEV Operations	$10

Notes: I = Interstate; SR = State Route; SDSU = San Diego State University; DAR = direct access ramp; N= north; S = south; HOT = high occupancy toll; HOV = high-occupancy vehicle; ML = Managed Lane; NEV = neighborhood electric vehicle; UTC = University Town Center.

*New local, express, and circulator transit routes are assumed to operate on existing roads with minimal capital costs. Vehicle and operations costs for new and existing routes are reflected in TL300 through TL311 as Systemwide Investments in Table A.6.

**Pacific Surfliner Rail2Rail is a program that allows passengers with certain passes to ride either COASTER or Pacific Surfliner trains. Pacific Surfliner Rail2Rail service will benefit from planned LOSSAN upgrades reflected in projects TL003 and TL004.

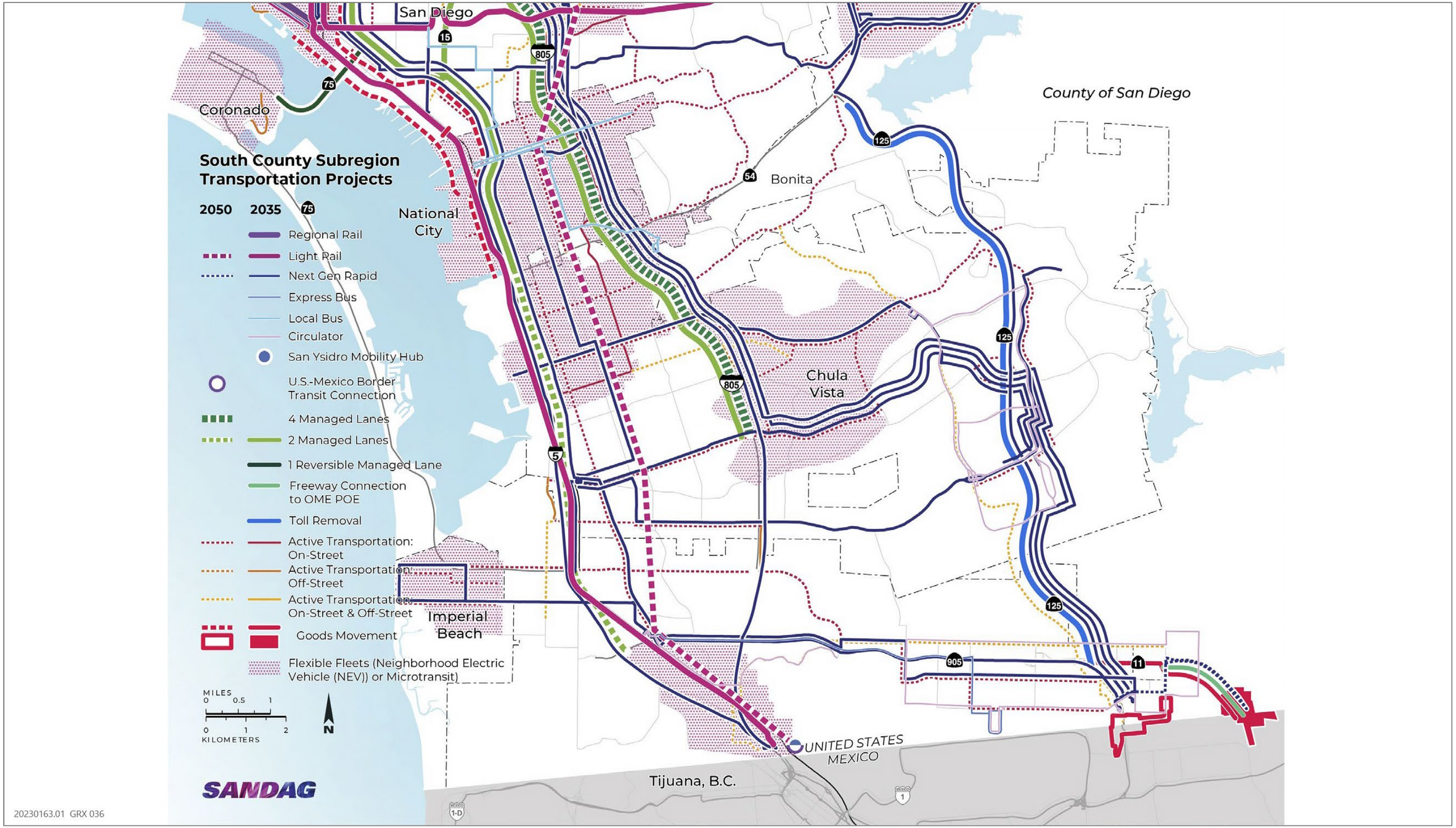
Source: SANDAG 2025e.

SOUTH COUNTY SUBREGION

The South County Subregion (South County) spans the South Bay, extending north to Coronado, south to the U.S.–Mexico border, and east to Otay Mesa. South County includes key routes, such as I-5, I-805, SR 94, SR 54, SR 125, and SR 905. Land ports of entry (POEs) are significant features of the subregion. The San Ysidro POE is the primary gateway for personal travel between the United States and Mexico and one of the busiest border crossings in the world. The Otay Mesa POE is a key gateway facilitating billions of dollars of U.S.–Mexico trade: Mexico the United States' number one trade partner. The addition of the new Otay Mesa East POE will further enhance trade and personal travel between the United States and Mexico. SR 125, also known as the South Bay Expressway, is a SANDAG-operated toll road. Beginning at SR 905 in Otay Mesa, SR 125 provides fast and convenient access between Mexico, East County, Downtown San Diego, and points north. South County is also served by an extensive public transportation network, including the Blue Line, Rapids 225 and 227, and many local bus routes. Additionally, the Bayshore Bikeway, along with major arterial roads, improves mobility across the area, offering more travel options for residents and visitors.

Proposed projects located in or partially within the South County Subregion are listed in Figure 2-18 and Table 2-10 below. The proposed projects are categorized by type and organized by phasing periods 2035 and 2050 within each project type.

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Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 2-18 South County Subregion Projects

Table 2-10 South County Subregion Projects

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
AT003	2035	Active Transportation: Off-Street Bikeway	Bayshore Bikeway: Barrio Logan Segment (Beardsley Street to Park Boulevard)	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$6
AT008	2035	Active Transportation: Off-Street Bikeway	I-805 Multi-Use Path Bridge Main Street to Palm Avenue	Local Bike Plan	$10
AT012	2035	Active Transportation: Off-Street Bikeway	Bayshore Bikeway Upgrades: Off-Street Coronado	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$12
AT013	2035	Active Transportation: Off-Street Bikeway	Bayshore Bikeway: Segment 8B - Palomar Street to Main Street	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan	$9
AT167	2035	Active Transportation: Off-Street Bikeway	Bayshore Bikeway Segment 1	Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$4
AT179	2035	Active Transportation: Off-Street Bikeway	Sweetwater Bikeway Ramp	Early Action Program (Tier 2)	$13
AT087	2050	Active Transportation: Off-Street Bikeway	Bayshore Bikeway: Harbor Drive	Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$14
AT127	2050	Active Transportation: Off-Street Bikeway	I-805 Connector - Bonita Road to Floyd Avenue	Regional Bike Plan, Local Bike Plan	$14
AT128	2050	Active Transportation: Off-Street Bikeway	I-805 Connector - Bonita Road to H Street	Regional Bike Plan, Local Bike Plan	$10
AT016	2035	Active Transportation: On-Street & Off-Street Bikeway	City Heights/Fairmount Corridor	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$43
AT040	2035	Active Transportation: On-Street & Off-Street Bikeway	Lemon Grove to Imperial Bikeway	Early Action Program (Tier 2), Systemic Safety Network, Upgrade Existing Bikeway	$36
AT023	2050	Active Transportation: On-Street & Off-Street Bikeway	Chollas Creek Bikeway: South Fork	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$65
AT078	2050	Active Transportation: On-Street & Off-Street Bikeway	SR 125 Connector - Bonita Road to U.S.-Mexico Border	Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$102
AT099	2050	Active Transportation: On-Street & Off-Street Bikeway	Chollas Creek Bikeway: North Fork	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$77
AT119	2050	Active Transportation: On-Street & Off-Street Bikeway	Golden Hill to Fairmount Park	Local Bike Plan	$14

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
AT155	2050	Active Transportation: On-Street & Off-Street Bikeway	San Ysidro to Otay Mesa Connector	Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$29
AT156	2050	Active Transportation: On-Street & Off-Street Bikeway	Saturn Boulevard Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$15
AT159	2050	Active Transportation: On-Street & Off-Street Bikeway	SR 905 Corridor	Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$109
AT174	2050	Active Transportation: On-Street & Off-Street Bikeway	San Ysidro Park to School Connector	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$10
AT011	2035	Active Transportation: On-Street Bikeway	South Bay to Southeastern San Diego	Early Action Program (Tier 2), Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$53
AT027	2035	Active Transportation: On-Street Bikeway	Downtown to Southeast	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Safety Focus Network	$3
AT035	2035	Active Transportation: On-Street Bikeway	Imperial Beach Connector	Early Action Program (Tier 1), Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$5
AT045	2035	Active Transportation: On-Street Bikeway	North Park to Downtown	Early Action Program (Tier 1), Safety Focus Network, Upgrade Existing Bikeway	$4
AT007	2050	Active Transportation: On-Street Bikeway	Eastlake Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$36
AT061	2050	Active Transportation: On-Street Bikeway	Golden Hill to Logan Heights	Early Action Program (Tier 1), Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$12
AT067	2050	Active Transportation: On-Street Bikeway	Main Street to Bayshore	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$22
AT068	2050	Active Transportation: On-Street Bikeway	Market Street Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$34
AT071	2050	Active Transportation: On-Street Bikeway	Palm Avenue to Otay Mesa	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$45
AT072	2050	Active Transportation: On-Street Bikeway	Palomar Street Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$36
AT076	2050	Active Transportation: On-Street Bikeway	Spring Valley to Bayshore Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$40
AT077	2050	Active Transportation: On-Street Bikeway	Spring Valley to Sweetwater Bikeway	Regional Bike Plan, Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$38

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
AT080	2050	Active Transportation: On-Street Bikeway	Sweetwater to Chula Vista Bayshore	Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$18
AT081	2050	Active Transportation: On-Street Bikeway	Sweetwater to Skyline Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$26
AT083	2050	Active Transportation: On-Street Bikeway	Encanto to Barrio Logan Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$30
AT085	2050	Active Transportation: On-Street Bikeway	Bay to Ranch Bikeway	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$9
AT086	2050	Active Transportation: On-Street Bikeway	Bayshore Bikeway Connector	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$5
AT090	2050	Active Transportation: On-Street Bikeway	Border Access Corridor	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$42
AT098	2050	Active Transportation: On-Street Bikeway	Chollas Creek Bikeway to Otay	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$19
AT100	2050	Active Transportation: On-Street Bikeway	Chula Vista Oleander Connector	Local Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$16
AT101	2050	Active Transportation: On-Street Bikeway	Chula Vista Regional Connector	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$55
AT111	2050	Active Transportation: On-Street Bikeway	Collwood to Euclid Bikeway	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$28
AT118	2050	Active Transportation: On-Street Bikeway	Golden Hill to Bayshore Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$10
AT129	2050	Active Transportation: On-Street Bikeway	Imperial Beach Bikeways	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Systemic Safety Network, Upgrade Existing Bikeway	$14
AT130	2050	Active Transportation: On-Street Bikeway	J Street Bikeway	Regional Bike Plan, Local Bike Plan, Upgrade Existing Bikeway	$17
AT136	2050	Active Transportation: On-Street Bikeway	Logan Bikeway	Local Bike Plan, Safety Focus Network, Systemic Safety Network	$4
AT144	2050	Active Transportation: On-Street Bikeway	National City - Chula Vista - San Ysidro Bikeway	Regional Bike Plan, Local Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$39
AT148	2050	Active Transportation: On-Street Bikeway	Valencia Bikeway	Regional Bike Plan, Local Bike Plan, Systemic Safety Network, Upgrade Existing Bikeway	$7
AT157	2050	Active Transportation: On-Street Bikeway	South Park to Downtown	Local Bike Plan, Comprehensive Multimodal Corridor Plan, Upgrade Existing Bikeway	$13

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
AT160	2050	Active Transportation: On-Street Bikeway	SR 125 Corridor - East County Southern Loop to La Mesa/Lemon Grove/El Cajon connections	Regional Bike Plan, Comprehensive Multimodal Corridor Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$36
AT162	2050	Active Transportation: On-Street Bikeway	Sweetwater to National City	Regional Bike Plan, Safety Focus Network, Systemic Safety Network, Upgrade Existing Bikeway	$29
CC002	2035	Complete Corridors: 2 MLs	I-5 MLs	SR 54 to SR 15, 8F/10F to 8F+2ML	$113
CC003	2035	Complete Corridors: 2 MLs	I-5 MLs	SR 15 to Pacific Highway, 8F to 6F+2ML	$61
CC008	2035	Complete Corridors: 2 MLs	SR 15 MLs	I-5 to I-805, 6F to 6F+2ML	$130
CC014	2035	Complete Corridors: 2 MLs	I-805 MLs	Palomar Street to SR 94, 8F+2HOV to 8F+2ML	$110
CC016	2035	Complete Corridors: 2 MLs	I-805 MLs	SR 94 to SR 15, 8F to 8F+2ML	$55
CC001	2050	Complete Corridors: 2 MLs	I-5 MLs	SR 905 to SR 54, 8F to 6F+2ML	$81
CC025	2050	Complete Corridors: 2 MLs	SR 94 MLs	I-5 to I-15, 6F/8F to 6F+2ML	$80
CC026	2050	Complete Corridors: 2 MLs	SR 94 MLs	I-15 to I-805, 8F to 6F+2ML+Operational Improvements	$41
CC027	2050	Complete Corridors: 2 MLs	SR 94 MLs	I-805 to SR 125, 8F to 6F+2ML	$75
CC015	2050	Complete Corridors: 4 MLs	I-805 MLs	Palomar Street to SR 94, 8F+2ML to 6F+4ML	$110
CC017	2050	Complete Corridors: 4 MLs	I-805 MLs	SR 94 to SR 15, 8F+2ML to 6F+4ML	$16
CC035	2035	Complete Corridors: Toll Removal	SR 125 MLs	SR 905 to SR 54, 4T to 4F	$42
CC037	2035	Complete Corridors: Reversible Managed Lane	SR 75 Coronado Bridge	4F+1 Reversible to 4F+1 ML HOV	$22
CC038	2050	Complete Corridors: Reversible Managed Lane	SR 75 Coronado Bridge	4F+1 Reversible to 4F+1 ML HOT	$22
CC040	2035	Complete Corridors: Freeway Connection to OME POE	SR 11/Otay Mesa East POE (Enrico Fermi to Mexico) to OME POE	Otay Mesa East POE and roadway connections	$615
CC077	2050	Complete Corridors: ML Connector	SR 94/I-805 ML Connector	North to West, East to South	$300
CC080	2050	Complete Corridors: ML Connector	I-15/SR 94 ML Connector	South to West, East to North	$800

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
CC087	2035	Complete Corridors: Transportation Technology	I-5	Transportation technology	$482
CC089	2035	Complete Corridors: Transportation Technology	I-805	Transportation technology	$284
CC091	2035	Complete Corridors: Transportation Technology	I-15	Transportation technology	$362
CC107	2035	Complete Corridors: Transportation Technology	SR 125	Transportation technology	$224
CC101	2050	Complete Corridors: Transportation Technology	SR 94	Transportation technology	$305
CC103	2050	Complete Corridors: Transportation Technology	SR 54	Transportation technology	$90
CC109	2050	Complete Corridors: Transportation Technology	SR 905	Transportation technology	$195
CC088	2035	Complete Corridors: SIS	I-5	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$87
CC090	2035	Complete Corridors: SIS	I-805	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$47
CC092	2035	Complete Corridors: SIS	I-15	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$69
CC108	2035	Complete Corridors: SIS	SR 125	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$43
CC102	2050	Complete Corridors: SIS	SR 94	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$92
CC104	2050	Complete Corridors: SIS	SR 54	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$20
CC110	2050	Complete Corridors: SIS	SR 905	SIS upgrades to signalized ramps and intersections along the highway and parallel or connecting major arterials	$38
GM02	2035	Complete Corridors: Goods Movement	Otay Mesa East Port of Entry Pilot Programs	Pilot programs for streamlining commercial vehicle operations for reducing wait times at Otay Mesa East Port of Entry, including commercial vehicle appointment system	$25

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
GM03	2035	Complete Corridors: Goods Movement	Vesta Bridge - Phase 1	Vesta Bridge Phase 1 and operational improvements: SR 15, Main Street, Harbor Drive, and 32nd Street	$105
GM06	2035	Complete Corridors: Goods Movement	Harbor Drive 2.0	Designated Freight Route: Dedicated lanes (where feasible) and signal priority for truck freight along Harbor Drive between Marine Terminals and connections to I-5. Includes freight signal prioritization, queue jumps, delineators and signage	$177
GM07	2035	Complete Corridors: Goods Movement	Regional Border Management System & Tolling Equipment	Border Wait Times - SR 11 tolling equipment, and Regional Border Management System	$44
GM01	2050	Complete Corridors: Goods Movement	I-5 Working Waterfront Access	I-5 Working Waterfront Access Bottleneck Relief between SR 94 and SR 54	$120
GM04	2050	Complete Corridors: Goods Movement	Otay Mesa Port of Entry Truck Bridge to Commercial Vehicle Enforcement Facility	Otay Mesa Port of Entry: Bridge widening between Port of Entry and Commercial Vehicle Enforcement Facility to coincide with improvements at both facilities	$63
GM05	2050	Complete Corridors: Goods Movement	Harbor Drive Multimodal Corridor Improvements	Improvements at intersections between marine terminals; pedestrian crossings; various truck improvements; bikeway accommodations; streetscape, safety, and parking improvements	$242
GM08	2050	Complete Corridors: Goods Movement	Otay Mesa East Port of Entry Build-Out	Expand facility to accommodate additional passenger vehicle, commercial vehicle, and pedestrian lanes	$1,200
TL001	2035	Transit: Airport Connection	Airport Transit Connection	Airport to Downtown	$3,186
TL003	2035	Transit: Regional Rail	Regional Rail 398	Oceanside to Downtown San Diego (Double tracking, bridge replacements, realignment in Del Mar, new platform at Fairgrounds)	$4,324
TL098	2035	Transit: Regional Rail	Regional Rail 598	Pacific Surfliner Rail2Rail (LOSSAN)	N/A**
TL004	2050	Transit: Regional Rail	Regional Rail 398	Camp Pendleton to Downtown San Diego (Grade separations, curve straightening, Miramar Tunnel, new station at Camp Pendleton and UTC)	$9,144
TL099	2050	Transit: Regional Rail	Regional Rail 598	Pacific Surfliner Rail2Rail (LOSSAN)	N/A**
TL007	2035	Transit: Light Rail	Blue Line (San Ysidro to UTC)	Grade separations	$239
TL009	2035	Transit: Light Rail	Orange Line (El Cajon to Downtown)	Grade separations	$112
TL011	2035	Transit: Light Rail	Green Line (Santee to Downtown)	Grade separations	$113
TL002	2050	Transit: Light Rail	Light Rail 582	Mission Valley to U.S.–Mexico Border via City Heights, National City, Chula Vista	$11,314
TL008	2050	Transit: Light Rail	Blue Line (San Ysidro to UTC)	Grade separations	$957
TL010	2050	Transit: Light Rail	Orange Line (El Cajon to Downtown)	Grade separations	$530

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
TL012	2050	Transit: Light Rail	Green Line (Santee to Downtown)	Grade separations	$788
TL013	2050	Transit: Light Rail	Streetcar	Balboa Park Perimeter Streetcar: Downtown to Logan Heights, Golden Hill, South Park, North Park, University Heights, Hillcrest	$1,060
TL014	2035	Transit: Next Gen Rapid	Arterial Rapid Route 120	Kearny Mesa to Downtown via Mission Valley	$106
TL016	2035	Transit: Next Gen Rapid	Arterial Rapid Route 209	Chula Vista Bayfront to Millennia via H Street Corridor, Southwestern College	$136
TL018	2035	Transit: Next Gen Rapid	Arterial Rapid Route 211	SDSU to Downtown via Adams Avenue	$101
TL019	2035	Transit: Next Gen Rapid	Arterial Rapid Route 212	Spring Valley to Downtown via Southeast San Diego	$137
TL020	2035	Transit: Next Gen Rapid	Arterial Rapid Route 215	SDSU to Downtown via El Cajon Boulevard	$71
TL021	2035	Transit: Next Gen Rapid	Mixed Rapid Route 225	Otay Mesa Transit Center to Downtown San Diego via Chula Vista, I-805	$3
TL022	2035	Transit: Next Gen Rapid	Mixed Rapid Route 227	Otay Mesa to Imperial Beach via 905	$68
TL024	2035	Transit: Next Gen Rapid	Arterial Rapid Route 229	Pacific Beach to Convention Center via Ingraham Street, Sports Arena Boulevard, Pacific Highway	$117
TL026	2035	Transit: Next Gen Rapid	Mixed Rapid Route 235	Escondido to Downtown San Diego via I-15	$9
TL031	2035	Transit: Next Gen Rapid	Arterial Rapid Route 255	Tram Rapid (precursor to Tram 555) Downtown to Logan Heights, Golden Hill, South Park, North Park, University Heights, Hillcrest	$72
TL034	2035	Transit: Next Gen Rapid	Mixed Rapid Route 265	Otay Mesa POE to SDSU Mission Valley via SR 125, I-805, I-15	$34
TL035	2035	Transit: Next Gen Rapid	Freeway Rapid Route 280	Downtown San Diego to Escondido	$12
TL036	2035	Transit: Next Gen Rapid	Freeway Rapid Route 290	Downtown San Diego to Rancho Bernardo Transit Station	$13
TL037	2035	Transit: Next Gen Rapid	Mixed Rapid Route 292	El Cajon to Otay Mesa via El Cajon, Jamacha, and Otay Lakes	$124
TL038	2035	Transit: Next Gen Rapid	Arterial Rapid Route 293	Palm Avenue Trolley to Otay Ranch via Palomar Street	$66
TL039	2035	Transit: Next Gen Rapid	Arterial Rapid Route 295	South Bay to Clairemont via La Mesa and Kearny Mesa	$149
TL050	2035	Transit: Next Gen Rapid	Arterial Rapid Route 625	SDSU to Palomar Station via East San Diego, Southeast San Diego, National City	$199
TL051	2035	Transit: Next Gen Rapid	Freeway Rapid Route 630	Iris Trolley/Palomar to Kearny Mesa via I-5/ SR 163 and City College	$62
TL052	2035	Transit: Next Gen Rapid	Arterial Rapid Route 635	Eastlake to Palomar Trolley via Main Street Corridor	$127

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
TL053	2035	Transit: Next Gen Rapid	Arterial Rapid Route 637	North Park to 32nd Street Trolley Station via Golden Hill	$80
TL054	2035	Transit: Next Gen Rapid	Arterial Rapid Route 638	Iris Trolley to Otay Mesa via Otay, Airway Drive, SR 905 Corridor	$73
TL055	2035	Transit: Next Gen Rapid	Freeway Rapid Route 640	San Ysidro to Santa Fe Depot via I-5 and City College	$18
TL056	2035	Transit: Next Gen Rapid	Freeway Rapid Route 688	San Ysidro to UTC via I-805, Kearny Mesa, UTC (stops at Palomar Street, H Street, Plaza Boulevard, 47th Street, El Cajon Boulevard, University Avenue, SDSU Mission Valley, Clairemont Mesa Boulevard, UTC)	$57
TL090	2050	Transit: Next Gen Rapid	Mixed Rapid Route 225	Otay Mesa Transit Center to Downtown San Diego via Chula Vista, I-805 (Inline station at SR 94 and 28th Street)	$23
TL091	2050	Transit: Next Gen Rapid	Mixed Rapid Route 235	Escondido to Downtown San Diego via I-15 (Inline station at SR 94 and 28th Street)	$23
TL093	2050	Transit: Next Gen Rapid	Mixed Rapid Route 227	Otay Mesa East POE to Imperial Beach via SR 905	$14
TL060	2035	Transit: Downtown Bus Layover	Bus Layover	Downtown Bus Layover	$70
TL062	2035	Transit: San Ysidro Mobility Hub	U.S.–Mexico Border Transit Connection	San Ysidro Mobility Hub	$300
TL063	2050	Transit: San Ysidro Mobility Hub	U.S.–Mexico Border Transit Connection	San Ysidro Mobility Hub	$650
TL064	2050	Transit: US-Mexico Border Transit Connection	U.S.–Mexico Border Transit Connection	U.S. - Mexico Border Transit Connection	$520
TL110	2035	Transit: Express Bus	Express Bus 121	CBX to Iris Transit Station Express	N/A*
TL113	2035	Transit: Express Bus	Express Bus 993	Shelter Island to Convention Center	N/A*
TL146	2035	Transit: Circulator	Circulator 193	Iris Transit Center to San Ysidro High School	N/A*
TL185	2035	Transit: Circulator	Circulator 661	Otay Mesa Loop via Otay Mesa Road, Heritage Road, Siempre Viva Road, and Alta Road	N/A*
TL194	2035	Transit: Circulator	Circulator 715	Otay Ranch Loop via Southwest College, La Media Road, Hunte Parkway, and Eastlake Parkway	N/A*
TL195	2035	Transit: Circulator	Circulator 716	Lower Otay Ranch Loop via Birch Road, Orion Avenue, Rock Mountain, and La Media Road	N/A*
TL147	2035	Transit: Local Bus	Local Bus 195	8th Street Trolley to Plaza Bonita via 8th Street, L Avenue, and 30th Street	N/A*
TL148	2035	Transit: Local Bus	Local Bus 196	8th Street Trolley to Plaza Boulevard via 8th Street	N/A*
TL149	2035	Transit: Local Bus	Local Bus 197	8th Street Trolley to 32nd Street Trolley via 40th Street/38th Street/32nd Street	N/A*

Project ID	Phase Year	Project Category	Project Name	Project Description	Cost ($2024) Millions
TL066	2035	Flexible Fleets: Microtransit Areas	Central Chula Vista	Microtransit Operations	$34
TL067	2035	Flexible Fleets: Microtransit Areas	Southeastern San Diego	Microtransit Operations	$45
TL069	2035	Flexible Fleets: Microtransit Areas	Casa De Oro/Spring Valley	Microtransit Operations	$18
FF02	2035	Flexible Fleets: NEV Shuttle Areas	Coronado	NEV Operations	$17
FF04	2035	Flexible Fleets: NEV Shuttle Areas	Downtown Chula Vista	NEV Operations	$10
FF05	2035	Flexible Fleets: NEV Shuttle Areas	Imperial Beach	NEV Operations	$10
FF08	2035	Flexible Fleets: NEV Shuttle Areas	National City	NEV Operations	$17
FF12	2035	Flexible Fleets: NEV Shuttle Areas	San Ysidro/U.S. Mexico Border	NEV Operations	$17
FF14	2035	Flexible Fleets: NEV Shuttle Areas	Downtown/Little Italy	NEV Operations	$17
NO01	2035	Transportation System Management: Smart Infrastructure	Advancing Border Connectivity SIS	SIS Implementation at Harbor Drive, Chula Vista (National City Boulevard and H Street) and San Ysidro Border District to enhance safety, transit optimization, and smoother goods movement.	$3
NO02	2035	Transportation System Management: Smart Borders	Advancing Border Connectivity Regional Border Management System	Planned technologies for traffic management and crowd-sourced wait time calculations at the Otay Mesa East POE.	$5
NO03	2035	Transportation System Management: Smart Corridors	Advancing Border Connectivity NextGen Integrated Corridor Management (ICM)	Regional traveler information system along the SR 905, I-5, and I-805 that allow for real-time traffic management and emergency response.	$4

Notes: I = Interstate; SR = State Route; SDSU = San Diego State University; POE = port of entry; N= north; S = south; ML = Managed Lane; NEV = neighborhood electric vehicle; UTC = University Town Center.

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**Pacific Surfliner Rail2Rail is a program that allows passengers with certain passes to ride either COASTER or Pacific Surfliner trains. Pacific Surfliner Rail2Rail service will benefit from planned LOSSAN upgrades reflected in projects TL003 and TL004.

Source: SANDAG 2025e.

ARTERIALS

Local jurisdictions and the County of San Diego will drive the completion of complete streets efforts along significant arterials (major through streets that connect the freeway system). These projects are listed in Table 2-11 with their 2025 RTIP ID numbers and are a part of the air quality conformity analysis for programmatic purposes (see Appendix C: "Air Quality Planning and Transportation Conformity" of the proposed Plan).

Table 2-11 Arterials

Phase Year	TIP ID	Lead Agency	Project Name	Description
2035	CHV91	Chula Vista	H Street Construction from Marina Parkway to E Street and widening of Bay Boulevard to Street A	H Street from E Street to Bay Boulevard (0.3 mile) - This project includes construction of a two to three lane road from E Street to Marina Parkway and a five lane Major Road from Street A to Bay Boulevard to integrate with the new segment of H Street that is currently under construction for redevelopment of the area as part of the Chula Vista Bayfront Master Plan. Street Improvements will include streetscape enhancements such as street trees, lighting, furnishings, etc. The project is identified and included in the Chula Vista Bayfront Master Plan and the Bayfront Transportation Development Impact Fee Nexus Study as "BAY-17".
2035	CHV93	Chula Vista	SR 125 at Main Street and Otay Valley Road Interchanges	Interchange on SR 125 at Main Street and Otay Valley Road - Construction of freeway interchanges/overpasses on SR 125 at Main Street and Otay Valley Road.
2035	CHV97	Chula Vista	Main Street from Heritage Road to Wolf Canyon Bridge	Main Street from Heritage Road to Wolf Canyon Bridge (0.82 mile) – Construction of a 6-lane Prime Arterial from Heritage Road to Wolf Canyon Bridge including bike lanes and sidewalk facilities. (TDIF Facility 60A).
2035	CNTY14 A	San Diego County	South Santa Fe Avenue South	South Santa Fe from Robelini Drive to Smilax Road (1.19 miles) – This project will improve South Santa Fe to a four-lane divided road from west of Robelini Drive to Smilax Road, including improvements to Robelini Drive. The project will be in phases.
2035	CNTY21	San Diego County	Bradley Avenue Widening and Overpass at SR 67	Bridge 57-0552 - On Bradley Avenue from Magnolia Avenue to Mollison Avenue, Phase 1 - Widen Bradley Avenue between Graves Ave and Mollison Avenue from 2 lanes to 4 lanes including sidewalks and bicycle lanes; Phase 2 - replace 2-lane bridge over SR 67 with a 6-lane bridge including turn pockets. Construction funding shown only for Phase 1. Phase 2 construction will be funded by TransNet.
2035	ESC04	Escondido	Citracado Parkway II	Citracado Parkway from West Valley to Andreason (0.5 mile) – widen from 2 to 4 lanes with raised medians, construct bridge over Escondido Creek.
2035	O22	Oceanside	College Boulevard Improvements from Vista Way to Old Grove Road	College Boulevard from Vista Way to Old Grove Road (2.5 miles) - Traffic calming without additional lanes between Waring Road/Barnard Drive and Roselle Avenue (first phase). The second phase is widening from the existing four lanes to six lanes with bike lanes and raised median between Olive Avenue and Old Grove.
2035	SAN260	North County Transit District	COASTER Train Sets	In the San Diego Region along the COASTER Corridor - Two additional train sets to provide more frequent commuter rail service, including 30-minute peak period service. Toll Credits will be used to match federal funds for the CON phase.
2035	SD34	San Diego	El Camino Real	Bridge 57C0042 - In San Diego on El Camino Real from San Dieguito Road to Via de la Valle - reconstruct & widen from two to four lanes and extend transition lane and additional grading to avoid biological impacts.

Phase Year	TIP ID	Lead Agency	Project Name	Description
2035	SD102A	San Diego	Otay Truck Route Widening (Phase 4)	Otay Truck Route - In San Diego, from Drucker Lane to La Media Road, add one lane, for a total of three lanes: two for trucks and one lane for emergency vehicles (Border Patrol/fire department access). From Britannia Boulevard to La Media Road, add one lane for trucks and one lane for emergency vehicles. Also, along Britannia Boulevard from Britannia Court to the Otay Truck Route, add one lane for trucks and one lane for emergency vehicles. This project will be constructed in two phases; an Eastern Phase between La Media Road and Drucker Lane, and a Western Phase from Britannia Boulevard to La Media Road. Current construction programming is for the Eastern Phase only. (CIP S-11060).
2035	SD250	San Diego	La Media Road Improvements	La Media Road from SR 905 to Siempre Viva Road (0.75 mile) - In San Diego, on La Media Road from SR905 to Siempre Viva Road, widen La Media Road to a six-lane primary arterial from SR 905 to Airway Road, and to a five-lane major between Airway Road and Siempre Viva Road with three southbound lanes and two northbound lanes. This project will also improve drainage at the intersection of La Media Road and Airway Road (CIP S-15018).
2035	SM19	San Marcos	Grand Avenue Bridge and Street Improvements	From Discovery Street to San Marcos Boulevard – construct four- lane secondary arterial bridge and a six-lane arterial street from Craven Road to Grand Avenue.
2035	SM24	San Marcos	Woodland Parkway Interchange and Barham Drive Widening & Street Improvements #88005	SR 78 Bridge 57 0389 - This project includes reconstruction of the SR 78 overcrossing at Woodland Parkway, reconfiguration of on/off ramps, widening and realigning portions of Woodland Parkway, Barham Drive and Rancheros Drive. Improvements would also include continuation of new bike lanes and trails.
2035	SM31	San Marcos	San Marcos Creek Specific Plan – Discovery St. Widening and Flood Control Improvements #88265	From Via Vera Cruz Road to Bent Avenue /Craven Road - Part of San Marcos Creek Specific Plan group of projects to widen Discovery Street to four lanes secondary arterial between Via Vera Cruz and Bent Avenue. Improvements include construction of roadway improvements, bike lanes and trails.
2035	SM32	San Marcos	Via Vera Cruz Bridge and Street Improvements #88264	Bridge 57C0867 - Part of San Marcos Creek Specific Plan group of projects to widen to four lanes secondary arterial and construct a bridge at San Marcos Creek.
2035	SM42	San Marcos	Discovery St. from Craven to Twin Oaks #ST007	Discovery Street from Craven Road to Twin Oaks Valley Road (0.9 mile) – The project includes the design and construction of all intersections, signals, utilities, drainage and water quality components of Discovery Street as a four-lane arterial from Bent Avenue and Craven Drive and east to Twin Oaks Valley Road.
2035	SM48	San Marcos	San Marcos Creek Specific Plan: Creekside Drive and Pad Grading #88505	Creekside Drive from Via Vera Cruz to Grand Avenue (0.57 mile) – construct approximately 3,000 feet of a two-lane collector road from Via Vera Cruz to Grand Avenue in the City of San Marcos; will include two 12' lanes, diagonal parking on the north side, and parallel parking on the south side; the project will also include a 10' bike trail meandering along the south side.
2035	SM69	San Marcos	Twin Oaks Valley Road & Barham Drive Improvements #ST008	Barham Drive from Campus Drive to Twin Oaks Valley Road (0.1 mile) - This project involves surface improvements including asphalt, concrete, medians, sidewalks, signage and traffic lights.

Phase Year	TIP ID	Lead Agency	Project Name	Description
2035	SNT33	Santee	SR 52 Improvements between SR 125 and I-15	SR 52 from SR 125 to I-15 Milepost begins at 7.4 ends at 14.6 (7.2 miles) – This project will improve Highway 52 between SR 125 and I-15 to alleviate congestion on the freeway and on Santee streets. The project will add a westbound lane from Mast Boulevard to the summit, relocate the bike lane to the south side of the freeway, add an additional lane to the westbound on-ramp at Mast Boulevard, and restripe the section between Mast Boulevard and SR 125 to add an additional lane in each direction.
2035	CNTY34	San Diego County	Dye Road Extension	Dye Road to San Vicente Road from 500 ft west of Ramona Street to Intersection of Warnock Drive and San Vicente Road (1.15 miles) - In Ramona - study, design and construct a two-lane community collector road with intermittent turn lanes, bike lanes, curb, gutter, and pathway/walkway.
2035	CNTY35	San Diego County	Ramona Street Extension	Ramona Street from Boundary Avenue to Warnock Drive (0.25 mile) - in the community of Ramona, construct new road extension; two lanes with intermittent turn lanes, bike lanes and walkway/pathway.

Notes: I = Interstate; SR = State Route.

Source: SANDAG 2025e.

3 ENVIRONMENTAL SETTING

3.1 PHYSICAL CHARACTERISTICS OF THE SAN DIEGO REGION

Located in the southwest corner of the United States, the San Diego region comprises approximately 4,200 square miles and three general physiographic subregions: Southern California coast, Southern California mountains and valleys, and Colorado desert (McNab et al. 2005). To the north, the region is bordered by Orange and Riverside Counties, although it is largely separated from Orange County by Camp Pendleton. To the south is the United States–Mexico border. The Pacific Ocean forms a natural border to the west, and the region shares a border with Imperial County to the east. The San Diego region is coterminous with San Diego County.

The Southern California coast subregion ranges in elevation from sea level to approximately 2,900 feet above mean sea level (AMSL). Although much of the coastal plain has been developed for commercial, industrial, recreational, and residential uses, the coastal plain also contains state parks, beaches, wetlands, and ecological reserves. Marine terraces step up the coastal plain west to east toward the inland foothills. The Southern California coast subregion also contains foothills and mesas with river valleys and narrow canyons. Several rivers run from the mountain area and through the Southern California coast subregion, flowing into intermittent drainages or the Pacific Ocean. The most intensive urban development, including population, housing, and employment within incorporated and unincorporated communities, is found in the Southern California coast subregion where topography and mild coastal climatic conditions are favorable.

Elevations in the Southern California mountains and valleys subregion range from 100 to 6,500 feet AMSL. The mountains are generally steep and covered with conifer and broadleaf trees, granitic boulders, meadows, and chaparral vegetation. The eastern portion of the San Diego region is the Colorado desert subregion. Elevations range from sea level to 3,400 feet AMSL, and the terrain includes mountains, alluvial fans, and desert floor. The mountain and desert subregions are sparsely populated in scattered towns as part of the unincorporated area of San Diego County. Much of the Colorado desert subregion is part of the Anza-Borrego State Park, the largest state park in California.

The San Diego region is likely to experience a variety of climate change impacts including longer and more intense droughts, sea-level rise of up to 1.3 feet by 2050 and up to 6.7 feet by 2100, fewer rainy days, more rainfall during the biggest rainstorms by 2050, and an increase in yearly average temperatures by up to 9°F by 2100 (CEP and SDF 2015; Kalansky et al. 2018; OPC 2024; Jennings et al. 2018). Climate change will increase the frequency, duration, and intensity of heat waves. Historically, the hottest day per year was between an average of 90-100 ºF at the coast and 105-115 ºF in the deserts. At the end of the century (2070–2100), under RCP 8.5, the hottest day per year is projected to increase to an average of 100–110ºF and 110–125ºF, at the coasts and in the desert respectively (Kalansky et al. 2018). The pre-2000 historical average for extreme heat events was two days; by 2050, it is expected to be 15 days (CEP and SDF 2015). Additionally, climate change is expected to increase the variability of precipitation, leading to longer and more intense droughts as well as more rainfall during the most extreme precipitation events (e.g., atmospheric rivers). Climate models indicate that increased precipitation is likely to occur in the winter and a decrease of precipitation is likely in autumn and spring. Drought results from fewer wet days leading to more dry years, a climate change effect that will be exacerbated by increased temperatures (Kalansky et al. 2018).

3.2 RARE AND UNIQUE ENVIRONMENTAL RESOURCES

Due to its diverse topography, geological conditions, and moderate climate, the San Diego region contains several rare and unique ecological and biological resources. The region encompasses a variety of habitats, such as coastal sage scrub, chaparral, grassland, riparian, woodlands, forest, and desert. Several habitats and species in the region are considered sensitive by state and federal agencies, local jurisdictions, and conservation organizations. In fact, the San Diego region is considered a biological "hot spot" for biodiversity and species endangerments, as many unique and endangered species are found only in this region.

Along the coast, the Torrey Pines State Natural Reserve is home to the Torrey pine, the rarest pine in North America. Coastal sage scrub is another unique vegetation community. An important habitat for many species, coastal sage scrub is found from the coast to the mountain regions. As a wetland, the riparian vegetation community (scrub, woodland, and forest) found in the region is one of the most sensitive habitats in California. The San Diego Bay is another important natural resource in the region.

3.3 EXISTING LAND USE AND DEVELOPMENT PATTERNS

This section describes existing land use and development patterns as of 2022, the baseline for this EIR. Urban development is primarily within the western third of the region. Development concentrations are mostly centered along the coast with areas of urbanization branching eastward. This land use pattern is shown in Figure 4.11-1 in Section 4.11, "Land Use and Planning." More than 50% of the total land area in the region is not available for urban development, including public lands, dedicated parks and open space, lands constrained for environmental reasons, and military bases. Of the 2,725,648 total acres in San Diego County, 1,495,658 acres are constrained, 799,266 acres are developed, and 524,010 are undeveloped.

Many incorporated cities, both large and small in size and population, are located along the coast and tend to have fairly high density relative to other portions of the region. Historically, development has centered along the coastal areas due to desirability of the location, access to infrastructure and transportation options, and access to employment and commercial centers, among other factors. As shown in Figure 4.11-1 land uses in the western portion of the region generally include residential development, commercial and office uses, industrial uses, public and transportation facilities, and interspersed areas of parks and open space. Many of the region's military facilities are also in proximity to the coast.

The cities and portions of the unincorporated county that are situated in more inland and eastern locations tend to have lower-density development and are typically located along major roadways. Historically, many inland locations have focused on maintaining more rural and nonurban characteristics. Land uses in the eastern portion of the region include some centers of urban development, typically along transportation corridors, including SR 78, SR 79, and SR 94 with rural, agricultural, commercial, and industrial uses. However, the majority of the land remains undeveloped with open space parks and agricultural lands throughout.

3.4 EXISTING TRANSPORTATION NETWORK

This section describes the existing transportation network as of 2022, the baseline for this EIR. The existing transportation network consists of freeways, highways, managed lanes, a toll road, regional arterials, local streets and roads, light-rail systems, heavy rail, rapid bus service, local bus service, bikeways, commercial and general aviation facilities, seaport facilities, and ports of entry at the United States–Mexico border (Figures 4.16-1 through 4.16-4 in Section 4.16, "Transportation"). These facilities serve the region's 18 cities and the county's unincorporated areas, as well as interregional and international commuting.

The largest proportion of major transportation facilities is located in the western third of the region to best serve the largest and fastest growing population areas. This includes the following major interstate highways and state highway routes:

- I-5,
- I-8,
- I-15,
- I-805,
- SR 11,
- SR 15,
- SR 52,
- SR 54,
- SR 56,
- SR 67,
- SR 75,
- SR 76,
- SR 78,
- SR 79,
- SR 94,
- SR 125,
- SR 163,
- SR 188,
- SR 282, and
- SR 905.

The San Diego Metropolitan Transit System operates the San Diego Trolley. The existing San Diego Trolley network consists of electrified light-rail vehicles operating on the Blue, Orange, and Green Lines. The Blue Line operates between the University City community in San Diego and San Ysidro at the international border via National City and Chula Vista. The Orange Line terminates at America Plaza in Downtown San Diego, with service extending east to El Cajon via southeastern San Diego, Lemon Grove, and La Mesa. The Green Line operates from 12th Street and Imperial Avenue in Downtown San Diego north to Old Town along the bayside, then east to Santee via Mission Valley and San Diego State University. The Copper Line operates between El Cajon and Santee Town Center.

In North County, the North County Transit District (NCTD) manages the SPRINTER light-rail system, which operates diesel-powered light-rail vehicles along a 22-mile east–west route serving 15 stations connecting Oceanside, Vista, San Marcos, and Escondido generally along SR 78. NCTD also operates the COASTER commuter rail service along the San Diego region's portion of the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor from Oceanside to Downtown San Diego.

Amtrak operates the intercity Pacific Surfliner on the LOSSAN corridor connecting San Diego to the rest of the Southern California and nationwide rail system. Metrolink, a regional commuter and passenger train system that operates in Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties, connects with the COASTER and SPRINTER systems via service to the Oceanside Transit Center. There also are three rail freight operators: the Burlington Northern and Santa Fe, Pacific Sun Railroad, and the San Diego and Imperial Valley Railroad.

Commuter and local bus service is provided throughout the region, including high-volume service to the North County, central, and south bay/border areas. In addition, regional corridor bikeways are primarily aligned in conjunction with major transportation corridors and are supported by an extensive feeder network and local streets.

The movement of goods in the San Diego region involves intermodal systems of air cargo, border crossings, maritime, pipeline, rail, and roadways/truckways. Situated between major production, trade, and population centers, the San Diego region possesses a wide array of transportation and infrastructure assets. The existing transportation system includes interstate highways and state highways, a Class I railroad, a short line railroad, airport cargo systems, the Port of San Diego, and three international border crossings: San Ysidro, Otay Mesa, and Tecate. A fourth international border crossing at Otay Mesa East is under development, which includes the new SR 11.

Ocean cargo and cruise ship facilities are located on San Diego Bay, providing facilities necessary for the transfer of goods to and from the region via cargo vessels and for the cruise industry. Maritime commerce is carried out at two marine terminals located on San Diego Bay: the 10th Avenue Marine Terminal in the City of San Diego and the National City Marine Terminal at 24th Street. Ferry service operates between Downtown San Diego and Coronado.

The San Diego County Airport System includes 12 public-use airports in the San Diego region, as well as four military airports/airfields. Tijuana International Airport is located directly south of the United States–Mexico border. San Diego International Airport (SDIA), McClellan-Palomar, and Tijuana International Airport accommodate commercial, general aviation, and corporate services. Brown Field Municipal, Gillespie Field, Montgomery Field, and Ramona accommodate general aviation and corporate services. The remaining airports accommodate general aviation only, and include Oceanside Airport, Fallbrook Community Airpark, Borrego Valley Airport, Ocotillo Airport, Agua Caliente Airport, and Jacumba Airport. Military airports are Marine Corps Base Camp Pendleton, Marine Corps Air Station Miramar, Naval Air Station North Island, and Naval Outlying Landing Field Imperial Beach. In general, the San Diego County Regional Airport Authority (SDCRAA) is the government entity with jurisdiction over airport planning. In addition, SDCRAA operates SDIA. SANDAG and SDCRAA work together to address long-term ground access improvements to SDIA.

The existing bicycle network in the San Diego region features 182 miles of existing and in-construction bikeways and 721 miles of planned bikeways, totaling 903 miles of regional active transportation network. The breakdown of the network by facility type is 162 miles of off-street bikeways, 517 miles of on-street bikeways, and 224 miles of bikeways featuring a mix of on- and off-street facilities (SANDAG 2025). The regional network also accounts for portions of the California Coastal Trail, and local jurisdictions have incorporated the various trail segments into their policy and planning frameworks.

Chapter 4, "Environmental Impact Analysis," provides additional, more specific information relating to the existing environmental setting in the San Diego region pertaining to aesthetics and visual resources; agriculture and forestry resources; air quality; biological resources; cultural resources; energy; geology, soils, and paleontological resources; greenhouse gas emissions; hazards and hazardous materials; hydrology and water quality; land use and planning; mineral resources; noise and vibration; population and housing; public services, recreation, and utilities; transportation; tribal cultural resources; water supply; and wildfire.

3.5 PLAN CONSISTENCY

CEQA Guidelines Section 15125(d) requires an EIR to discuss any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans. Land use authority is vested in 18 incorporated cities and the unincorporated county. Consistency of the proposed Plan with these agencies' land use plans (general plans and subregional plans, such as specific plans) is discussed in Section 4.11, "Land Use and Planning." In addition, consistency of the proposed Plan with applicable regional plans prepared for specific resources is discussed in other Chapter 4 subsections, which analyze the impacts on specific resources.

4 ENVIRONMENTAL IMPACT ANALYSIS APPROACH

This chapter discusses the environmental impacts of implementing the proposed Plan and identifies mitigation measures to reduce impacts found to be significant. This introductory section describes the issue areas analyzed and the general impact analysis methodology employed.

ISSUE AREAS ANALYZED

Consistent with the CEQA Guidelines and public scoping input discussed in Chapter 1, "Introduction," the potential environmental effects of the proposed Plan are analyzed for the following issue areas:

- aesthetics and visual resources;
- agriculture and forestry resources;
- air quality;
- biological resources;
- cultural resources;
- energy;
- geology, soils, and paleontological resources;
- greenhouse gas emissions;
- hazards and hazardous materials;
- hydrology and water quality;
- land use and planning;
- mineral resources;
- noise and vibration;
- population and housing;
- public services, recreation, and utilities
- transportation;
- tribal cultural resources;
- water supply; and
- wildfire.

ANALYSIS METHODOLOGY

As discussed in Chapter 1, this is a program EIR, which may be prepared for a series of related actions that can be characterized as one project (CEQA Guidelines Section 15168). The degree of specificity in an EIR corresponds to the degree of specificity of the underlying activity being evaluated (CEQA Guidelines Section 15146). This EIR analyzes impacts of the proposed Plan at the same level of detail as the proposed Plan. The EIR provides a foundation for second-tier CEQA documents for subsequent projects, but does not analyze the project-specific impacts of individual projects. Project-specific and site-specific details of subsequent transportation and land use projects will vary widely. When a first-tier Program EIR is prepared, "leaving project-specific details to subsequent EIRs when specific projects are considered" is a proper approach to CEQA tiering (*In re Bay Delta* [2008] 43 Cal. 4th 1143, 1174).

Also, the planning horizon of the proposed Plan is 2050. The programmatic and long-term nature of the proposed Plan necessitates a general and at times qualitative approach to the evaluation of impacts. The EIR analyzes impacts for the two main physical components of the proposed Plan: regional growth and land use change, and transportation network improvements and programs. It also analyzes the combined impacts of these components.

SANDAG is required to update the Regional Plan every 4 years, in collaboration with the 18 cities and County of San Diego, along with regional, state, and federal partners. The impact analysis involves comparison of anticipated future physical conditions under implementation of the proposed Plan to the baseline conditions for each resource area. The analysis includes not only future conditions in the 2050 long-term horizon year of the proposed Plan, but also the interim year of 2035. The baseline year for this EIR is 2022, which reasonably represents existing environmental conditions at the time of NOP publication (January 4, 2023). Although 2022 is generally the baseline year, for some resources it is updated when more recent data are available to provide a

more accurate impact analysis. In addition, each section of the EIR includes a regulatory setting which describes the current laws, regulations, plans, and policies at the time this EIR was prepared.

Each issue area section includes the following:

- **Existing conditions**, consistent with CEQA Guidelines Section 15125(a), are described in the EIR and serve as the baseline physical conditions for the analysis of impacts. As noted above, unless otherwise stated, the "Existing Conditions" sections of the EIR describe conditions existing in 2022.
- **"Regulatory Setting"** provides a summary of the federal, state, and local laws, regulations, plans, or policies that are relevant to each issue area and its significance criteria.
- **Significance criteria** are identifiable quantitative, qualitative, or performance levels used for each issue area to determine whether environmental impacts are significant. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions in Appendix G of the CEQA Guidelines. In some cases, the EIR has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop criteria that reflect the programmatic level of the impact analysis and the unique nature of the proposed Plan or local conditions.
- **"Environmental Impacts and Mitigation Measures"** includes the analysis methodology, impact analysis, and mitigation measures (if needed), and significance after mitigation for each significance criterion. The following further describes each of these subsections of this analysis.
  - **"Analysis Methodology"** describes the methods used to evaluate the impact for each significance criterion and explains how a significant impact is defined for each significance criterion. For some issue areas, technical appendices have been prepared that present more detail on methodology, assumptions, data sheets, or results.
  - **"Impact Analysis"** presents scientific or factual data for the cause-and-effect relationship between the proposed Plan and the forecasted changes in baseline physical environmental conditions. The magnitude, duration, extent, frequency, range, or other parameters of an impact may be described to determine whether impacts are significant; all direct effects and reasonably foreseeable indirect effects are considered, with due consideration to both short-term and long-term impacts. Impacts are analyzed for 2035 and 2050 for the reasons described above.

    This EIR provides quantitative analysis of the environmental impacts of the proposed Plan where possible or meaningful. For example, quantitative analysis is provided in the following environmental issue areas: "Agriculture and Forestry Resources," Air Quality," "Biological Resources," "Energy," "Greenhouse Gas Emissions," "Mineral Resources," "Population and Housing," "Public Services, Recreation and Utilities," "Transportation," "Water Supply," and "Wildfire." However, not all the proposed Plan's impacts can meaningfully be analyzed quantitatively through the year 2050. The proposed Plan includes programs related to emerging technologies, transportation system management, and transportation demand management. These programs do not involve additional construction activities that could affect sensitive resources that are not already included as part of a transportation network improvement. Therefore, no GIS-based impact analysis is completed for these programs.

    Where quantitative analysis of an impact is not possible or meaningful, qualitative analysis is provided. The EIR provides sufficient information about the proposed Plan's environmental impacts "in light of what is reasonably feasible" (CEQA Guidelines Section 15151). For example, indirect impacts that may occur on resources in proximity to areas experiencing regional growth and land use change or transportation network improvements cannot be quantified because they may be project-specific and are not always foreseeable. They are, therefore, qualitatively analyzed on a broad scale.

The existing environmental setting for some resource areas may be modified by future foreseeable effects of climate change that would occur by 2035 and 2050.[1] For selected significance criteria within these resource areas, the proposed Plan may exacerbate environmental hazards that are worsened by climate change (e.g., Hydrology/Water Quality," and "Wildfire"), or otherwise cause worse impacts because future resource conditions will be worsened or stressed due to climate change (e.g., "Air Quality," "Biological Resources," "Energy," and "Water Supply"). For these resource areas and significance criteria, to more accurately portray impacts, the impact analysis compares proposed Plan 2035 and 2050 impacts to both the existing environmental setting and to future environmental conditions as modified by climate change. For the remaining resource areas evaluated in the EIR, a climate change analysis is not presented because either future climate change effects on these resources are speculative and/or because future climate change would not cause proposed Plan impacts to be substantially worse.

- **Mitigation measures** are feasible actions intended to avoid or substantially lessen significant impacts identified in the impact analysis. Mitigation measures are provided only for those significance criteria where significant impacts have been identified.

  The EIR includes three broad types of mitigation measures: (1) plan- and policy-level mitigation measures assigned to SANDAG; (2) mitigation measures for transportation network improvements and programs, assigned to SANDAG and other transportation project sponsors; and (3) mitigation measures for development projects implementing regional growth and land use changes, which local jurisdictions implement.

  The Board has discretion to adopt or reject plan- and policy-level mitigation measures recommended in the EIR (as well as the other two types). This decision will be reflected in findings made by the Board at the time of project approval. Plan- or policy-level mitigation measures that are accepted will be made formal parts of the proposed Plan and monitored to help ensure their implementation.

  While the EIR provides as much detail as needed in the mitigation measures to evaluate their ability to avoid or substantially lessen impacts, some flexibility must be maintained to present mitigation approaches for impacts occurring under different circumstances. Many of the mitigation measures include lists of mitigation actions that can be implemented in connection with individual future transportation and development projects that would implement the proposed Plan; development projects would be undertaken under the land use authority of local governments. These individual future projects will occur over a wide and diverse geographic scope over the 30-year time span addressed in the proposed Plan. Some will require approvals from multiple public agencies, each with different legal, regulatory, or other authority relevant to the proposed Plan. Although generally feasible for many projects, the mitigation actions may not be feasible for specific projects because the nature of individual future projects, resources, legal authority of the approving agency or agencies, physical circumstances of the project, and local policy considerations for all future projects implementing the proposed Plan will vary widely. In each case, the lead agency (and any responsible agencies) for an individual project will have to determine which mitigation actions are specifically applicable to the project, and the degree to which the recommended mitigation actions can feasibly be implemented based on project-specific circumstances.

  Laws and regulations that are applied routinely to similar projects are generally considered in the impact analysis and not repeated as mitigation. However, some mitigation measures do describe specific impact-reducing actions that would be taken to achieve compliance with laws and regulations. In addition, many policies and programs already included in the proposed Plan would have the effect of reducing environmental effects that might otherwise occur from regional growth and land use change, and transportation network improvements and programs. The effects of these intrinsic elements of the proposed Plan are accounted for in the impact analysis. These intrinsic measures may be identified in the impact analysis text; however, they are not considered mitigation measures for purposes of the EIR.

[1] Foreseeable climate change effects on these resources are described in the environmental setting section of Section 4.8, "Greenhouse Gas Emissions and Climate Change."

SANDAG is responsible for implementing those mitigation measures within its responsibility, jurisdiction, and statutory authority. Mitigation can also include measures that are within the responsibility and jurisdiction of another public agency (CEQA Guidelines Section 15091[a][2]). In many instances, mitigation measures included in this EIR that would avoid or substantially lessen significant impacts of the proposed Plan fall under the responsibility and jurisdiction of other implementation agencies, such as cities, the County, Caltrans, public transit agencies, or other special districts. Because other project agencies would be responsible for certain mitigation measures identified in this EIR, SANDAG in its CEQA findings may find that those measures, if feasible, can and should be adopted by those other agencies (CEQA Guidelines Section 15091[a][2]). Details regarding responsibilities for mitigation measure implementation will be provided in a separate mitigation monitoring and reporting program (MMRP) that the Board will consider for approval in conjunction with approval of the proposed Plan.

For second-tier transportation projects, SANDAG will implement mitigation measures for those projects that SANDAG directly approves or carries out as the CEQA lead agency or where discretionary TransNet funds are used. Where SANDAG acts as a pass-through agency for funding, it is the funding agency's responsibility to place conditions on grant funding. When using discretionary TransNet funds, which support TransNet grant programs funding local agency capital projects, SANDAG will require as a grant condition the implementation of all feasible EIR mitigation measures that are applicable to the project type being funded.

- **"Significance after Mitigation"** describes the effect of the mitigation measure(s) on the significant impact(s) and determines whether the mitigation measure(s) will reduce the impact to less than significant or whether the impact will remain significant. Impacts that remain significant after feasible mitigation measures are applied are identified as significant and unavoidable impacts. For some impacts, infeasible mitigation measures are also discussed, with explanations of why they are infeasible; this discussion is provided for informational purposes only and is not required by CEQA. As mentioned previously, with respect to land use changes implemented by local jurisdictions and transportation network improvements implemented by other transportation project sponsors, SANDAG has no authority to require implementing agencies to implement or enforce project-specific mitigation measures. In addition, some programmatic mitigation may not be feasible or effective for particular projects based on project- or site-specific circumstances. This results in many significant impacts being significant and unavoidable. In each issue area section, this EIR identifies mitigation measures that generally are performance standards–based, which SANDAG shall and other implementing agencies "can and should" comply with in mitigating project-specific impacts. Where applicable, SANDAG then identifies examples of project-level mitigation measures that may be required by lead agencies to meet performance standards. In project-specific CEQA reviews, lead agencies may also identify other comparable measures capable of reducing impacts below the specified threshold. SANDAG cannot require other lead agencies to adopt mitigation, and it is ultimately the responsibility of the lead agency to determine and adopt project-specific mitigation as appropriate and feasible for each individual project. As a result, this EIR concludes significant and unavoidable for many impacts where SANDAG does not have authority to implement or enforce project-specific mitigation measures or where state or local action might be needed to reduce impacts to less-than-significant levels.

- **"Cumulative Analysis"** identifies the cumulative impacts of the proposed Plan for each issue area. The following describes the approach for the cumulative analysis in more detail.

CUMULATIVE ANALYSIS

The cumulative impact analysis considers the cumulative effects of past, present, and reasonably foreseeable future projects combined with the contribution of regional growth and land use change and transportation network improvements and programs included in the proposed Plan to these effects. The CEQA Guidelines define a cumulative impact as one in which two or more individual effects, when considered together, are considerable or

can compound or increase other environmental impacts. Individual effects may be changed resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related discusses past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (CEQA Guidelines Section 15355).

Cumulative Impact Methodology

CEQA Guidelines Section 15130 describes the requirements for the discussion of cumulative impacts in an EIR, and states that an EIR will discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. The discussion must reflect the severity of impacts and their likelihood of occurrence, but the discussion need not provide as much detail as is provided for the impacts attributable to the project alone. In addition, the CEQA Guidelines allow for a project's contribution to be rendered less than cumulatively considerable with implementation of appropriate mitigation.

According to Section 15130(b) of the State CEQA Guidelines, cumulative impact analysis may be conducted using one of two methods: the list method, which includes "a list of past, present, and probable activities producing related or cumulative impacts," or the plan method, which uses "a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact." For the purposes of this EIR, a combination of both methods is used for the cumulative analysis, as described below. To analyze the cumulative effects of regional growth and land use and transportation network improvements and programs included in the proposed Plan per CEQA requirements, the following approach for each issue topic was applied:

1. Summarize the impacts on the resource of regional growth and land use change and transportation network improvements included in the proposed Plan.
2. Summarize projected impacts in related plans and impacts of probable future projects within the geographic scope of the cumulative impact analysis.
3. Discuss combined impacts and conclude whether cumulative impacts are significant; then explain whether the proposed Plan's incremental contribution to any significant cumulative impacts is cumulatively considerable and therefore significant.
4. Where the incremental contribution to a significant cumulative impact is cumulatively considerable, list mitigation measures that would reduce the incremental effects and determine whether they would make the impact less than significant. If none exist or identified mitigation measures would not make the impact less than significant., conclude that the contribution to the cumulative impact remains significant and unavoidable.

Cumulative Projects

Several existing and probable future large-scale projects in the San Diego region are forecast to occur within the 2050 timeframe of the proposed Plan and could contribute to significant cumulative impacts. Past projects include those that have been recently completed but were not necessarily considered in the baseline for the proposed Plan and have ongoing impacts with the potential to combine with the impacts of other projects. Present and probable future projects include those that are under construction, in a preconstruction phase, or show a level of assurance that the project will move forward, such as allocated funding or movement through the necessary planning process for project approval. These projects have independent utility from the proposed Plan and do not rely on it for their justification. These projects are described below.

CALIFORNIA HIGH-SPEED RAIL LOS ANGELES–SAN DIEGO SEGMENT

The California High-Speed Rail Authority (HSRA) has developed plans for an 800-mile system that includes nine corridors connecting California's major metropolitan areas. Trains would reach speeds in excess of 200 miles per hour (mph) in more rural areas on a dedicated, fully grade-separated system, making it possible to travel from San Diego to Los Angeles in less than 80 minutes and San Diego to San Francisco in less than 4 hours. Figure 4-1 depicts a statewide map of the California High Speed Rail Train (HST) project, as well as four options for the San Diego region.

The High Speed Rail project has independent utility and is not a component of the proposed Plan. Responsibility for the HST belongs to HSRA; SANDAG does not have authority over the alignment, design, or funding of the HST.

The high-speed corridor serving the San Diego region runs from southwest Riverside County along the I-15 corridor. The Los Angeles to San Diego section is being considered to identify the best high-speed configuration through the Inland Empire, as well as interim improvements that can upgrade regional rail service in the corridor before completion of Phase I. When complete in Phase 2, this section would close a major rail gap between the two counties. A proposed schedule for implementation is not available and timing could depend on funding (HSRA 2024).

MIDWAY RISING SPECIFIC PLAN

The City of San Diego (City) is preparing a Subsequent Environmental Impact Report (SEIR) to evaluate the environmental impacts of the proposed redevelopment of the existing San Diego Sports Arena site. On Oct. 4, 2021, the City of San Diego issued a Notice of Availability (NOA) to lease 48.5 acres of surplus property located at the San Diego Sports Arena site in the Midway District (City of San Diego n.d.-a). A Draft SEIR was released for public review on March 25, 2025.

To ensure that the Sports Arena Community Village would be planned comprehensively, the 2018 Midway-Pacific Highway Community Plan (2018 Community Plan) identified the need to prepare either a Specific Plan or a Master Planned Development Permit, and therefore, a Specific Plan has been proposed. The Midway Rising Specific Plan (Specific Plan) provides supplemental development regulations that work with the underlying base zones and development regulations in the San Diego Municipal Code (SDMC) to ensure the implementation of the vision. The Specific Plan's purpose is to provide guidance and direction on land use, site planning, building, public space, and landscape design to ensure that future development of the Project site results in a pedestrian- and transit-oriented mixed-use entertainment destination. The Specific Plan allows for the redevelopment of the 49.23-acre site with a mix of uses, including entertainment, retail, residential, recreational, and public park uses.

The Specific Plan would provide up to 4,254 housing units, including up to 2,000 affordable units restricted to households with incomes less than 80 percent area median income, to provide a range of housing opportunities in a variety of sizes and number of bedrooms. The Specific Plan allows for the development of a multi-purpose entertainment center that may host a range of activities. The entertainment center would reach a maximum height of 165 feet and replace the existing San Diego International Sports Arena. The entertainment center would host a variety of entertainment events including but not limited to concerts, family shows, sporting events, motorsports, comedy, and musical and artistic entertainment productions. The Project would also include a maximum of 130,000 square feet of commercial retail uses, excluding the entertainment center and outdoor retail markets, such as farmers markets. Commercial uses may include restaurants, shops, and supporting neighborhood retail.

NAVY OLD TOWN REVITALIZATION PROJECT

The US Department of the Navy (Navy) prepared a draft environmental impact statement (EIS) to evaluate the potential environmental consequences of the proposed modernization of Naval Base Point Loma Old Town Campus (OTC), San Diego, California. OTC is home to the Naval Information Warfare Systems Command (NAVWAR) (Navy 2021). The Navy analyzed five alternatives and identified Alternative 4—high density

development with a transit center—as its preferred alternative. The proposed modernization of NAVWAR's facilities on OTC would include demolition, construction, and renovation of buildings, utilities, and infrastructure. Modernization would be accomplished in either of two ways:

1. Navy redevelopment: A Navy-only project that would construct new or renovate existing NAVWAR facilities at OTC. No public-private or mixed-use development would occur on OTC under this scenario.
2. Public-private redevelopment: Collaboration between the Navy, the private sector, and possibly other government agencies to finance and construct new NAVWAR facilities at OTC. Development would include new facilities for NAVWAR and a range of private mixed-use development (e.g., residential, office, retail, hotel). The developers of the mixed-use development would pay for construction of NAVWAR facilities in exchange for the opportunity to develop the remaining OTC land. Two of the action alternatives analyzed in this EIS include consolidation of a transit center to OTC.

SAN DIEGO INTERNATIONAL AIRPORT DEVELOPMENT PLAN

Each year, more than 25 million air passengers use the San Diego International Airport (SDIA).

To maximize the airport's operational efficiency and make the most of the airport's 661-acre footprint, SDIA is moving forward with its next master planning phase, the airport development plan (ADP). The ADP provides a development framework to implement improvements that will enable the San Diego County Regional Airport Authority to accommodate future demand for air travel that is anticipated to occur at SDIA with more modern, efficient, and comfortable facilities. The ADP is considered a probable future project for the cumulative impact analysis.

The primary components of the project are the replacement of the existing Terminal 1, a new administration building, and a new airport access roadway with new bicycle and pedestrian infrastructure. As part of the Terminal 1 replacement, a new parking structure has been constructed. The parking structure was completed in 2024, and Phase 1A of Terminal 1 is anticipated to be completed in Summer 2025. Phase 1B is scheduled to be completed in 2028. Ultimately, the number of gates at SDIA would increase by 62 gates (SDCRAA 2025).

CITY OF SAN DIEGO PURE WATER NORTH CITY PROJECT

The City of San Diego is implementing the North City Project, which is the first phase of the Pure Water San Diego Program. It involves the production of 30 million gallons per day of purified water. The North City Project will expand the existing North City Water Reclamation Plant (NCWRP) and construct an adjacent North City Pure Water Facility (City of San Diego n.d.-b). Purified water will be conveyed by the North City Pure Water Pump Station to the Miramar Reservoir for storage. Other project components include a new pump station and forcemain to deliver additional wastewater to the NCWRP, a brine/centrate discharge pipeline, upgrades to the existing Metro Biosolids Center, a new North City Renewable Energy Facility at the NCWRP, and a new Landfill Gas Pipeline between the Miramar Landfill gas collection system and the NCWRP.

The North City Project includes a variety of facilities located throughout the central coastal areas of San Diego County in the North City geographic area. The pure water facility and pump station are located within the corporate boundaries of the City of San Diego and is anticipated to be completed in 2025.

PORT OF SAN DIEGO DEVELOPMENT PROJECTS

The San Diego Unified Port District (Port) is undertaking a comprehensive update to its existing Port Master Plan (PMP). The Port Master Plan Update (PMPU) provides the official goals and planning policies, as well as water and land uses, for development and conservation of the District lands, tidelands, and submerged lands (collectively, Tidelands or District Tidelands) in eight of the District's 10 planning districts that comprise the PMPU area. The PMPU would implement the approximately 30-year planning vision through a series of goals, objectives, and policies that set the foundation and direction for planned improvements and development standards, as established within the following six elements: Water and Land Use; Mobility; Ecology; Safety and Resiliency;

Environmental Justice; and Economics. The PMPU identifies planned improvements, including appealable and non-appealable development, for each planning district and would include new hotel, convention, restaurant, and retail space, improvements to public access and recreational resources, and in-water features, such as additional recreational boat berthing space, commercial fishing berthing space, and anchorages (Port 2024a).

The three planning districts not being updated as part of the PMPU are Planning District 5: National City Bayfront, Planning District 6: Chula Vista Bayfront, and the Pond 20 portion of Planning District 7: South Bay. These planning districts are not part of the proposed PMPU because no changes to those planning districts, or portions thereof, are proposed by the PMPU. The National City Bayfront is planned under the National City Bayfront Projects & Port Master Plan Amendment program, which extends into the City of National City's jurisdiction and was completed prior to the approval of the PMPU and certification of the PMPU PEIR. The Chula Vista Bayfront has a recently approved land use plan for the entire planning district that is currently under implementation. No changes are proposed to that land use plan. Finally, the District-owned property in the southern portion of Pond 20 was evaluated under the Wetland Mitigation Bank at Pond 20 Project EIR and Port Master Plan Amendment for the creation of a wetland mitigation bank and to incorporate the property into the current PMP. The Final PEIR was certified by the District's Board of Port Commissioners on April 13, 2021 (Port 2024b). The PMPU would not affect the water or land use designations and the anticipated buildout of these districts. The PMPU was adopted and associated Final PEIR certified by the Board of Port Commissioners on February 28, 2024, and submitted to the California Conservation Corps (CCC) for certification. The PMPU is currently undergoing CCC processing, in accordance with the California Coastal Act.

In addition, in 2016, the Port adopted a redevelopment plan for the Tenth Avenue Marine Terminal, which would involve a variety of infrastructure investments that may be undertaken over the long term to accommodate an increase of the marine terminal's capabilities and capacity. These include up to five gantry cranes, additional and consolidated dry bulk storage capacity (which may include a new 100,000-square-foot dry bulk structure or an equivalent vertical storage facility), enhancements to the existing conveyor system, demolition of the molasses tanks and Warehouse C, additional open storage space, establishment of an on-dock rail facility, a centralized gate facility, and the Demolition and Initial Rail Component. The Final EIR for this project was certified on December 13, 2016 (Port 2016).

OTHER PROBABLE PROJECTS

For some resource topic areas, additional large-scale probable future projects are also considered in the cumulative impact analysis. For example, for cumulative aesthetics and visual resources impacts, impacts of future long linear projects, such as rail pipeline and energy transmission infrastructure, are considered.

REGIONAL PLANNING DOCUMENTS

The cumulative impact analysis considers documents, studies, and plans that have been produced by various agencies and organizations describing or evaluating conditions contributing to cumulative impacts. For some of these documents, EIRs or EISs have been prepared that describe environmental impacts of plan implementation. Available information in adopted plans or certified environmental documents is used to describe existing and future conditions that may contribute to cumulative impacts. In some cases, planning documents are included that have been prepared by local jurisdictions, including cities and other agencies that have applicability to planning efforts or other topic areas throughout the region, such as local general plans and their various elements, resource protection ordinances, and climate action plans. In some cases, the impacts of local plans are already addressed and accounted for in SANDAG and Southern California Association of Governments (SCAG) EIRs. Documents that have application across multiple resource topics are listed below; additional planning documents are referenced when used within a specific resource topic analysis.

- Southern California Association of Governments: 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (SCAG 2024);

- California Air Resources Board: 2022 Scoping Plan for Achieving Carbon Neutrality (CARB 2022);
- California Department of Transportation: California-Baja California Border Master Plan (Caltrans 2021);
- County of San Diego Climate Action Plan (County of San Diego 2024);
- Unified Port of San Diego: San Diego Unified Port District Master Plan (Port 2024c), Port District Master Plan Update (Port 2024a);
- San Diego County Regional Airport Authority: Regional Aviation Strategic Plan (SDCRAA 2011);
- San Diego County Regional Airport Authority: Regional Aviation Strategic Plan Implementation Report (SDCRAA 2021);
- San Diego International Airport: Airport Master Plan (SDCRAA 2008); Aviation Activity Forecasts (SDCRAA 2019);
- 2021 Regional Transportation Plan/Sustainable Communities Strategy (SANDAG 2021a) and associated EIR (SANDAG 2021b);
- US Environmental Protection Agency: The US–Mexico Border Environmental Program: Border 2025 (EPA 2021);
- US Marine Corps: MCB Camp Pendleton Integrated Natural Resources Management Plan (US Marine Corps 2024); MCAS Miramar Integrated Natural Resources Management Plan (US Marine Corps 2018);
- US Bureau of Land Management: Eastern San Diego County Resource Management Plan (BLM 2007);
- US Department of Agriculture: Cleveland National Forest Plan (USFS 2006);
- 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan (IMPLAN 2013);
- San Diego County Water Authority Regional Water Facilities Optimization and Master Plan Update (SDCWA 2024); and
- San Diego Gas & Electric Company 2012 Long-Term Procurement Plan (SDG&E 2012).

GROWTH PROJECTIONS

The cumulative impact analysis considers population projections gathered from a variety of sources, in addition to the projections contained in adopted plans, to understand and characterize the cumulative setting. Population projections include:

- SANDAG Series 15 Regional Growth Forecast used as the basis for proposed Plan (SANDAG 2024),
- SCAG's 2024 RTP/SCS Growth Forecast (SCAG 2024),
- California Department of Finance Population Projections (DOF 2024), and
- 2021 Border Master Plan (Caltrans 2021).

Population projections from these sources are provided in Table 4-1 for the 2035 and 2050 horizon years.

Table 4-1 Growth Projections Considered in the Cumulative Impact Analysis

Region	Population		
	2022	2035	2050
SANDAG	3,287,306	3,404,362	3,400,250
SCAG region	18,827,000	19,946,000	20,909,000
Baja California	3,710,000	4,376,364	5,142,727
State of California	39,146,273	40,351,593	41,655,829

Sources: SANDAG 2024; SCAG 2024, DOF 2024; Caltrans 2021; Institute of the Americas 2025.

GEOGRAPHIC SCOPE

The geographic scope defines the area in which the impacts of the proposed Plan are analyzed in combination with similar impacts of cumulative projects or impacts associated with approved planning documents to determine if cumulative impacts would occur. For the purposes of this EIR, the geographic scope for cumulative impacts analysis is shown in Table4-2. The cumulative impact analysis section for each cumulative impact topic explains why the specific geographic scope was selected.

Table 4-2 Topic-Specific Geographic Scope and Cumulative Impacts

Cumulative Impact Topic	Geographic Scope
Aesthetics and Visual Resources	California
Agriculture and Forestry Resources	Southern California/Northern Baja California
Air Quality	Southern California/Northern Baja California
Biological Resources	Southern California/Northern Baja California
Cultural Resources	Southern California/Northern Baja California
Energy	Southern California/Northern Baja California
Geology, Soils, and Paleontological Resources	Southern California/Northern Baja California
Greenhouse Gas Emissions	Global
Hazards and Hazardous Materials	Southern California/Northern Baja California
Hydrology and Water Quality	Southern California/Northern Baja California
Land Use and Planning	Southern California
Mineral Resources	Southern California/Northern Baja California
Noise and Vibration	Southern California/Northern Baja California
Population and Housing	Southern California/Northern Baja California
Public Services, Recreation and Utilities	Southern California/Northern Baja California
Transportation	Southern California/Northern Baja California
Tribal Cultural Resources	Southern California/Northern Baja California
Water Supply	State of California/Lower Colorado River Basin/Northen Baja California
Wildfire	Southern California/Northern Baja California

Note: Southern California generally includes the areas encompassed by SANDAG and SCAG jurisdictions. SCAG represents six Southern California counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) over an area covering more than 38,000 square miles. Northern Baja California generally includes the municipalities of Tijuana, Tecate, Playas de Rosarito, parts of Mexicali, and Ensenada.

Source: Data modeled by Ascent in 2025.

4.1 AESTHETICS AND VISUAL RESOURCES

This section evaluates the potential aesthetics and visual resources impacts of the proposed Plan.

4.1.1 Existing Conditions

The following discussion provides a comprehensive overview of the current visual landscape character in the region and addresses key elements that define the visual environment, including the overall visual character of the region, scenic vistas, and visual resources. These resources include natural landforms that enhance the region's aesthetic appeal and designated scenic highways that contribute to the visual experience for residents and visitors. Additionally, the discussion examines light and glare impacts and emphasizes the importance of preserving dark skies, which are essential for maintaining the natural nighttime environment. Together, these elements offer a detailed understanding of the region's existing visual conditions and their significance.

REGIONAL CHARACTER

The San Diego region is a visually diverse landscape rich in natural open space, topographic resources, scenic highways, scenic vistas, and other distinct aesthetic resources. Its proximity to the Pacific Ocean not only shapes its natural setting but also reinforces its identity as a region defined by coastal and marine influences. Recent coastal restoration projects have further enhanced these visual and ecological features. The topography contributes greatly to the overall character and quality of the existing visual setting. In general terms, the San Diego region is characterized by four physiographic areas: the low-lying coastal plain, foothills, mountains, and lowlands of the desert. The visual character of each is described briefly below.

The coastal plain ranges in elevation from sea level to approximately 600 feet above mean sea level (AMSL) and includes beaches; bays; shoreline; coastal canyons; and the many rivers, streams, and other watercourses that drain inland areas and eventually reach the coastal environment and waters. The coastal plain provides expansive views of scenic resources in all directions, with the coastline visible from regional transportation facilities, including the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor and Interstate (I) 5. Recent improvements to the LOSSAN corridor and ongoing coastal bluff stabilization efforts aim to preserve these scenic vistas. Much of the coastal plain is developed with urban land uses and generally includes a dense development pattern consisting of a mix of single- and multifamily development on varying-sized lots with supporting commercial uses, including office space and neighborhood-serving or regional retail establishments, along major corridors. The circulation systems in these coastal communities are essentially based around a grid system with more curvilinear street patterns occurring along the hillsides. Agricultural uses in the coastal area include row crops, field flowers, and greenhouses.

The foothills of the San Diego region range in elevation from 600–2,000 feet AMSL and are characterized by rolling to hilly uplands that contain frequent narrow, winding valleys. This area is traversed by several rivers, as well as a number of intermittent drainages. Several side canyons incise the coastal plan and create major drainages that generally flow westward toward the coast. Major rivers in the San Diego region include the Santa Margarita, San Luis Rey, San Dieguito, San Diego, Sweetwater, Otay, and Tijuana Rivers. Major coastal waterbodies include Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito Lagoon, Los Peñasquitos Lagoon, Mission Bay, San Diego Bay, Tijuana River Estuary, and the Pacific Ocean. Playas/inundation areas/washes are present in areas surrounding Lake Henshaw, Lake Cuyamaca, Moreno Reservoir, and Lake Hodges. The foothills are also developed with various suburban to semirural development land uses. Most contain a mix of single-family and low-scale multifamily suburban-style development, as well as some commercial and employment uses intended to support the residential uses.

The mountain region ranges in elevation from 2,000–6,000 feet AMSL and features steep-sided mountains that are typically covered with granitic boulders. Lower slopes feature chaparral vegetation. Higher elevations are host to

oak woodlands and coniferous forest. The mountain areas are generally undeveloped with low-density, rural communities scattered throughout, such as Alpine, Pine Valley, Campo, Ramona, and Julian. Wildfire impacts and associated recovery efforts have become a defining aspect of the mountain region's visual and ecological character, influencing vegetation patterns and community resilience planning.

The eastern portion of the San Diego region is in the desert zone. Elevations range from sea level to 3,000 feet AMSL, and the terrain includes mountains, alluvial fans, and desert floor. The majority of this region is part of the Anza-Borrego Desert State Park. The desert region is generally undeveloped and sparsely populated in scattered towns, such as the unincorporated community of Borrego Springs. Notable features include recent renewable energy projects, including solar farms, and native desert habitat preserves and conservation areas. The desert region provides expansive views of the surrounding area, which is characterized by dramatic landforms and native desert habitats.

PANORAMIC VIEWS

The varied topography and wide range of visual features throughout the San Diego region provide many opportunities for panoramic views. These viewsheds highlight the region's natural beauty, encompassing mountains, beaches, the Pacific Ocean, bays, lagoons, canyons, and valleys. In addition, recent coastal restoration projects, urban green space developments, and ongoing conservation efforts have further preserved and enhanced these iconic vistas. Human-made features, such as city skylines, rural communities, parks, and golf courses, also contribute to the visual diversity. In certain areas, renewable energy installations, such as solar and wind farms, have added a contemporary dimension to the visual landscape, blending technological advancement with the region's natural and rural settings.

SIGNIFICANT LANDSCAPE FEATURES

The coastal plain, foothills, mountains, and desert regions each contain numerous scenic resources and significant landscape features that contribute to the San Diego region's overall scenic quality. Major scenic resources in the coastal areas include views of the Pacific Ocean, beaches, bays, lagoons, and harbors. Notable features are San Diego Bay, Mission Bay Park, Los Peñasquitos Lagoon, Batiquitos Lagoon, Agua Hedionda Lagoon, Buena Vista Lagoon, San Elijo Lagoon, and Oceanside Harbor. Recent lagoon restoration projects, such as enhancements at Buena Vista and San Elijo Lagoons, have further preserved these natural resources. Coastal parks, including Border Field State Park, the Tijuana Estuary, Silver Strand State Beach, and Torrey Pines State Reserve and Beach, along with prominent land and water features, such as Cabrillo National Monument on Point Loma, Sunset Cliffs, La Jolla Cove, Soledad Mountain, and the offshore Coronado Islands, remain essential visual resources along the coast.

In the foothills, the prominent visual resources are rivers, lakes, open bodies of water, and parks, such as the Otay River, Sweetwater River, San Diego River, Upper and Lower Otay Lakes, Sweetwater Reservoir, Lake Hodges, San Vicente Reservoir, Mission Trails Regional Park, Santee Lakes Regional Park, Tecolote Canyon, Los Peñasquitos Canyon Preserve, Old Town State Historic Park, and Presidio Park. Efforts to preserve open space and improve trail systems in these areas have expanded recreational opportunities while maintaining the scenic integrity of the foothills.

In the mountain region, scenic resources consist of large park areas, such as the Cleveland National Forest, Agua Tibia Wilderness Area, San Mateo Canyon Wilderness, Santa Rosa Mountains State Wilderness, Palomar Mountain State Park, and Cuyamaca Rancho State Park, and large water bodies, such as El Capitan Reservoir, Barrett Lake, Lake Morena, and Lake Cuyamaca. Recent fire recovery and reforestation efforts in the Cleveland National Forest and other areas have contributed to restoring the region's natural beauty and biodiversity.

The desert region is primarily located within Anza-Borrego Desert State Park, the largest California State Park. The desert region includes expansive scenic views, dramatic landforms, desert valleys, and native desert habitat. In recent years, renewable energy projects and conservation initiatives have sought to balance development with the preservation of the desert's unique character. The wide range of visual features in the desert region helps define communities, provides visual relief from urban development, and offers recreational opportunities.

In addition to the visual resources described above, the San Diego region's scenic quality is enhanced by its many parks, golf courses, and preserved open spaces. Urban parks, such as Balboa Park and Waterfront Park, provide green spaces in developed areas, whereas regional parks, such as San Dieguito River Park and Tijuana River Valley Regional Park, offer scenic trails and ecological preserves. Agricultural lands, conservation areas, and undeveloped tracts further protect the region's natural beauty, ensuring a balance between development, recreation, and conservation.

OPEN SPACE AND PROTECTED AREAS

A significant part of the San Diego region's visual character can be attributed to the large amount of open space and protected areas. Recent data indicates that approximately 75,000 acres of green space in the region have been conserved or enhanced as parks and native lands (San Diego Foundation 2020). In addition, new conservation initiatives, such as the Scenic Preservation Overlay Zone in Carlsbad, the Scenic Resources and Open Space Network in Chula Vista, and the Coastal Overlay Zone and Environmentally Sensitive Regulations in San Diego, have been implemented to safeguard critical habitats and biodiversity, ensuring the continued preservation of these open spaces for future generations (City of Carlsbad 2019; City of Chula Vista 2005; City of San Diego 2024).

The San Diego region also contains large areas of undeveloped military land at Marine Corps Base Camp Pendleton and Marine Corps Air Station Miramar. Although these areas are not accessible to the general public, they contribute significantly to the overall undeveloped nature of those portions of the San Diego region, providing important ecological buffer zones and contributing to regional biodiversity conservation efforts.

The western third of the San Diego region contains the bulk of the region's population and urban areas, although open spaces are interspersed in this area as well. Ongoing urban planning initiatives, such as the Hillside Overlay Zone in El Cajon, the Viewshed Protection program in Escondido, and the Scenic Area Overlay Zone in Solana Beach, emphasize the integration of open space in developed areas, with an increasing focus on creating accessible green spaces, recreational areas, and connecting urban parks to preserve the region's visual quality amid growing development (City of El Cajon 2001; City of Escondido 2012 City of Solana Beach 2013).

STATE SCENIC HIGHWAYS

The San Diego region includes several officially designated scenic highways that are protected under the California Scenic Highway Program, administered by the California Department of Transportation (Caltrans). Designated scenic highways are located in areas of outstanding natural beauty and receive special conservation measures to preserve their scenic views and protect them from encroaching development. These highways continue to serve as important corridors that showcase the region's diverse landscapes—from coastal plains to mountain vistas.

The San Diego region also contains 11 highways identified by the program as eligible scenic highways. These highways are considered significant scenic resources but have not yet been officially designated due to the absence of a locally adopted scenic corridor protection program or a formal application to Caltrans. Efforts to expand scenic highway designations have been encouraged in recent years, particularly to enhance conservation and tourism initiatives.

The highways in the San Diego region officially designated or identified as eligible scenic highways by Caltrans are listed in Table 4.1-1 and shown in Figure 4.1-1. In addition, local jurisdictions have increasingly collaborated with state agencies to implement land use policies and corridor-management plans that further safeguard these scenic resources.

Table 4.1-1 Caltrans-Designated and Eligible Scenic Highways in the San Diego Region

Highways	Officially Designated
SR 52	From near Santo Road to near Mast Boulevard
SR 75	San Diego–Coronado Bay Bridge and the Silver Strand extending from Avenida del Sol in Coronado south to the Imperial Beach city limit
SR 78	From the west to the east boundary of Anza-Borrego State Park
SR 163	From the north to the south boundary of Balboa Park
SR 125	From I-8 south to SR 94
Eligible for Scenic Designation	
I-5	From the international border near Tijuana to SR 75 (Palm Avenue) at the south end of San Diego Bay and from San Diego opposite Coronado to SR 74 near San Juan Capistrano (Orange County)
I-8	From Sunset Cliffs Boulevard to SR 98 near Coyote Wells (Imperial County).
I-15	From SR 76 near San Luis Rey to SR 91 near Corona (Riverside County).
SR 52	From I-5 east of La Jolla to SR 67 near Santee
SR 75	From I-5 in Palm City/Nestor to 9th Street in Imperial Beach
SR 76	From I-5 near Oceanside to SR 79 near Lake Henshaw
SR 78	From SR 79 near Santa Ysabel to SR 86 passing Julian
SR 79	From I-8 near Descanso to SR 78 near Julian and from SR 78 near Santa Ysabel to SR 371 near Aguanga (Riverside County)
SR 94	From SR 125 near Spring Valley to I-8 west of Jacumba
SR 163	From Ash Street to I-8
SR 209	From Point Loma to I-5

Notes: SR= State Route; I = Interstate.

Source: Caltrans 2019.

OTHER SCENIC ROUTES

In addition to the state scenic highways, the *County of San Diego General Plan Conservation and Open Space Element* (County of San Diego 2011) identifies other scenic roadways and highways worthy of protection in the unincorporated county. A list of these highway segments is presented in Table 4.1-2.

Table 4.1-2 County Scenic Highway System

Route	Segment
SR 78	Wynola Road east to Imperial County line (excluding portion in Anza-Borrego Desert State Park)
SR 125	SR 94 to I-8
I-5	Oceanside city limits north to Orange County line
I-8	El Cajon city limits to SR 79
I-15	Escondido city limits north to Riverside County line
SR 67	Santee city limits to SR 78 (excluding portion in the city of Poway)
SR 76	Oceanside city limits east to I-15
SR 76	I-15 east to SR 79
Bear Valley Parkway and SR 78	Escondido city limits southwest to Via Rancho Parkway
SR 78	Via Rancho Parkway to SR 79, except portions in the city of San Diego

Route	Segment
SR 79	Riverside County line to SR 76
SR 94	SR 125 to I-8
SR 188 (Tecate Road)	United States–Mexico border north to SR 94
Sunrise Highway (County Route S1)	Old Highway 80 to SR 79 through the Cleveland National Forest
Old Overland Stage Route (County Route S2)	Imperial County line north to SR 78
Lilac Road and Valley Center Road (County Route S6)	SR 76 to SR 76
San Felipe Road, Montezuma Valley Road, Pal Canyon Road, Peg Leg Road, and Borrego Salton Seaway (County Route S22)	SR 79 east to Imperial County line
Avocado Boulevard	SR 94 to El Cajon city limits
Bonita, San Miguel, Guajolote, and Sweetwater River Road	I 805 north to SR 94 (excluding portion in the city of Chula Vista)
Buckman Springs Road	Lake Morena Drive to SR 94
Camino del Rey west to Lilac Road	Oceanside city limits east to Vista Way
Dehesa Road	El Cajon city limits to Tavern Road
Elfin Forest Road/Harmony Grove Road	San Marcos city limits to Escondido city limits
El Monte Road	El Capitan Reservoir to Lake Jennings Park Road
Fuerte Drive	I-8 to Chase Avenue
Gird, Reche, Live Oak Park, and Mission Roads	SR 76 north and east to I-15
Harbison Canyon Road	Arnold Way to Dehesa Road
Highland Valley Road	San Diego city limits to SR 67
Honey Springs Road	SR 94 north to Lyons Valley Road
Japatul Road	Lyons Valley Road to I-8
La Cresta Road	Greenfield Drive to La Cresta Boulevard
Lake Wohlford Road	Valley Center Road east (Escondido city limits) to Valley Center Road (excluding portion within the City of Escondido)
Lake Morena Drive	Buckman Springs Road north to Morena Lake
Lyons Valley Road	SR 94 to Cleveland National Forest
Mission and Green Canyon Roads	SR 76 north and east to Reche Road
Mountain View Road/Francis Drive	Boulevard to Harbison Canyon Road
Oak Drive	Lake Morena Drive north to Buckman Springs Road
Old Highway 80	SR 79 (Pine Valley) to I-8 (Jacumba)
Olive Hill Road	SR 76 to planning area boundary
Otay Lakes Road	Chula Vista city limits to SR 94
Potrero Valley Road	SR 94 to Potrero County Park
San Vicente and Ramona Oaks Road	SR 78 to Cleveland National Forest

Notes: SR= State Route; I = Interstate.

Source: County of San Diego 2011.



Source: Data downloaded from SanGIS and the U.S. Department of Transportation in 2025; adapted by Ascent in 2025.

Figure 4.1-1 Designated State and Eligible California Scenic Highways

Sunrise Highway is a U.S. Forest Service (USFS) Scenic Highway designated under the National Scenic Byway (NSB) Program. Sunrise Highway is located between the Cuyamaca Reservoir and Laguna Junction and provides views of mountain meadows, forests, and the Anza-Borrego Desert. It is the only nationally designated roadway in the San Diego region.

The City of San Diego also maintains scenic routes throughout the city to afford scenic views of the community and to link points of visitor interest. Some of the other local jurisdictions in the San Diego region have adopted scenic highway general plan elements or programs, such as the Scenic Highway Overlay Zone in Coronado, the Scenic/Visual Corridor Overlay in Encinitas, and the Scenic Park Overlay District in Oceanside.

LIGHT AND GLARE

There are two typical types of light intrusion. First, light emanates from the interior of structures and passes out through windows. Second, light is produced by exterior sources, such as streetlights, security lighting, landscape lighting, and illuminated signage. Light spillover is typically defined as the presence of unwanted or misdirected light on properties adjacent to the property being illuminated. Light spillover can be a nuisance to adjacent areas, diminish views of the clear night sky, and negatively impact wildlife by disrupting natural behaviors.

Glare is described as the distraction, discomfort, or impairment of vision caused by extreme contrasts in the field of vision, where light sources, such as sunlight, lamps, luminaires, or reflecting surfaces, are excessively bright in relation to the general brightness of surroundings. Glare also results from sunlight reflecting off flat building surfaces, with glass typically contributing the highest degree of reflectivity.

The existing light and glare conditions in the San Diego region vary depending on the area. Urbanized areas tend to produce high levels of nighttime light due to dense development and extensive lighting for transportation and commercial activities. Daytime glare results from reflective materials, such as glass building façades and wide stretches of asphalt roads, whereas shadows from tall buildings can affect adjacent outdoor land uses.

Rural areas tend to produce low levels of nighttime light and low to moderate levels of daytime glare because agricultural structures and paved roads produce some glare. Shadows from taller structures are very low due to the distance between structures (County of San Diego 2011).

DARK SKIES

Dark skies are a natural resource in San Diego County and are essential for the study of celestial bodies. Rural areas of the San Diego region contain dark skies with minimal light pollution from urban areas, making them ideal for astronomical research and stargazing. Two world-class observatories, Palomar Observatory and Mount Laguna Observatory, are located in the San Diego.

Dark skies are not only a scientific resource but also an important aspect of the rural character in the San Diego region. Efforts to protect these skies have intensified, with local jurisdictions and communities implementing dark-sky ordinances and supporting initiatives, such as the designation of International Dark Sky Parks and Reserves. These measures aim to mitigate light pollution, safeguard wildlife, and enhance the natural nighttime environment for residents and visitors alike. The preservation of dark skies continues to play a vital role in maintaining the balance between development and environmental stewardship in San Diego County.

4.1.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act of 1968 (16 U.S. Code [USC] Sections 1271–1287) consists of Public Law 90-542 (October 2, 1968) and amendments. The act established a method for providing federal protection for some of the country's remaining free-flowing rivers, preserving them and their immediate environments for the use and enjoyment by present and future generations. Eligible rivers can be designated as Wild River Areas, Scenic River Areas, or Recreational River Areas. Recreational River Areas are "those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past." The Wild and Scenic Rivers Act, under Section 10, includes management direction for designated rivers. Section 10(a) states the following:

> "…each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its aesthetic, scenic, historic, archaeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area."

United States Department of Transportation Act, Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 (49 USC Section 303) was enacted to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) requires a comprehensive evaluation of all environmental impacts resulting from federal-aid transportation projects administered by the Federal Highway Administration (FHWA), Federal Transit Administration, and Federal Aviation Administration that involve the use of or interference with use of the following types of land:

- public park lands
- recreation areas
- wildlife and waterfowl refuges
- publicly or privately owned historic properties of federal, state, or local significance.

This evaluation, called the Section 4(f) statement, must be sufficiently detailed to permit the U.S. Secretary of Transportation to determine that:

- there is no feasible and prudent alternative to the use of such land
- the program includes all possible planning to minimize harm to any park, recreation area, wildlife and waterfowl refuge, or historic site that would result from the use of such lands
- if there is a feasible and prudent alternative, a proposed project using Section 4(f) lands cannot be approved by the Secretary; or if there is no feasible and prudent alternative, the proposed project must include all possible planning to minimize harm to the affected lands.

Detailed inventories of the locations and likely impacts on resources that fall into the Section 4(f) category are required in project-level environmental assessments.

In August 2005, Section 4(f) was amended to simplify the process for approval of projects that have only minimal impacts on lands protected by Section 4(f). Under the new provisions, the U.S. Secretary of Transportation may find such a minimal impact if consultation with the state historic preservation officer results in a determination

that a transportation project will have no adverse effect on the historic site or that there will be no historic properties affected by the proposed action. In such instances, analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is complete following consultation.

National Trails System Act

The National Trails System Act of 1968 established a network of national recreation, scenic, and historical trails. National scenic trails are established to "provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of areas through which such trails may pass. National scenic trails may be located to represent desert, marsh, grassland, mountain, canyon, river forest and other areas, as well as landforms which exhibit significant characteristics of the physiographic regions of the Nation" (16 USC Section 1242). Currently, there are 11 national scenic trails, 21 national historic trails, and more than 1,300 national recreation trails in the United States (NPS 2023). Regardless of trail type, measures may be included to protect and preserve the visual resources associated with these trails. National scenic and historical trails are normally managed by the National Park Service (NPS), USFS, or the Bureau of Land Management (BLM). However, some trails may fall under multiple jurisdictions and land ownership due to the geographic extent. This requires the responsible agencies and landowners to manage the trails in a collaborative process.

A portion of the Pacific Crest Trail (PCT), which is one of the 11 national scenic trails established under the National Trails System Act of 1968, passes through San Diego County. The PCT begins at the United Sate–Mexico border near Campo, in southeastern San Diego County, and traverses approximately 133 miles through the county before continuing northward through California, Oregon, and Washington. The portion of the trail that passes through San Diego County has diverse landscapes, including the Laguna Mountains, Anza-Borrego Desert State Park, and the Cleveland National Forest. These areas offer hikers a range of environments, from desert expanses to forested mountain regions (PCTA n.d.).

Federal Land Policy and Management Act

The Federal Land Policy and Management Act requires federal agencies to manage, protect, and minimize damage to scenic, visual, and aesthetic resources located on public lands. BLM uses a visual resource management system to manage the resources under its jurisdiction. As required by the Federal Land Policy and Management Act, the evaluation of areas managed by BLM that are potentially affected by a project shall consider the rules or guidelines specified under the visual resource management system for the purpose of applying area-specific management priorities.

National Scenic Byway Program

The NSB Program was established by FHWA within the adoption of the Intermodal Surface Transportation Efficiency Act of 1991 (23 USC Section 162). The NSB Program is a grassroots collaborative intended to recognize, preserve, and enhance selected roads throughout the United States. This voluntary program establishes All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. There are 150 designated roads, including the Sunrise Highway, in 46 states.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California Energy Code

The California Energy Code (California Code of Regulations [CCR], Title 24, Part 6) creates standards to reduce energy consumption. The type of luminaries and the allowable wattage of certain outdoor lighting applications are regulated, which can have an effect on the amount of light and glare from lighting in new development.

Scenic Highway Program

Recognizing the growing need to protect the state's scenic beauty, the California State Legislature established the Scenic Highway Program in 1963. This program was added to the California Streets and Highways Code (Section

260 et seq.) with the intent to protect and enhance California's beauty, amenity, and quality of life. The program is administered by Caltrans and consists of laws, incentives, and guidelines that are intended to protect the scenic, historic, and recreational resources in designated scenic highway corridors. A scenic highway corridor is defined by Caltrans as the area of land generally adjacent to and visible from designated scenic highways (Caltrans 2008). It is usually limited by topography or jurisdictional boundaries.

A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon travelers' enjoyment of the view. When a city or county nominates an eligible scenic highway for official designation, it must identify and define the scenic corridor of the highway. Because a scenic corridor is the land generally adjacent to and visible from the highway, it is identified using a motorist's line of vision. A reasonable boundary is selected when the view extends to the distant horizon.

The corridor protection program does not preclude development but seeks to encourage quality development that does not degrade the scenic value of the corridor. Jurisdictional boundaries of the nominating agency are also considered. The agency must also adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. These ordinances constitute the scenic corridor protection program.

State goals for scenic highways include the following (Caltrans 2008):

- Preserve and enhance the unique visual, biological, and ecological resources of the scenic highway corridor.
- Prevent and eliminate (when reasonably possible) conditions that detract from or compromise the quality of the aesthetic resources of the scenic highway corridor.
- Encourage the development and maintenance of park and recreational facilities that contribute to the aesthetic quality of the scenic highway corridor.
- Encourage preservation of historical landmarks adjacent to the scenic highway corridor.
- Encourage community civic groups to create programs that increase community interest in the visual assets of the scenic highway corridor and facilitate the implementation of such programs.

California Coastal Act

Under the California Coastal Act of 1976 (Public Resources Code Section 30000 et seq.), scenic and visual qualities of coastal areas are considered and protected as a visual resource. One of the primary objectives of the Coastal Act is the protection of scenic and visual resources, particularly as viewed from public places. Section 30251 requires that development be sited and designed to protect views to and along the ocean and other scenic coastal areas. New development must minimize the alteration of natural landforms. This policy also requires that development is sited and designed to be visually compatible with the character of surrounding areas. Where feasible, development must include measures to restore and enhance visual quality in visually degraded areas.

Open Space Easement Act of 1974

Cities and counties can use open space easements as a mechanism to preserve scenic resources if they have adopted open space plans, as provided by the Open Space Easement Act of 1974 (Government Code Sections 51070–51097). According to this act, a city or county may acquire or approve an open space easement through a variety of means, including use of public funds.

California Energy Code

The California Energy Code (14 CCR Section 6) creates standards in an effort to reduce energy consumption. The type of luminaries and the allowable wattage of certain outdoor lighting applications are regulated.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

County Scenic Highway System

The *County of San Diego General Plan Conservation Element* continues to identify scenic roadways in unincorporated areas that warrant protection beyond the State Scenic Highway Program. These roadways are designated as "scenic" based on the extent of visible natural landscapes, the aesthetic quality of these landscapes, and the degree to which development affects the traveler's visual experience (County of San Diego 2011). County scenic roadways are listed in Table 4.1 -2.

Dark Sky Ordinance

Sections 59.10–59.115 of the San Diego County Code, known as the Light Pollution Code or Dark Sky Ordinance, were adopted to minimize light pollution for the enjoyment and use of property and the night environment by the citizens of San Diego County. The ordinance also aims to protect the Palomar and Mount Laguna Observatories from light pollution impacts that hinder astronomical research.

The ordinance regulates the types of outdoor light fixtures and hours of outdoor lighting. Areas within 15 miles of either observatory are designated as zone A, subject to the most stringent lighting restrictions, whereas all other areas in the San Diego region are designated as zone B, with slightly less restrictive requirements. Recent amendments have incorporated additional provisions to reduce impacts on wildlife and enhance protections in designated dark-sky communities, such as Julian and Borrego Springs.

This ordinance reflects the county's commitment to preserving the natural nighttime environment, supporting scientific research, and mitigating light pollution impacts on ecosystems and rural character.

Local Design Review Programs

Local jurisdictions maintain design review programs aimed at preserving and enhancing community character. Table 4.1-3 below provides a list of each jurisdiction's program or department that enforces the design review process. These programs include guidelines that address architectural style, view corridor protection, landscaping, parking design, signage, and lighting. Recent updates have focused on incorporating sustainable design practices and accommodating new state housing laws to ensure that development aligns with both aesthetic standards and housing needs.

Table 4.1-3 Design Review Programs and Departments in San Diego County Jurisdictions

Jurisdictions	Design Review Program or Department	Description
Carlsbad	Village and Barrio Design Review Committee	The Design Review Committee worked with residents to help turn existing design standards for multifamily and mixed-use projects in the city's Village and Barrio neighborhoods into objective design standards. Members were selected by the city council in March 2022.
Chula Vista	Development Services Department	The mission of the Development Services Department is to guide the physical development of the city through implementation of the General Plan, development regulations, and building codes. The department is committed to enhancing the quality of life in the community by planning for sound infrastructure and public services, protection of the environment, and the promotion of high-quality social and economic growth.
Coronado	Design Review Commission	The Design Review Commission is a five-member volunteer board appointed by the city council whose appointed task is "...to achieve a beautiful, pleasant, principally residential community by fostering and encouraging good design, harmonious colors and materials, good proportional relationships and generous landscaping, and to protect the health, safety, comfort and general welfare of the citizens of Coronado by providing for a design review process." (CMC 80.00.010).

Jurisdictions	Design Review Program or Department	Description
Del Mar	Design Review Board	The design review process is intended to preserve and improve the scenic amenities of Del Mar and to protect the city's natural environment, its scenic vistas, and the community's overall aesthetic quality. The design review process encourages good design, including the use of harmonious materials and colors, and the appropriate use of landscaping. In addition to protecting the city's scenic and natural resources, the design review process also has the desired effect of protecting property values.
El Cajon	Community Development Department	The Community Development Department provides for orderly growth, development and redevelopment of the city through the application and implementation of the general plan, zoning, and building codes.
Encinitas	Development Planning	Development Planning processes discretionary land use and development applications ensuring compliance with all city zoning standards, plans, policies, guidelines, and regulations, including environmental review and other applicable local and state regulations.
Escondido	Planning Commission	The Planning Commission serves in an advisory capacity to the city council on land use policy planning matters, which guide the future development of the city. The Planning Commission has final approval authority on certain cases and recommends action to the city council on others. Areas of focus include: ▶ conducting a detailed review of all types of development projects and individual land use requests, such as subdivision maps, specific plans, conditional use permits, planned developments, and appeals of administrative approvals, as well as others ▶ assisting the council in the formulation of policies and ordinances that implement the general plan.
Imperial Beach	Design Review Board	The Design Review Board is a city council–appointed board whose members are charged with the review of certain proposed development projects to determine whether the proposed development conforms with the policies of the city's general plan, Certified Local Coastal Program, zoning standards, and design review criteria. The Design Review Board plays a large role in protecting the classic Southern California atmosphere of the city.
La Mesa	Design Review Board	The Design Review Board reviews and approves development plans for compliance with the Urban Design Program and makes recommendations on development proposals and other design-related issues as directed by council.
Lemon Grove	Building Division	The Building Division is responsible for the application and administration of state and local building regulations. These minimum standards are designed to safeguard life, health, property, and public welfare by regulating the design and construction of all buildings and structures in the city of Lemon Grove.
National City	Planning Division	The Planning Division is responsible for reviewing land development proposals, ensuring compliance with the city's general plan, land use code, Local Coastal Program Land Use Plan, Local Coastal Program implementation, State Subdivision Map Act, CEQA, and other applicable local and state regulations.
Oceanside	Plan Review Process	Plan review is the first step in obtaining city-approved plans for construction permits and in ensuring that all projects are constructed safely and properly. It is an important part in the process of construction and alteration of roadways, buildings, and structures. Plan review involves checking and approving plans to ensure they follow all applicable federal, state, and local codes. The purpose of the review is to produce construction documents for use in the field that meet life and fire safety provisions. The Land Development section coordinates with plan review divisions from other city departments to facilitate approval of plans for permit issuance.

Jurisdictions	Design Review Program or Department	Description
Poway	Development Services	The Development Services Department assists current and prospective residents and businesses through design review, permitting, and inspection of new construction and rehabilitation projects to ensure a safe and well-planned community. The Poway Municipal Code and Specific Plans further define the standards and process for development.
City of San Diego	City Planning Department	The project multidisciplinary team reviewers members are staff responsible for determining whether a project complies with state and local land development policies and regulations. The team represents expertise in the building and site engineering, planning, landscape architecture, and architecture disciplines. Each time a project is submitted for review, the appropriate project review team from this group of disciplines is formed. This staff then make recommendations on the proposed project's compliance with applicable development standards and requirements during each review. The development project managers are responsible for process-related matters on development projects. They have responsibility for all formal project communication between the customer and staff and with the community. Development projects are facilitated through the project review process by the development project managers. When design conflicts arise on a project between staff recommendations and a customer's proposal, the development project manager has the responsibility to make sure the conflict is resolved in a timely manner.
San Marcos	Planning Division	The Planning Division promotes and enhances the well-being of residents, visitors, property owners, and businesses of the city of San Marcos by encouraging high-quality development, responsible business practices, protection of natural resources, and implementation of the city's general plan and zoning ordinance.
Santee	Planning and Building Department	The Planning and Building Department carries out a variety of functions related to the orderly development of the city. One of its primary tasks is to ensure that current developments comply with the city's general plan, municipal code, and the California Building Code.
Solana Beach	Community Development, Planning	The Planning Division assists property owners with new construction and remodel projects by processing discretionary applications, such as development review permits, structure development permits, conditional use permits, temporary use permits, and variance requests. The Planning Division also administers and implements the city's general plan, zoning and subdivision regulations, and develops strategies for long-range planning functions.
Vista	Community Development, Planning Division	The Planning Division is tasked with ensuring land uses in Vista comply with city codes, the general plan, and city council and Planning Commission policies. The Planning Division also handles zoning questions, setbacks, and state law requirements. Approval of projects through the planning process is required prior to issuing grading and building permits. The Planning Division handles environmental review of public and private projects. Advanced planning programs provided by the division include a comprehensive general plan update, specific plans and their amendments, and special land use studies as directed by the Planning Commission and city council.
Unincorporated	"B" Designator Community Design Review Area Regulations	The purpose of the "B" Designator Community Design Review Area Regulations is to maintain and enhance the character and identity of county communities. This design review program is in place in areas of Alpine, Bonsall, Fallbrook, Julian, Lakeside, Ramona, Spring Valley, Sweetwater, and Valley Center. The program also applies to properties in the I-15 corridor north of Escondido.

Notes: I = Interstate.

Sources: City of Carlsbad n.d.; City of Chula Vista n.d.; City of Coronado 2023; City of Del Mar n.d.; City of El Cajon n.d.; City of Encinitas n.d.; City of Escondido n.d.; City of Imperial Beach n.d.; City of La Mesa n.d.; City of Lemon Grove n.d.; City of National City n.d.; City of Oceanside n.d.; City of Poway n.d.; City of San Diego n.d.; City of San Marcos n.d.; City of Santee n.d.; City of Solana Beach n.d.; City of Vista n.d.; County of San Diego 2013.

Local Visual Plans and Regulations

Table 4.1-4 presents the visual plans and regulations in the San Diego region. Many local jurisdictions have updated their general plans to strengthen policies that protect and enhance designated scenic highway corridors. For instance, the City of Coronado, which also has a scenic highway element in its general plan and provides implementing measures via the Sign Ordinance and the Scenic Highway Overlay Zone, and has established the Scenic Highway 75 Beautification and Restoration Project. Additionally, the County of San Diego has adopted new elements, such as the *County of San Diego General Plan Environmental Justice Element*, to address equitable access to aesthetic and environmental benefits across communities.

Table 4.1-4 Visual Resource Protection Plans and Regulations Governing Scenic Quality in the San Diego Region by Local Jurisdiction

Jurisdiction	Visual Plan or Regulation	Local Scenic Resources
Carlsbad	Scenic Preservation Overlay Zone from the municipal code designates areas to preserve or enhance outstanding views, flora, and geology, or other unique natural attributes, and historical and cultural resources of Carlsbad. Currently, the Overlay Zone is applied to the El Camino Real corridor (City of Carlsbad Municipal Code [MC], Chapter 21.40).	The following resources were identified in the Carlsbad Draft Local Coastal Program: ▶ Coastal corridor/El Camino Real ▶ Buena Vista Lagoon ▶ Agua Hedionda ▶ Batiquitos Lagoon ▶ Agricultural fields (flower field/strawberry field)
Chula Vista	Scenic Resources and Open Space Network in the general plan designates scenic roadways and open space, including resources that make up most of the Chula Vista Greenbelt (City of Chula Vista MC, Chapter 17).	The following resources were identified in the Chula Vista General Plan: ▶ Otay River ▶ Sweetwater River ▶ Upper and Lower Otay Lakes ▶ Sweetwater Reservoir ▶ San Miguel Mountains ▶ San Diego Bay ▶ Rice Canyon ▶ Long Canyon
Coronado	Scenic Highway Overlay Zone from the municipal code is designed to eliminate unsightly conditions, to protect views along scenic highways, and to retain unusual and attractive natural and human-made features in the scenic corridor (City of Coronado MC, Chapter 86.44).	The following resources were identified in the City of Coronado Local Coastal Program Plan and General Plan Scenic Resources Element: ▶ Coronado Bay Bridge ▶ Silver Strand ▶ San Diego Bay ▶ Pacific Ocean ▶ coastal beaches
Del Mar	Trees, scenic views, and sunlight protection measures recognize that trees, scenic views, and plentiful sunlight contribute to the special character of Del Mar and to the overall quality of life enjoyed by residents, property owners, and visitors. The measures provide processes by which persons may seek to restore said resources (City of Del Mar MC, Chapter 23.5). Bluff, Slope, and Canyon Overlay Zone is designed to protect the health, safety, and general welfare, and to control the development of properties within the designated zone to preserve the scenic sandstone bluffs and related canyons and steep slopes that characterize the area within the zone. The unique landforms in the zone provide	The following resources were identified in the City of Del Mar Community Plan; and Local Coastal Program and Implementing Ordinances : ▶ coastal beaches ▶ Pacific Ocean ▶ San Dieguito River/floodplain ▶ Crest Canyon ▶ Peñasquitos Creek ▶ sandstone bluffs ▶ beach bluffs ▶ canyons and steep slopes

Jurisdiction	Visual Plan or Regulation	Local Scenic Resources
	visual relief and diversity in the city, and they define and separate neighborhoods, enhance the overall quality of Del Mar's local coastal environment, and preserve the economic integrity of Del Mar's visitor-oriented community (City of Del Mar MC, Chapter 30.52).	
El Cajon	Hillside Overlay Zone from the municipal code is designed to minimize the disturbance of the natural terrain and thereby conserve the aesthetic qualities afforded by those areas (City of El Cajon Zoning Ordinance, Chapter 17.170).	The following resources were identified in the City of El Cajon General Plan: ▶ valley floors ▶ hillsides
Encinitas	Scenic/Visual Corridor Overlay designation identifies areas of Encinitas where significant aesthetic and visual resources need to be considered before new development proceeds to ensure that significant viewsheds are retained (City of Encinitas MC, Section 30.34).	The following resources were identified in the *City of Encinitas General Plan Resource Management Element*: ▶ San Elijo Lagoon ▶ Pacific Ocean ▶ Cardiff Beach/coastal beaches ▶ Coast Highway 101 ▶ Manchester Avenue
Escondido	Viewshed protection is designed to preserve and protect existing internal and external view corridors in Escondido, with particular emphasis on ridgelines, unique landforms, and visual gateways and edges of the community (City of Escondido MC, Section 33-1067).	The following resources were identified in the *City of Escondido General Plan*: ▶ Lake Wohlford ▶ San Dieguito River ▶ Elfin Forest Recreation Park ▶ Bear Ridge
Imperial Beach	Open Space Zone in the municipal code provides for land set aside for the protection of sensitive and fragile natural resources and is intended to limit and control access and intensity of uses in these areas, specifically relating to the Tijuana River Valley (City of Imperial Beach MC, Chapter 19.29).	The following resources were identified in the *City of Imperial Beach General Plan*: ▶ Tijuana River Estuary ▶ Pacific Ocean ▶ Ream Field ▶ salt evaporation ponds ▶ San Diego Bay ▶ coastal/beach area
La Mesa	Scenic Preservation Overlay Zone in the municipal code establishes regulations for the recognized scenic areas in the city, the character of which could be permanently damaged by actions involving the development and use of land without special regulations to prevent or mitigate such damage (City of La Mesa MC Chapter 29).	The following resources were identified in the *City of La Mesa General Plan Land Use and Urban Design Element*: ▶ SR 125/SR 94/I-8 corridor ▶ hillsides ▶ rural neighborhoods
Lemon Grove	The Open Space Zone in the municipal code establishes regulations for usable open space necessary to fulfill needs for outdoor leisure and recreation, to preserve valuable natural resources, and to improve the amenity of residential living (City of Lemon Grove MC, Chapter 17.24).	The following resource was identified in the *Chollas Creek Watershed Regional Park Master Plan*: ▶ Chollas Creek
National City	Viewshed protection in the general plan is designed to preserve scenic resources and significant viewsheds of San Diego Bay, open space, creeks, and other distinctive scenic resources.	The following resources were identified in the *City of National City General Plan, Land Use Element City of National City* (2024): ▶ San Diego Bay ▶ hillsides

Jurisdiction	Visual Plan or Regulation	Local Scenic Resources
Oceanside	Scenic Park Overlay District of the zoning ordinance is implemented to conserve and protect valuable natural resources of recreational and scenic areas in and adjacent to the Guajome Regional Park and other public parks (City of Oceanside Zoning Ordinance, Article 15).	The following resources were identified in the *City of Oceanside General Plan Land Use Element*: ▶ Pacific Ocean ▶ coastal/beach area ▶ Guajome Regional Park ▶ San Luis Rey River ▶ Buena Vista Lagoon
Poway	Open Space-Resource Management Zone in the municipal code preserves open space for the conservation of natural and cultural resources and maintains the natural character of the land (City of Poway MC, Chapter 17.24).	The following resources were identified in the *City of Poway General Plan, Natural Resources Element*: ▶ Twin Peaks ▶ Kent Hill ▶ Vandan Park ▶ Tooth Rock ▶ Goat Peak ▶ Iron Mountain
San Diego	Coastal Overlay Zone from the municipal code protects and enhances the quality of public access and coastal resources. Height limits are restricted to 30 feet by the Coastal Zone. Additionally, the city's Environmentally Sensitive Regulations of the Development Code were developed to protect, preserve and, where damaged, restore, the environmentally sensitive lands of San Diego and the viability of the species supported by those lands. These regulations are intended to assure that development, including, but not limited to coastal development in the Coastal Overlay Zone, occurs in a manner that protects the overall quality of the resources and the natural and topographic character of the area, encourages a sensitive form of *development*, retains biodiversity and interconnected habitats, and maximizes physical and visual public access to and along the shoreline (City of San Diego MC, Chapter 14).	The following resources were identified in the *City of San Diego General Plan*: ▶ Mission Trails Regional Park ▶ Marian Bear Memorial Park ▶ Rose Canyon Open Space Park ▶ Tecolote Canyon Natural Park and Nature Center ▶ San Diego River Park ▶ Los Peñasquitos Canyon Preserve ▶ Black Mountain Open Space Park ▶ San Pasqual/Clevenger Canyon Open Space Park ▶ public views of the Pacific Ocean, downtown skyline, canyons, and open spaces ▶ prominent views from Hillcrest, including San Diego Bay, Mission Bay, Balboa Park, and Mission Valley ▶ view corridor along Upas Street from 6th Avenue to Balboa Park ▶ views from Bachman Place over canyons in the Hillcrest Medical Complex neighborhood ▶ Torrey Pines State Natural Reserve ▶ Torrey Pines City Park and Municipal Golf Course ▶ hiking trails in Rose Canyon through chaparral and oak woodlands ▶ Sorrento Valley and Soledad Canyon hillsides ▶ scenic entrance along slopes near Gilman Drive from I-5 and Sorrento Valley ▶ multi-habitat planning areas protecting wildlife corridors and sensitive species ▶ canyon ecosystems and scenic views near Campus Point Drive and Towne Centre Drive
San Marcos	The city's zoning code has a Ridgeline Protection and Management Overlay Zone to protect natural viewsheds and unique natural resources in San Marcos, especially hillsides and ridgelines. It also has restrictions on nighttime lighting in commercial areas to limit the amount of light that spills onto	The following resources were identified in the *City of San Marcos General Plan Conservation and Open Space Element*: ▶ San Marcos Mountains ▶ Merriam Mountains ▶ Mount Whitney

Jurisdiction	Visual Plan or Regulation	Local Scenic Resources
	adjacent properties or reflects into the sky (City of San Marcos Zoning Code, Chapter 20.260).	▶ Cerro de La Posas ▶ Double Peak ▶ Owens Peak ▶ Franks Peak
Santee	Park/Open Space Districts as defined in the municipal code promotes a balanced mix of open space uses with development throughout the city in order to provide the enhancement of visual resources, avoidance of hazards, and conservation of resources (City of Santee MC, Chapter 17.16).	The following resources were identified in the *City of Santee General Plan, Conservation Element*: ▶ Mission Trails ▶ Santee Lakes ▶ San Diego River Park ▶ Goodan Ranch ▶ Sycamore Creek ▶ Forester Creek ▶ Rattlesnake Creek
Solana Beach	View Assessment Ordinance in the municipal code preserves the existing character of established residential neighborhoods, and the desire to protect public and private views, and aesthetics (City of Solana Beach MC, Section 17.63). Scenic Area Overlay Zone regulates development in areas of high scenic value to preserve and enhance the scenic resources present within and adjacent to such areas (City of Solana Beach MC, Section 17.48). Exterior Lighting Regulations (Dark Sky Overlay) controls excessive or unnecessary outdoor light emissions which produce unwanted illumination of adjacent premises within the city and prescribes standards for the maintenance of designated "dark-sky" neighborhoods (City of Solana Beach MC, Section 17.60.060). Chapter 5, Section C of the city's Local Coastal Program/Land Use Program establishes policies related to the protection of scenic and visual resources.	The following resources were identified in the *City of Solana Beach General Plan, Conservation and Open Space Element*: ▶ San Elijo Lagoon ▶ Highway 101/Pacific Coast Highway ▶ Lomas Santa Fe ▶ coastal/beach area
Vista	No visual resource protection plans or specific regulations have been established at this time.	The following scenic resources were identified in the *City of Vista General Plan 2030 Resource Conservation and Sustainability Element*: ▶ rolling hills and natural landscapes ▶ Buena Vista Creek and riparian corridors ▶ Agua Hedionda Creek ▶ public parks and open space areas ▶ agricultural lands ▶ cultural and historic landmarks
County of San Diego	San Diego County's Resource Protection Ordinance protects sensitive lands and prevents their degradation and loss by requiring the Resource Protection Study for certain discretionary projects. (San Diego County Code of Regulatory Ordinances, Title 8, Division 6)	The following resources were identified in the *County of San Diego General Plan Conservation and Open Space Element*: ▶ El Capital Reservoir and El Cajon Mountain ▶ Viejas Mountain ▶ Sweetwater River Canyon ▶ Loveland Reservoir ▶ Horsethief Creek/Pine Valley ▶ Creek region ▶ Gaskill Peak region

Jurisdiction	Visual Plan or Regulation	Local Scenic Resources
		▶ Bells Mountain ▶ Gopher Canyon ▶ San Marcos Mountains ▶ Boulder Creek Basin ▶ Descanso Valley ▶ Guatay Mountain ▶ Lake Cuyamaca and meadows ▶ Crouch Valley ▶ Buckman Springs meadow ▶ Pine Valley ▶ McGinty/Dehesa/Sequan ▶ Harbison Canyon ▶ North Fork of the Sweetwater river ▶ Lancaster Mountain ▶ Lawson Peak ▶ Mother Grundy ▶ Tecate Peak/Cottonwood Creek ▶ San Miguel/Jamul Mountains ▶ El Cajon Mountain/El Capitan Reservoir ▶ Jesmond Dene Oaks ▶ Valley Center Ridge ▶ Burnt Mountain ▶ San Marcos Mountains ▶ Mesa Grande ▶ Palomar Mountain/Aqua Tibia Wilderness ▶ Volcan Mountain ▶ Otay Mountain/Lower Otay Lake ▶ San Luis Rey River ▶ Mount Olympus ▶ Rainbow Oak woodland areas ▶ Goose Valley ridge ▶ SR 78 corridor ▶ Mussey Grade Road ▶ Mount Woodson ▶ Batiquitos Lagoon region ▶ Oak Crest park site ▶ San Elijo Lagoon/San Dieguito park area ▶ Sweetwater community planning area ▶ eucalyptus groves 1, 2, and 3. ▶ Mother Miguel Mountain. ▶ Valley Center Ridge ▶ Chaparral Ridge ▶ Keys Creek

Source: City of Carlsbad 2019; City of Chula Vista 2005; City of Coronado 2005, 1999; City of Del Mar 1999, 1993, 2001; City of El Cajon 2001; City of Encinitas 2011; City of Escondido 2012; City of Imperial Beach 2018; City of La Mesa 2012; Groundwork San Diego 2022; City of Santee 2003; City of National City 2024; City of Oceanside 2002; City of Poway 1991; City of San Diego 2024; City of San Marcos 2012; City of Solana Beach 2013; City of Vista 2012; County of San Diego 2011.

These updates reflect ongoing efforts to balance development with the preservation of the San Diego region's aesthetic and visual resources, encouraging growth to be managed in a way that maintains the area's scenic quality and community character.

4.1.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique characteristics of the proposed Plan.

Checklist questions for aesthetic and visual resources impacts are provided in Section I of the CEQA Guidelines Appendix G. Appendix G criterion I (a) is addressed in AES-1, criterion I (b) is addressed in AES-2, criterion I (c) is addressed in AES-3, and criterion (d) is addressed in AES-4.

For the purposes of this EIR, implementation of the proposed Plan would have a significant aesthetic and visual resources impact if it would:

AES-1 Have a substantial adverse effect on a scenic vista.

AES-2 Substantially damage scenic resources, including but not limited to, trees, rocks, outcroppings, and historic structures within a state scenic highway or local scenic route.

AES-3 Substantially degrade the existing visual character or quality of public views of the site and its surroundings, including adding a visual element of urban character to an existing rural or open space area, or conflicting with regulations governing scenic quality.

AES-4 Substantially degrade the existing visual character or quality of public views of the site and its surroundings by creating a new source of substantial light or glare that would adversely affect day or nighttime views.

The analysis discloses impacts to aesthetics and visual resources. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's aesthetics impacts would be worsened by climate change. Therefore, a climate change analysis for aesthetics impacts is not included in this section.

4.1.4 Environmental Impacts and Mitigation Measures

AES-1 HAVE A SUBSTANTIAL ADVERSE EFFECT ON A SCENIC VISTA.

Analysis Methodology

The following analysis evaluates impacts of forecasted regional growth and land use change or planned transportation network improvements that would have a substantial adverse effect on a scenic vista by blocking panoramic views or impeding or detracting from public views of major landscape features or landforms, such as the coast, bays, lagoons, canyons, mesas, and natural vegetation; historical or unique structures; water resources, such as reservoirs, lakes, and streams; and large open spaces, including preserves and regional parks. The analysis considers the location of new growth and land use changes in the region, and the role of local visual protection programs in reducing impacts from the new growth and land use change.

The analysis of transportation network improvements focuses on the proposed Plan's new infrastructure or facilities that would result in both short-term and long-term impacts by impeding, blocking, or detracting from views from scenic vistas throughout the region. Those improvements and programs involving only operational changes would not substantially affect scenic vistas. The analysis generally considers the location of planned transportation network improvements, their proximity to scenic vistas, and the likelihood of the improvement—given scale and typical design characteristics—to impact views.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. The increased density can be seen when comparing the existing housing density to the 2035 housing density, as shown in Figure 4.14-1 in Section 4.14, "Population and Housing." Approximately 93.3% of the forecasted regional population increase between 2022 and 2035 is in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those three jurisdictions accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, whereas the cities of San Diego, San Marcos, and Oceanside will accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Areas of increased residential density by 2035 are projected in existing established communities, such as the city of San Diego. Established communities in Chula Vista and San Marcos are also expected to see increased density. Development in these areas would take place mostly along highway corridors, such as I-5, SR 76, SR 78, I-15, I-805 east of Chula Vista, and SR 11, and generally in San Diego County community planning areas. By concentrating growth through infill development in these areas, obstruction or impediment of scenic vistas would be minimized compared to new development in more rural areas.

New development caused by regional growth and land use change would be in the form of new homes, services, commercial areas, industrial centers, schools, and civic uses. Additionally, the proposed Plan forecasts a general intensification of existing land uses in urban communities and along key transportation corridors. The land use components of the proposed Plan would induce substantial population increases in the specific locations described above through policies and strategies that provide for the development of new housing units, job-supporting nonresidential land uses, and related improvements to public facilities and infrastructure.

The introduction of new development in some areas would also result in short-term construction impacts related to scenic vistas, creating temporary views of earth-moving activities, denuded slopes, large construction equipment and vehicles, and staging areas. Scenic vistas may be affected by regional growth and land use change projected to occur in 2035. Impacts on scenic vistas include blocking or impeding panoramic views and views of major landscape features during development and redevelopment activities. Construction of new development in some areas would also result in short-term construction impacts related to scenic vistas, creating temporary views of earth-moving activities, denuded slopes, large construction equipment and vehicles, and staging areas.

Regarding permanent impacts, future development must comply with adopted policies that regulate the design of new buildings and protect the existing visual quality of the local jurisdiction. For example, as listed in Table 4.1-4, local jurisdictions have adopted visual regulations that require all development to adhere to standards that address bulk, mass, articulation, height, and transition issues (such as the interface with surrounding or adjacent development and uses) and to minimize negative impacts on the community. Visual policies also ensure exclusion of incompatible uses and structures, and preserve and enhance the scenic resources present in adjacent areas. In addition, all development and redevelopment projects, ministerial projects excluded, would undergo further environmental and design review on a project-by-project basis to ensure that substantial adverse effects on scenic vistas are identified and avoided or reduced to the extent feasible. Development in the Coastal Zone would need to adhere to the California Coastal Act and local coastal plans, whereas typical measures in local plans require development to be sited and designed to protect views to and along the ocean and other scenic coastal areas.

These measures would reduce adverse effects on scenic vistas. However, even with implementation of such measures, it cannot be guaranteed that substantial adverse effects on scenic vistas would be avoided or reduced for all projects. Some new development would obstruct, interrupt, or detract from a scenic vista. Therefore, regional growth and land use change would cause a significant impact.

Transportation Network Improvements and Programs

By 2035, additional transportation network improvements would occur in the San Diego region as part of the proposed Plan. Some of the improvements in the proposed Plan completed by 2035 would involve only operational changes that would not require construction of new transportation or transit facilities, such as increasing service frequencies or creating new transit routes and, therefore, would have little impact on scenic vistas. However, Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. Complete Corridor improvements consist of continued double-tracking at certain locations on the LOSSAN Rail Corridor, increased in COASTER frequencies, and grade separation at Leucadia Boulevard. The 2035 phase also includes a major new commuter rail line (Route 582) from Mission Valley to the United States–Mexico border via City Heights, National City, and Chula Vista, and commuter rail service from Oceanside to Downtown and from Camp Pendleton to Downtown (CR 398). Rail grade separations include the Blue Line, Green Line, and Orange Line through the South Bay and East County communities.

In 2035, the Complete Corridor program includes new Managed Lanes and Managed Lane connectors on SR 15, SR 94, SR 78, SR 163, SR 125, I-5, I-8, and I-805 corridors that would involve relatively minor impacts on scenic vistas because of their location in urban environments. Improvements along SR 52 include highway widening that may affect a designated scenic vista. Adverse scenic vista impacts would occur for alignments and facilities that require large cut-and-fill slopes or noise barriers, whether in previously undeveloped areas or developed urban areas. Careful alignment and design, collaboration with local jurisdictions, and conformance with local grading ordinances to ensure compatibility with surrounding development would reduce impacts. Improvements to the I-5 corridor that involve installing soundwalls would obstruct views to scenic resources from private residences located at elevations higher than the freeway. Two new Managed Lanes on SR 78 would not obstruct, interrupt, or detract from a scenic vista, such as views of the Batiquitos Lagoon, Pacific Ocean, and steep rugged terrain near the Twin Oaks to I-15 corridor. However, the locations of some transportation network improvements and certain design features (e.g., above-grade facilities, retaining walls, sound attenuation walls, cut-and-fill activities) would require physical changes that would have substantial adverse effects on scenic vistas, including blocking panoramic views or views of major landscape features or landforms. The proposed Plan contains four transportation network improvements on the arterial roadway system in 2035. These projects include addition of new lanes and Class II bicycle lanes along Carlsbad Boulevard in the city of Carlsbad; new travel lanes, bicycle lanes, pedestrian pathways in the community of Ramona; bridge widening, new ramps, and realignment of existing ramps at Palm Avenue/I-805 in the South Bay; and new interchange and roadway improvements at SR 78. Scenic views along these corridors are of the coast along Carlsbad Boulevard and rolling hills and valleys in Ramona and SR 78. Road widening and bikeway improvements would result in change in the visual environment that would obstruct, interrupt, or detract from a scenic vista during both construction and operation and result in a substantial adverse effect. Transportation network improvements would cause a significant impact.

Active transportation improvements by 2035 include development of various bikeways throughout the region, including bikeway improvements to the Coastal Rail Trail and the Bayshore Bikeway. Transit service improvements to be constructed by 2035 include increases in service of the COASTER and SPRINTER, extensions and increases in service of the Trolley, new commuter rail service, and several new rapid transit routes. Increases in transit services and the development of an active transportation network would not substantially obstruct, interrupt, or detract from a scenic vista.

2035 Conclusion

Development associated with regional growth and land use change, as well as transportation network improvements, would have substantial adverse effects on scenic vistas. Therefore, this impact (AES-1) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, regional population is forecasted to decrease by 4,112 people (-0.1%), regional housing is forecast to increase by 65,577 units (4.8%), and regional employment is forecasted to increase by 103,460 jobs (6.2%). The 2050 regional Sustainable Communities Strategy (SCS) land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the City of San Diego (51.6%) Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these three jurisdictions contribute to approximately 70.3% of the new jobs between 2036 and 2050.

New development is also projected in the north coastal corridor between Del Mar and Marine Corps Base (MCB) Camp Pendleton, the area between MCB Camp Pendleton and I-15, the corridor along SR 78 between Vista and San Marcos, the area northeast of I-15 and Escondido, and the SR 56 corridor along Carmel Valley and Poway. In the South Bay, development is expected to be adjacent to SR 125 in the Otay Ranch area, adjacent to SR 11 in East Otay Mesa, and along the SR 94 and I-8 corridors. Regional growth is projected in the unincorporated areas of Lakeside, North County Metro, and Valle de Oro. There are no housing units expected to be built in the unincorporated area after 2035. The only significant increase in jobs over that period is expected to be in Otay.

Scenic vistas as discussed in the 2035 analysis may be affected by the regional growth and land use change projected to occur in 2050. Landforms consisting of steep mountain ranges and rural valleys dominate the scenic vistas in the inland regions. As shown in Figure 4.1-1, these areas are located northeast of Escondido to SR 76, east of MCB Camp Pendleton, and north and south of the SR 78 corridor. Large pockets of land currently used for agricultural purposes would be developed with spaced, rural residential uses. New development would be located on hillsides, and along the ocean, bays, or rivers, which, in some locations, would impede or block panoramic views or views of major landscape features or landforms as seen from public-viewing areas (coastlines; bays; lagoons; canyons; mesas; natural vegetation; historical or unique structures; water resources, such as reservoirs, lakes, and streams; and large open spaces, including preserves and regional parks). Construction of new development in some areas would also result in short-term impacts related to scenic vistas, creating temporary views of earth-moving activities, denuded slopes, large construction equipment and vehicles, and staging areas.

As discussed in the 2035 analysis, although existing visual regulations, development codes, and laws would reduce impacts on scenic vistas upon implementation of the proposed Plan, it cannot be guaranteed that substantial adverse effects on scenic vistas would be avoided or reduced for all future projects. Some new development would obstruct, interrupt, or detract from a scenic vista. Therefore, regional growth and land use change would cause a significant impact.

Transportation Network Improvements and Programs

By 2050, additional transportation network improvements would occur in the San Diego region as part of the proposed Plan. Implementation of the proposed Plan's transportation network as described in Chapter 2, "Project Description," include Complete Corridor improvements consisting of continued double-tracking at certain locations on the LOSSAN Rail Corridor, increases in COASTER frequencies, construction of the Sorrento Mesa and University Town Center (UTC) tunnels, and a new station at Balboa Avenue. The 2050 phase also includes three new major commuter rail lines. These include the completion of commuter rail service from Mission Valley to the United States–Mexico border via City Heights, National City, and Chula Vista (CR 582);); from Oceanside to Downtown; and from Oceanside to Downtown (CR 398). The SPRINTER rail lines would be extended from Escondido to the Westfield North County Shopping Center.

The extension of new commuter rail lines would largely extend through highly urbanized corridors in North County, South Bay, and East County areas and would pass through communities that have scenic vistas of the Pacific Ocean, San Diego Bay, Otay River, Sweetwater River, San Diego River, preserves, canyon lands, and parks. Portions of the new commuter rail lines would impair or detract from scenic vistas in these communities with the introduction of new infrastructure, including tracks, station platforms, overhead catenary wire, and other features, such as above-grade guideways and overcrossings.

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035.. Roadway improvements also include goods movement support with Harbor Drive multimodal corridor improvements and the Otay Mesa Port of Entry (POE) pedestrian bridge. By 2050, active transportation projects include buildout of the San Luis Rey River Trail and bikeway trails in the Encinitas–San Marcos corridor; Camp Pendleton Trail; I-15 Bikeway; SR 56 Bikeway; SR 52 Bikeway; I-8 Corridor Trail; I-805 corridor; SR 905 corridor; El Camino Real Bike Lanes; Carlsbad to San Marcos corridor; Mira Mesa corridor; Mid-County Bikeway; Central Coast corridor; Downtown San Diego to southeast San Diego corridor; San Diego River Bikeway; Kearney Mesa to Beaches corridor; and several enhanced bike lanes through Santee, El Cajon, La Mesa, and unincorporated San Diego County.

Improvement of existing highway facilities along SR 15, SR 52, SR 94, and SR 54, which largely consist of new Managed Lanes, would result in relatively minor impacts on scenic vistas because of their location in urban environments. Improvements along portions of SR 125 and SR 52, which include ramp improvements and new Managed Lanes, may affect highly scenic vistas. Adverse impacts would occur for alignments and facilities that require large cut-and-fill slopes or noise barriers, whether in undeveloped areas or developed urban areas. Careful alignment and design, collaboration with local jurisdictions, and conformance with local grading ordinances to ensure compatibility with surrounding development would reduce scenic vista impacts. Improvements to the I-5 corridor that involve installing soundwalls would obstruct views to scenic resources from private residences located at an elevation higher than the freeway. Thus, the locations of some transportation network improvements and certain design features (e.g., above-grade facilities, retaining walls, sound attenuation walls, cut-and-fill activities) would require physical changes that have substantial adverse effects on scenic vistas, including blocking panoramic views or views of major landscape features or landforms. Transportation network improvements and programs would cause a significant impact.

2050 Conclusion

Development associated with regional growth and land use change, as well as transportation network improvements, would have substantial adverse effects on scenic vistas. Therefore, this impact (AES-1) in the year 2050 is significant.

MITIGATION MEASURES

AES-1 HAVE A SUBSTANTIAL ADVERSE EFFECT ON A SCENIC VISTA

2035, 2050

AES-1a Protect Public Views of Scenic Vistas for Transportation Network Improvements.

During planning, design, project-level CEQA review, and construction of transportation network improvements SANDAG shall, and other transportation project sponsors can and should, ensure that projects protect public views of scenic vistas. Construction and operations measures consist of, but are not limited to, the following:

- Site construction-staging areas away from scenic vistas. If this is infeasible, reduce the visibility of construction-staging areas. Fence and screen these areas with low-contrast materials consistent with the surrounding environment.
- Avoid permanent obstruction of scenic vistas from public-viewing areas when selecting alignments and the grade of new infrastructure (i.e., above, at, or below grade).

- Use transparent safety barrier designs (e.g., railings) rather than walls.

AES-1b Protect Public Views of Scenic Vistas for Development Projects.
During planning, design, project-level CEQA review, and construction of development projects, the County of San Diego, cities, and other local jurisdictions can and should incorporate scale and massing measures, as well as measures specific to development projects. These measures consist of, but are not limited to, the following:

- Ensure building siting, height, and mass protect scenic vistas.
- Design projects to minimize contrasts in scale and massing between the project and surrounding natural forms and developments. Avoid large cuts and/or fills, where material is removed (cut) from certain areas and hauled away or used to fill in others using either onsite or offsite soil, when the visual environment (natural or urban) would be substantially disrupted. Site or design of projects should minimize their intrusion into important viewsheds and use contour grading to better match surrounding terrain.
- Screen development adjacent to natural features as appropriate so that development does not appear visually intrusive or interfere with the experience within the scenic vista. The provision of enhanced landscaping adjacent to natural features could be used to soften the appearance of or buffer development from the natural features.
- Require development in visually sensitive areas to minimize visual impacts and to preserve unique or special visual features, particularly in rural areas, through the following:
  - creative site planning,
  - integration of natural features into the project,
  - appropriate scale, materials, and design to complement the surrounding natural landscape,
  - minimal disturbance of topography,
  - clustering of development to preserve a balance of open space vistas, natural features, and community character, and
  - creation of contiguous open space network.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measures AES-1a and AES-1b would reduce significant impacts on scenic vistas caused by blocking panoramic views or impeding public views of major landscape features or landforms. However, some of the development associated with regional growth and land use change and transportation network improvements would be located in areas where substantial adverse effects on scenic vistas cannot be avoided. It cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, substantial adverse impacts on scenic vistas would remain significant and unavoidable.

AES-2 SUBSTANTIALLY DAMAGE SCENIC RESOURCES, INCLUDING BUT NOT LIMITED TO, TREES, ROCKS, OUTCROPPINGS, AND HISTORIC STRUCTURES WITHIN A STATE SCENIC HIGHWAY OR LOCAL SCENIC ROUTE

Analysis Methodology

This analysis examines how forecasted regional growth and land use and planned transportation network improvements and programs would damage two types of scenic resources: (1) scenic resources in a state scenic highway and (2) other scenic resources identified in local plans, including local scenic routes. Damage to scenic resources in a scenic highway or other scenic resources, including resources along local scenic routes, would occur if development were to detract or diminish the elements that contribute to the scenic corridor of the highway or route.

Areas identified for forecasted regional growth and land use change or planned transportation network improvements under the proposed Plan were considered for their proximity to designated scenic highways and roads in the region. In those areas, the impacts on scenic resources are evaluated given the scale and typical design characteristics of the development or improvements that are included in the proposed Plan. A significant impact on scenic resources would occur if forecasted regional growth and land use change or planned transportation network improvements associated with the proposed Plan would occur in new locations or if an increase in the intensity of existing development is planned that would block or otherwise substantially disrupt views of scenic resources in a state scenic highway or other scenic resources, including local scenic routes.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Chapter 2, "Project Description," of this Draft EIR, approximately 93.3% of the forecasted regional population increase between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). The proposed Plan forecasts a general intensification of existing land uses in urban communities and along major transportation corridors. New development caused by regional growth and land use change would include new housing units, services, commercial areas, industrial centers, schools, and civic uses. Concentrated growth is also expected to occur around the planned transit improvement areas throughout the region.

The proposed Plan would result in adverse aesthetic and visual resource impacts related to implementation of regional growth and land use change along eligible and designated scenic highways and local scenic routes. New development associated with regional growth in the north coastal area between Del Mar and Oceanside would occur adjacent to and be visible from vehicles traveling on state-eligible scenic highways, such as I-5 and SR 76. Scenic resources along the I-5 coastal corridor include views of local beaches and the ocean; various estuaries and lagoons, such as Buena Vista, Agua Hedionda, and Batiquitos Lagoon; the agricultural fields in Carlsbad; San Dieguito River; and Peñasquitos Lagoon, could be impacted by construction if construction includes activities such as tree removal, grading, demolition, and/or cut-and-fill. Historic structures such as the Whaley House and those within the Gaslamp Quarter in the city of San Diego can be seen from the 1-5, however damage to these structures would be unlikely as construction is not anticipated to occur directly adjacent to these resources.

Along the SR 76 corridor, scenic resources include Guajome Regional Park, San Luis Rey River, and Buena Vista Lagoon. As well as historic structures such as the Mission of San Luis Rey in the city of Oceanside Growth in the La Mesa and Lemon Grove communities would be adjacent to SR 94, an eligible scenic highway, and SR 125, a designated state highway. Scenic resources along these corridors include trees, rock outcroppings, canyon lands, and ridgelines. New growth in Santee would occur adjacent to SR 52, of which the area between I-15 east and Santo Road is a designated state scenic highway, and the area east of Santo Road to SR 67 is designated as an eligible scenic highway and includes scenic resources, such as San Diego River, Mission Trails, Santee Lake, and Sycamore and Rattlesnake Creeks. Development would also occur adjacent to scenic resources identified in local plans (local scenic routes), such as the forecasted growth in Oceanside and Carlsbad. Planned regional growth and land use changes in 2035 could result in physical damage to scenic resources consisting of, but not limited to, trees, rocks, and outcroppings in a state scenic highway and other local scenic resources, identified in local plans. This impact would be significant.

Transportation Network Improvements and Programs

Planned transportation network improvements by 2035 include programs that would help facilitate movement of people and goods and accessibility to improve the quality of life and sustain the economy as the region grows, such as the development of Complete Corridors; Flexible Fleets; and more opportunities for biking, walking, and other forms of active transportation. The proposed Plan includes the construction of new rail and transit facilities by 2035, such as the development of commuter rail service from Mission Valley to the United States–Mexico border via City Heights, National City, and Chula Vista (CR 582) and commuter rail service from Oceanside to Downtown and from Camp Pendleton to Downtown (CR 398). The proposed Plan also includes double-tracking

and several grade-separation projects in 2035 for SPRINTER. Rail grade separations include the Blue Line, Orange Line, and Green Line through the Central, South, and East County communities. New commuter rail service between Oceanside and Downtown would occur adjacent to and be visible from vehicles traveling on state-eligible scenic highways, such as I-5.

Active transportation improvements by 2035 include development of various bikeways throughout the region, including bikeway improvements to the Coastal Rail Trail and the Bayshore Bikeway. Transit service improvements to be constructed by 2035 include increases in service of the COASTER, extensions and increases in service of the Trolley, and several new rapid transit routes. Increases in transit services and the development of an active transportation network would be visible from vehicles traveling along SR 76, which is a state-eligible scenic highway. The addition of a second track to an existing single track along the COASTER corridor would not damage scenic resources visible from I-5, a state-eligible scenic highway. The proposed trolley improvements in the South Bay and East County would not occur in proximity to state-designated or eligible scenic highways.

The proposed Plan contains four transportation network improvements on the arterial roadway system in 2035. These projects include addition of new lanes and Class II bicycle lanes along Carlsbad Boulevard in the city of Carlsbad; new travel lanes, bicycle lanes, and pedestrian pathways in the community of Ramona; bridge widening, new ramps, and realignment of existing ramps at Palm Avenue/SR 805 in the South Bay; and new interchange and roadway improvements at SR 78. Arterial improvements in northern inland communities would impact scenic resources along SR 78, a local scenic roadway designated by the city of San Marcos, and I-5, an eligible scenic highway. Road widening and bikeway improvements in Ramona and South Bay would not occur in proximity to any state-designated or eligible scenic highway.

Most of the Managed Lane improvements planned by 2035 are in the more urbanized areas of the San Diego region, such as I-5, I-15, segments of I-8 and SR 94, and I-805. Highway improvements would be visible to motorists traveling along SR 52, along SR 125, and in the I-8 and SR 94 rural corridors, which are state-designated and eligible scenic highways. Table 4.1-5 lists the scenic highways in the San Diego region that would be affected by implementation of the 2035 transportation projects in the proposed Plan, identifies the proposed improvements, and includes the impact that would occur.

Table 4.1-5 Transportation Network Improvements Relative to Designated or Eligible Scenic Highways (2035)

Scenic Route	Proposed Improvement	Impact
I-5 (E)	Pacific Surfliner Rail2Rail (LOSSAN) upgrades, Managed Lanes	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
I-8 (E)	Interchange/intersection improvements	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 52 (E) (D)	Operational improvements, Managed Lanes	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 94 (E)	Managed Lanes, interchange/arterial improvements	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 76 (E)	Interchange/intersection improvements, shoulder widening	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 78 (D)	Managed Lanes, Interchange/Arterial improvements,	New construction may damage scenic resources, such as trees, rocks, and outcroppings
SR 125 (D)	Managed Lanes, interchange/arterial improvements	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings

Notes: (E) = eligible for designation as a scenic highway; (D) = officially designated as a scenic highway.

Source: Data provided by SANDAG in 2025; adapted by Circlepoint in 2025.

Although there are no restrictions on modifications to scenic highways, local agencies and Caltrans must work together to coordinate projects and ensure the protection of the scenic value (California Streets and Highways

Code Section 260 et seq.). For example, state law requires the undergrounding of all visible electricity distribution lines within 1,000 feet of a scenic highway. In some cases, local governments have their own land use and site planning regulations to protect scenic values along a given corridor. The proposed Plan's 2035 transportation network improvements could damage scenic resources consisting of, but not limited to, historic structures, trees, rocks, and outcroppings, in a state scenic highway, and other local scenic resources identified in local plans. This impact would be significant.

2035 Conclusion

Implementation of regional growth and land use change and transportation network improvements would result in new development and infrastructure affecting scenic resources, including trees, rocks, outcroppings, and historic structures in a state scenic highway and local scenic routes. Therefore, this impact (AES-2) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2 "Project Description," of this Draft EIR, from 2036 to 2050, regional population is forecasted to decrease by 4,112 people (-0.1%), regional housing is forecast to increase by 65,577 units, and regional employment is forecasted to increase by 103,460 jobs. As shown in Figure 2-2, regional land use and development changes will be evident by 2050. Similar to buildout conditions in 2035, areas of increased residential density by 2050 are projected in existing established communities, such as the city of San Diego. New development is also expected in the north coastal corridor between Del Mar and MCB Camp Pendleton, the area between MCB Camp Pendleton and I-15, the corridor along SR 78 between Vista and San Marcos, the area northeast of I-15 and Escondido, and the SR 56 corridor along Carmel Valley and Poway. In the South Bay, development is projected adjacent to SR 125 in the Otay Ranch area, adjacent to SR 11 in East Otay Mesa, and along the SR 94 and I-8 corridors. Regional growth is expected in the unincorporated areas of North County Metro and Otay, but will decrease in the unincorporated communities of Alpine, Ramona, Valley, Lakeside, and Fallbrook.

Local scenic resources in a state scenic highway, as discussed in the 2035 analysis, may be affected by the regional growth and land use change projected to occur in 2050. This regional growth and land use change would result in adverse visual impacts related to implementation of projects along eligible and designated scenic highways, and local scenic routes. Impacts would occur where development detracts from or diminishes the elements that contribute to the scenic nature of the highway, including trees, rocks, outcroppings, and historical bridges and structures in a state scenic highway corridor, or local scenic routes. Therefore, regional growth and land use change would cause a significant impact.

Transportation Network Improvements and Programs

Planned transportation network improvements by 2050 include the proposed Plan's transportation network as described above and the development of Complete Corridors; Flexible Fleets; and more opportunities for biking, walking, and other forms of active transportation. By 2050, additional transportation network improvements would occur in the San Diego region as part of the proposed Plan. The proposed Plan includes the construction of new rail and transit facilities by 2050, such as the completion of commuter rail service from Mission Valley to the United States–Mexico border via City Heights, National City, and Chula Vista (CR 582); from Oceanside to Downtown; and from Camp Pendleton to Downtown San Diego (CR 398). The SPRINTER rail lines would be extended from Oceanside to Escondido. The extension of the new commuter rail lines would largely extend through highly urbanized corridors in the North County Subregion, South County Subregion, and East County Subregion and Rural Areas. New commuter rail service between Oceanside and Downtown and between Downtown San Diego to El Cajon would occur adjacent to and be visible from vehicles traveling on state-eligible scenic highways, such as I-5 and portions of I-8.

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035.. Roadway improvements also include goods movement support with Harbor Drive

multimodal corridor improvements and the Otay Mesa POE pedestrian bridge. By 2050, active transportation projects include buildout of the San Luis Rey River Trail and bikeway trails in the Encinitas–San Marcos corridor; Camp Pendleton Trail; I-15 Bikeway; I-8 Corridor Trail; I-805 corridor; SR 905 corridor; El Camino Real Bike Lanes; Carlsbad to San Marcos bikeway; Mira Mesa corridor; Mid-County Bikeway; Central Coast corridor; Downtown San Diego to Southeast San Diego corridor; San Diego River Bikeway connections; and several enhanced bike lanes through Santee, El Cajon, La Mesa, and unincorporated San Diego County.

Potential impacts on scenic resources and public viewsheds would occur with planned transportation improvements in the northern coastal communities. Scenic resources include the coastal corridor with views of local beaches and the ocean; various estuaries and lagoons, such as Buena Vista, Agua Hedionda, and Batiquitos Lagoons; the agricultural fields in Carlsbad; San Dieguito River; and Peñasquitos Lagoon. Highway improvements along SR 54, SR 67, SR 94, and SR 125 would occur in proximity to local scenic resources with views of trees and rock outcroppings.

Transportation improvements are planned on three designated and five eligible scenic highways. Table 4.1-6 lists the scenic highways in the San Diego region that would be affected by implementation of the 2050 transportation projects provided in the proposed Plan, identifies the proposed improvements, and includes the impact that would occur.

Table 4.1-6 Transportation Network Improvements Relative to Designated or Eligible Scenic Highways (2050)

Scenic Route	Proposed Improvement	Impact
I-5 (E)	LOSSAN rail upgrades, additional Managed Lanes	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
I-8 (E)	Operational improvements	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 52 (E) (D)	Managed Lanes, Freeway connections	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 94 (E)	Freeway connections, Managed Lanes	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 76 (E)	Facility improvements, straightening, shoulder widening	Construction activities may cause substantial damage to scenic resources, such as trees, rocks, and outcroppings
SR 78 (D)	Intersection improvements	New construction may impede or block scenic resources

Notes: (E) = eligible for designation as a scenic highway; (D) = officially designated as a scenic highway.

Source: Data provided by SANDAG in 2025; adapted by Circlepoint in 2025

The proposed Plan's 2050 transportation network improvements could damage scenic resources, consisting of, but not limited to trees, rock outcroppings, and historical sites in a state scenic highway, and local scenic routes. Because of the location of these transportation network improvements along scenic highways and affect on local scenic resources, this would be a significant impact.

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements would result in new development and infrastructure affecting scenic resources, including trees, rock outcroppings, and historical structures in a state scenic highway, and local scenic routes. Therefore, this impact (AES-2) in the year 2050 is significant.

MITIGATION MEASURES

AES-2 SUBSTANTIALLY DAMAGE SCENIC RESOURCES, INCLUDING BUT NOT LIMITED TO, TREES, ROCKS, OUTCROPPINGS, AND HISTORIC STRUCTURES WITHIN A STATE SCENIC HIGHWAY

2035, 2050

AES-2a Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Transportation Network Improvements.

During planning, design, and project-level CEQA review of transportation network improvements in eligible or designated state scenic highways and local scenic routes, SANDAG shall, and other transportation project sponsors can and should, ensure that projects are designed to minimize damage to scenic resources.

The following measures would reduce the significant effects related to damage of scenic resources in a state scenic highway, another scenic resource, or a local scenic route that are in the jurisdiction and responsibility of Caltrans or other public agencies. Where a project has the potential for significant effects, mitigation measures shall ensure compliance with regulations for Caltrans scenic vistas, requirements of the Coastal Act, and policies in county and city general plans. Such measures may include the following:

- Use a palette of colors, textures, and building materials that are graffiti-resistant or use vegetation as a physical barrier that complements the surrounding landscape and development.
- Retain or replace trees bordering scenic highways and routes to the extent feasible.
- Provide new corridor landscaping that provides appropriate transition to existing natural and human-made features and is complementary to the dominant landscaping or native habitats of surrounding areas.
- Avoid, if possible, large cuts and fills when the visual environment (natural or urban) would be substantially disrupted. Site or design of projects should minimize their intrusion into important viewsheds and use contour grading to better match surrounding terrain.

AES-2b Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Development Projects.

During planning, design, and project-level CEQA review of development projects, the County of San Diego, cities, and other local jurisdictions can and should incorporate measures that ensure that projects are designed to reduce impacts on scenic resources in eligible and designated state scenic highways, coastal areas, and local scenic resources. Measures consist of, but are not limited to, the following:

- For projects in or adjacent to designated or eligible state scenic highway corridors and local scenic routes identified in local approved plans, prior to project approval, complete visual resources studies. If a significant impact on scenic resources is identified, the study would require site-specific mitigation measures, which may include those identified below.
  - Avoid damaging, moving, or removing trees, rock outcroppings, historic structures, and other scenic resources from eligible or designated state scenic highway corridors and local scenic resources, where those scenic resources are relevant to the designation or eligibility for designation as a state scenic highway or are identified as a protected visual resource in local plans.
  - Apply development standards and guidelines to maintain compatibility with surrounding natural areas, including site coverage, building height and massing, building materials and color, landscaping, and site grading.
  - Ensure vegetation used as screening and landscaping blends in and complements the natural landscape.
  - Retain or replace trees in scenic highways and routes.
  - Ensure grading blends with the adjacent landforms and topography.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measures AES-1a, AES-2a, and AES-2b would reduce significant impacts on scenic resources, including resources in a state scenic highway, and local scenic routes. However, some of the growth and land use change and transportation network improvements are located in areas where damage, movement, or removal of trees, rocks, outcroppings, and other scenic resources cannot be avoided, such as improvements on state-designated SR 52 and SR 125 and eligible scenic highways I-5, SR 76, SR 52, I-8, and SR 94. It cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, this impact (AES-2) would remain significant and unavoidable.

AES-3 SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF PUBLIC VIEWS OF THE SITE AND ITS SURROUNDINGS, INCLUDING ADDING A VISUAL ELEMENT OF URBAN CHARACTER TO AN EXISTING RURAL OR OPEN SPACE AREA, OR CONFLICTING WITH REGULATIONS GOVERNING SCENIC QUALITY

Analysis Methodology

This analysis provides a description of the existing visual character of areas that would experience forecasted regional growth and land use change or planned transportation network improvements under the proposed Plan and describes how the proposed Plan would affect the visual character of these areas. Visual changes are described for areas where forecasted regional growth and land use change or planned transportation network improvements are proposed, including adding a visual element of urban character to an existing rural or open space area. Visual regulations and policies governing scenic quality (Table 4.1-4) are analyzed for their ability to reduce visual impacts. A significant impact on the visual character or the quality of public views of the site and its surroundings would occur when forecasted regional growth and land use change or planned transportation network improvements associated with the proposed Plan would result in a substantial negative visual effect on or otherwise degrade the existing visual character and quality of the project sites or their surroundings as viewed from public areas.

Impact Analysis

2035

Regional Growth and Land Use Change

As identified in Table 2-1 in Chapter 2, "Project Description," from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. By 2035, some regional growth would be accommodated in the northern and eastern rural areas of the region, including North County Metro and Otay. Development in these areas would be located mostly along highway corridors, such as I-5, SR 76, SR 78, I-15, I-805 east of Chula Vista, and SR 11, and generally in San Diego County community planning areas. Regional growth and land use change would include some conversion of undeveloped lands, although there would be a focus on infill development in the existing communities, all of which would change visual character. Urban centers in the western third of the San Diego region would have most available land developed with single- and multifamily, commercial and office, and industrial uses. Consistent with the goals of the proposed Plan, the dense growth in existing urban centers with high accessibility to transit options allows for the creation of communities that are more sustainable, walkable, transit-oriented, and compact.

In more urbanized areas, changes in visual character would also occur as remaining undeveloped properties are developed and infill occurs. Visual character changes would occur because the infill developments are larger than

those that currently exist surrounding the communities and have the potential to transform the surrounding community from rural to more urban. Local jurisdictions have general plan policies, zoning ordinances, other ordinances, and additional regulations and policies, such as design guidelines, in place to protect visual character and quality in their jurisdictions. As listed in Table 4.1-4, various jurisdictions have adopted visual regulations that require all development to adhere to standards that address bulk, mass, articulation, height, and transition issues, such as the interface with surrounding or adjacent development and uses, and reduce negative impacts on the community. Visual policies also ensure exclusion of incompatible uses and structures, and preserve and enhance scenic resources present in adjacent areas. Although some infill development projects would cause adverse visual character impacts in urban areas, these policies and regulations would ensure that there would be no substantial degradation of visual character. Some of the regional growth and land use change associated with the proposed Plan is located in areas where it would not substantially affect the surrounding visual character. However, regional growth and land use change in outlying and less urbanized areas would substantially degrade the visual character of the area, including adding a visual element of urban character to an existing rural or open space area. Therefore, impacts related to the degradation of visual character would be significant.

Transportation Network Improvements and Programs

Planned transportation network improvements by 2035, as described in Chapter 2, "Project Description," include more transit options; Complete Corridors; Flexible Fleet options; and opportunities for biking, walking, and other forms of active transportation. The proposed Plan includes the construction of new rail and transit facilities by 2035, such as the development of commuter rail service from Mission Valley to the United States–Mexico border via City Heights, National City, and Chula Vista (CR 582), and commuter rail service from Oceanside to Downtown and from Camp Pendleton to Downtown (CR 398). The proposed Plan includes double-tracking and several grade-separation projects in 2035 for the SPRINTER, and rail grade separations include the Blue Line, Orange Line, and Green Line through the South Bay and East County communities. New commuter rail service between Oceanside and Downtown would occur adjacent to scenic resources and could result in the degradation of visual character along this corridor.

Active transportation improvements by 2035 include development of various bikeways throughout the region, including bikeway improvements to the Coastal Rail Trail and the Bayshore Bikeway. Transit service improvements to be constructed by 2035 include increases in service for the COASTER, extensions and increases in service of the Trolley, and several new Rapid transit routes. Due to the highly urbanized nature of the area surrounding these improvements, degradation of visual character would not occur.

The proposed Plan contains four transportation network improvements on the arterial roadway system by 2035. These projects include addition of new lanes and Class II bicycle lanes along Carlsbad Boulevard in the city of Carlsbad; new travel lanes, bicycle lanes, and pedestrian pathways in the community of Ramona; bridge widening, new ramps, and realignment of existing ramps at Palm Avenue/I-805 in the South Bay; and new interchange and roadway improvements at SR 78. Impacts related to visual character would occur along these roadways. Adverse visual character impacts could occur in these rural areas if roadway widening would introduce visual elements of urban character to an existing rural area, such as Ramona and the inland communities along SR 78 if new transportation infrastructure is required.

In urbanized areas, roadways and ancillary improvements, such as soundwalls, introduced by transportation network improvements may also result in adverse visual character impacts depending on the scale of improvements and location of sensitive viewers, including the motorists; users of gathering places, rest areas, and vista points; and a large number of residents who live around resources.

Although the transportation network improvements and programs described above would generally occur in urbanized environments and would likely be associated with existing transportation infrastructure, some major expansions occurring in rural areas could result in a substantial change to the visual character of the site and its surroundings. These improvements could cause a significant impact.

2035 Conclusion

By 2035, implementation of the proposed Plan would result in regional growth and land use change and transportation network improvements that would substantially degrade visual character, including adding visual elements of urban character to existing rural or open space areas. Therefore, this impact (AES-3) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2 "Project Description," of this Draft EIR, from 2036 to 2050, regional population is forecasted to decrease by 4,112 people, housing is forecasted to increase by 65,577 units, and employment is forecasted to increase by 103,460 jobs. The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

Regional growth and land use change by 2050 would include some conversion of undeveloped lands, although there would be a focus on infill development in the existing communities, all of which would change visual character.

In more urbanized areas, changes in visual character would also occur as remaining undeveloped properties are developed and infill occurs. Local jurisdictions have general plan policies, zoning ordinances, other ordinances, and additional regulations and policies, such as design guidelines, in place to protect visual character and quality in their jurisdictions. As listed in Table 4.1-4, various jurisdictions have adopted visual regulations that require all development to adhere to standards that address bulk, mass, articulation, height, and transition issues (such as the interface with surrounding or adjacent development and uses), and reduce negative impacts on the community. Visual policies also ensure exclusion of incompatible uses and structures, and preserve and enhance scenic resources present in adjacent areas. Although some infill development projects would cause adverse visual character impacts in urban areas, these policies and regulations would ensure there would be no substantial degradation of visual character.

Some of the regional growth and land use change associated with the proposed Plan is located in areas where it would not substantially change the surrounding visual character. However, in outlying and less urbanized areas, regional growth and land use change would substantially degrade the visual character of an area, including adding a visual element of urban character to an existing rural or open space area. Therefore, impacts related to the degradation of visual character would be significant.

Transportation Network Improvements and Programs

Planned transportation network improvements by 2050, as described in Chapter 2, "Project Description," include more transit options; Complete Corridors; Flexible Fleet options; and opportunities for biking, walking, and other forms of active transportation. The proposed Plan includes the construction of new rail and transit facilities by 2050, such as the completion of commuter rail service from Mission Valley to the United States–Mexico border via City Heights, National City, and Chula Vista (CR 582) and from Oceanside to Downtown (CR 398). The SPRINTER rail lines would be extended from Escondido to the Westfield North County Shopping Center. The extension of the new commuter rail lines would largely extend through highly urbanized corridors in the North County, South County, and East County. New commuter rail service between Oceanside and Downtown and between Downtown San Diego to El Cajon would occur adjacent to local scenic resource and may lead to visual degradation of the area.

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. By 2050, active transportation projects include buildout of the San Luis Rey River Trail and bikeway trails in the Encinitas–San Marcos corridor; Camp Pendleton Trail; I-15 Bikeway; I-8 corridor Trail; I-805 corridor; SR 905 corridor; El Camino Real Bike Lanes; Carlsbad to San Marcos corridor; Mira Mesa corridor;

Mid-County Bikeway; Central Coast corridor; Downtown San Diego to Southeast San Diego corridor; San Diego River Bikeway; and several enhanced bike lanes through Santee, El Cajon, La Mesa, and unincorporated San Diego County. Increases in transit service on existing operating transit modes would not result in an adverse change in visual character to the communities because the facilities already exist and the community is adapted to the transit mode passing through the area.

Proposed improvements to existing facilities and construction of new highways, roadways, and other transit facilities would create adverse visual impacts by adding visual elements of urban character to existing rural or open spaces. This would occur where new alignments or improvements to existing facilities would pass through primarily rural, agricultural, or open space areas, and the contrast would result in substantial degradation of visual character. These generally would occur along the I-5 corridor north of Oceanside; along SR 76, east of I-15 to Couser Canyon; on I-15 between SR 78 and SR 76; along SR 56, along SR 67, on SR 94 east of SR 125; and along SR 125 south of SR 54.

In urbanized areas, roadways and ancillary improvements, such as soundwalls, introduced by transportation network improvements and programs may also result in adverse visual character impacts depending on the scale of improvements and location of sensitive viewers, including motorists; users of gathering places, rest areas, and vista points; and a large number of residents who live around such visual resources. Highway widening and the construction of Managed Lanes may result in some loss of existing freeway landscaping. Although the transportation network improvements and programs described above would generally occur in urbanized environments and would likely be associated with existing transportation infrastructure, some major expansions occurring in rural areas could result in a substantial change to the visual character of the site and its surroundings. These improvements could cause a significant impact.

2050 Conclusion

By 2050, implementation of the proposed Plan would result in regional growth and land use change and transportation network improvements that would substantially degrade the region's visual character, including adding visual elements of urban character to existing rural or open space areas. Therefore, this impact (AES-3) in the year 2050 is significant.

MITIGATION MEASURES

AES-3 SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OF QUALITY OF PUBLIC VIEWS OF THE SITE AND ITS SURROUNDINGS, INCLUDING ADDING A VISUAL ELEMENT OF URBAN CHARACTER TO AN EXISTING RURAL OR OPEN SPACE AREA, CONFLICTING WITH REGULATIONS GOVERNING SCENIC QUALITY

2035, 2050

Implementation of Mitigation Measures AES-1a, AES-2a, and AES-2b discussed under Impacts AES-1 and AES-2 would also reduce impacts related to degradation of existing visual character.

AES-3a Reduce Impacts on Visual Character for Transportation Network Improvements.

During planning, design, and project-level CEQA review of transportation network improvements, SANDAG shall, and other transportation project sponsors can and should, incorporate measures that ensure that projects are designed to reduce significant impacts on visual character. Measures consist of, but are not limited to, the following:

- Use contour grading to match surrounding terrain and existing natural and human-made features of the area.
- Revegetate graded slopes and exposed earth surfaces prior to completion of construction.
- Construct permanent barriers (e.g., soundwalls, safety barriers, retaining walls) of materials whose color and texture or treatment (e.g., landscaping cover) complements the surrounding landscape and development.

Break up large barrier façades using techniques that consist of, but are not limited to, color, texture, landscaping, see-through safety barriers, and alternating façades.

AES-3b: Reduce Impacts on Visual Character for Development Projects.
During planning, design, and project-level CEQA review of development projects the County of San Diego, cities, and other local jurisdictions can and should incorporate measures that ensure that projects are designed to reduce significant impacts on visual character. Measures consist of, but are not limited to, the following:

- Use contour grading to match surrounding terrain and existing natural and human-made features of the area.
- Revegetate graded slopes and exposed earth surfaces prior to completion of construction.
- Construct permanent barriers (e.g., soundwalls, safety barriers, retaining walls) of materials whose color and texture or treatment (e.g., landscaping cover) complements the surrounding landscape and development. Break up large barrier façades using techniques that consist of, but are not limited to, color, texture, landscaping, see-through safety barriers, and alternating façades.
- Apply development standards and design guidelines to maintain compatibility with surrounding development, including site coverage, building height and massing, building materials and color, landscaping, and site grading.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measures AES-1a, AES-2a, AES-2b, AES-3a, and AES-3b would reduce significant impacts associated with the degradation of visual character. However, although these mitigation measures reduce changes in visual character, mitigation cannot prevent all instances of substantial degradation of visual character caused by regional growth and land use change and transportation network improvements. It cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, substantial degradation of visual character would remain significant and unavoidable.

AES-4 SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF PUBLIC VIEWS OF THE SITE AND ITS SURROUNDINGS BY CREATING A NEW SOURCE OF LIGHT AND GLARE THAT WOULD ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS

Analysis Methodology

This section analyzes impacts from light and glare. In regard to forecasted regional growth and land use change, additional sources of light and glare may come from development in outlying communities or conversion of undeveloped lands to more urban uses. Relevant policies and ordinances are analyzed for their ability to reduce light and glare impacts. A significant impact could occur if the introduction of these new lighting or glare sources would shed substantial light onto adjacent, light-sensitive property or land use; would emit a substantial amount of ambient light into the nighttime sky or areas with existing dark skies; or would create a new source of substantial glare that would affect daytime views that would adversely alter the visual character of the area. Uses considered sensitive to nighttime light consist of, but are not limited to, residential uses, some commercial and industrial uses, observatories, and natural areas (see Section 4.4, "Biological Resources," for a discussion of the impacts of light and glare on biological resources). Therefore, the analysis considers whether regional growth and changes in land use would create new lighting sources that would result in the generation of a substantial amount of light or glare onto adjacent, light-sensitive property or land use, or would emit a substantial amount of ambient light into the nighttime sky or areas with existing dark skies.

Transportation network improvement projects (which include improvements and lane additions) may also result in additional vehicles on the roadways in addition to street lights, intersection control devices, reflective signage, and reflective roadway materials. These additional light sources could increase the total amount of illumination or glare in an area in such a way as to degrade day or nighttime views, which would result in a significant impact related to light or glare. A qualitative analysis of impacts is provided by assessing the location of proposed major

transportation network improvement projects in relationship to areas with low levels of nighttime lighting, including areas with dark skies.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Chapter 2, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). By 2035, the regional growth and land use changes described above would result in additional sources of light and glare. Lighting requirements are guided by standards set by local jurisdictions. Typical measures include the use of downward-directed light-emitting diode (LED) lighting. Such requirements aid in the preservation of dark-sky conditions, which are essential for local observatories to operate. New development would be required to comply with the applicable lighting standards regarding the location, type, and direction of the lighting. A lighting plan is typically required to be submitted to planning departments during the development review process to show illumination levels and point of intersection between fixtures and the use of LED lighting. However, adherence to lighting standards may not be applicable to all types of development projects, and impacts to visual character or the quality of public views from new sources of light and glare may occur in some areas. Therefore, impacts related to the degradation of visual character would be significant.

Transportation Network Improvements and Programs

Active transportation improvements by 2035 include development of various bikeways throughout the region, including bikeway improvements to the Coastal Rail Trail and Bayshore Bikeway. Transit service improvements to be constructed by 2035 include increases in service for the COASTER, extensions and increases in service of the Trolley, and several new rapid transit routes. Other rail improvements would include the Del Mar Tunnel and the associated inland rail relocation and bluff restoration and increases in Amtrak and freight rail service. Because of the highly urbanized nature of the area surrounding these improvements, substantial sources of additional lighting and glare would not occur.

Two new Managed Lanes along SR 78 from I-5 to Twin Oaks Road would be added, which would result in additional sources of light and glare. The proposed Plan also features four transportation network improvements on the arterial roadway system in 2035. These projects include the addition of new lanes and Class II bicycle lanes along Carlsbad Boulevard in Carlsbad; new travel lanes and bicycle lanes and pedestrian pathways in the community of Ramona; bridge widening, new ramps, and realignment of existing ramps at Palm Avenue/I-805 in the South Bay; and new interchange and roadway improvements at SR 78. However, the additional lighting introduced along these roadways would not generate a substantial amount of new lighting, but rather expand on the lighting already present. However, transportation improvements in the community of Ramona and the more rural area near SR 78 would result in a noticeable increase in light sources at night, which would adversely affect dark skies. Additionally, projects with lane additions and improvements that would increase traffic on roadways would experience additional light sources from vehicle headlights at night, which in some more rural locations would adversely affect dark skies, resulting in a significant impact.

During the daytime, additional vehicles could increase the amount of glare in an area due to the increase in reflective surfaces, and at night additional vehicle headlights could increase the amount of light in an area where previously no sources of transportation light and glare existed. Planned transportation improvements would be aligned with planned developments, which would help to reduce aesthetic impacts. However, planned transportation improvements could introduce light and glare to areas where previously no sources of light and glare existed, resulting in new sources of substantial light and glare that could be considered substantial.

2035 Conclusion

By 2035, regional growth and land use changes and transportation network improvements would create new light sources from new development and vehicle headlights at night that would adversely affect dark skies in some locations as well as cause daytime glare in areas. Therefore, this impact (AES-4) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Regional growth and land use change by 2050 would include some conversion of undeveloped lands, although there would be a focus on infill development in the existing communities, all of which would change visual character. This would also result in additional sources of light and glare, which would have significant impacts on the region's dark skies and daytime glare from vehicles. However, adherence to lighting standards may not be applicable to all types of development projects, daytime and dark sky impacts may occur in some areas. Therefore, impacts related to the degradation of visual character would be significant.

Transportation Network Improvements and Programs

Proposed improvements to existing facilities and construction of new highways, roadways, and other transit facilities would create additional sources of light and glare. This would occur where new alignments or improvements to existing facilities would pass through primarily rural, agricultural, or open space areas, and the contrast would result in the introduction of new light and glare sources. These generally would occur along the I-5 corridor north of Oceanside, along SR 76 east of I-15 to Couser Canyon; on I-15 between SR 78 and SR 76; along SR 56, along SR 67, on SR 94 east of SR 125; and along SR 125 south of SR 54. Additionally, projects with lane additions and improvements that would increase traffic on roadways would experience additional light sources from vehicle headlights at night, which in some more rural locations would adversely affect dark skies, resulting in a significant impact Additionally, vehicle headlights could increase the amount of light in an area where previously no sources of transportation light and glare existed during the day.

2050 Conclusion

By 2050, regional growth and land use changes and transportation network improvements would create new light sources from new development and vehicle headlights at night that would adversely affect dark skies in some locations as well as cause daytime glare in areas. Therefore, this impact (AES-4) in the year 2050 is significant.

MITIGATION MEASURES

AES-4 SUBSTANTIALLY DEGRADE THE EXISTING VISUAL CHARACTER OR QUALITY OF PUBLIC VIEWS OF THE SITE AND ITS SURROUNDINGS BY CREATING A NEW SOURCE OF LIGHT AND GLARE THAT WOULD ADVERSELY AFFECT DAY OR NIGHTTIME VIEWS

2035, 2050

Implement mitigation measure BIO-2a (Implement Design, Minimization, and Avoidance Measures for Special-Status Animal Species) as discussed under impact BIO-2 in Section 4.4 "Biological Resources."

AES-4a Minimize Effects of Light and Glare for Transportation Network Improvements.

During planning, design, project-level CEQA review, and construction of transportation network improvements, SANDAG shall, and other transportation project sponsors can and should, ensure that projects avoid or minimize the effects of light and glare on routes of travel for motorists, cyclists, and pedestrians, and on adjacent properties.

Where SANDAG and other transportation project sponsors have identified that a project has the potential for significant effects, they can and should adopt mitigation measures to ensure consistency with the goals and policies in county and city general plans, as applicable. Construction and operational measures consist of, but are not limited to, the following:

- Minimize and control glare from transportation projects through the adoption of project design features that reduce glare, such as those listed below:
  - Planting trees along transportation corridors to reduce glare from the sun.
  - Landscaping off-street parking areas, loading areas, and service areas.
  - Limiting the use of reflective materials, such as metal.
  - Using nonreflective material, such as paint, vegetative screening, matte finish coatings, and masonry.
  - Screening parking areas by using vegetation or trees.
  - Using low-reflective glass.
- Impose lighting standards that ensure that minimum safety and security needs are addressed and minimize light trespass and glare associated with transportation network improvements. These standards include the following:
  - Minimizing incidental spillover of light onto adjacent nighttime light-sensitive uses and undeveloped open space.
  - Installing luminaries that provide good color rendering and natural light qualities.
  - Minimizing the potential for back scatter into the nighttime sky.

AES-4b Minimize Effects of Light and Glare for Development Projects.
During planning, design, project-level CEQA review, and construction of development projects, the County of San Diego, cities, and other local jurisdictions can and should ensure that projects avoid or minimize the effects of light and glare on routes of travel for motorists, cyclists, and pedestrians, and on adjacent properties. Where a project has the potential for significant effects, mitigation measures shall ensure consistency with the goals and policies in county and city general plans, as applicable. Such measures may consist of, but are not limited to, the following:

- Use lighting fixtures that are adequately shielded to a point below the light bulb and reflector and that prevent unnecessary glare onto adjacent properties.
- Restrict the operation of outdoor lighting for construction from the hours of 7:00 p.m. to 7:00 a.m.
- Use low-intensity fixtures for outdoor lighting.
- Use unidirectional lighting to avoid light trespass onto adjacent properties.
- Provide structural or vegetative screening from light-sensitive uses.
- Shield and direct all new street and pedestrian lighting away from light-sensitive off-site uses.
- Use nonreflective glass or glass treated with a nonreflective coating for all exterior windows and glass used on building surfaces.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measures AES-4a and AES-4b, and BIO-2a would reduce significant impacts associated with the introduction of new light and glare sources. However, although these mitigation measures

reduce light and glare impacts, mitigation cannot prevent all instances of new light and glare sources caused by regional growth and land use change, as well as transportation network improvements, particularly from additional light sources from vehicle headlights at night. It cannot be guaranteed that all future project-level impacts related to light and glare can be mitigated to less-than-significant levels. Impacts would remain significant and unavoidable.

4.1.5 Cumulative Impacts Analysis

C-AES-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO AESTHETICS AND VISUAL RESOURCES

The area of geographic consideration for cumulative impacts on aesthetics and visual resources is the Southern California and Northern Baja region. While diverse, this region contains a similar variety of viewsheds, landscapes, and visual character. Aesthetic effects extend across jurisdictional boundaries and can potentially have wide-ranging impacts. Northern Baja is appropriate to include because there are expansive views of the southern San Diego region from higher elevations throughout Tijuana.

A hybrid approach for the cumulative analysis of aesthetics and visual resources allows for the discussion of visual change associated with general patterns of regional urbanization, growth, and land use change while also incorporating more precise visual effects caused by specific major development and infrastructure projects. A significant cumulative impact on aesthetics and visual resources would occur if the proposed Plan would result in incremental effects that are considered cumulatively significant when considered in combination with the impact projections in adopted plans and impacts on aesthetics and visual resources resulting from large-scale existing and probable future projects. Significant cumulative impacts related to aesthetics and visual resources would occur if there were a substantial cumulative impact on scenic vistas or scenic resources, or degradation of the character of an area, including the addition of visual elements of urban character to an existing rural or open space area or by creating substantial new sources of light or glare that would adversely affect day- or nighttime views.

This cumulative impact assessment considers and relies on the impact analysis in this EIR for the proposed Plan and Southern California Association of Governments (SCAG) 2020-2024 RTP/SCS Final EIR (SCAG 2020) for the Southern California region, including Los Angeles, Orange County, Riverside, and San Bernardino County. The Connect SoCal 2024 SCAG RTP/SCS planning horizon is 2050. There are no regional plans pertaining to aesthetics and visual resources for the Northern Baja California region, except for the 2021 Border Master Plan, which provides a general land use description of the United States–Mexico border region (Caltrans and SIDURT 2021).

Impacts of the Proposed Plan

The analysis in this EIR concludes that development associated with regional growth and transportation network improvements would result in new infrastructure and development that would interrupt or detract from a scenic vista, block panoramic views, or damage views of significant landscape features or landforms (Impact AES-1). Additionally, new development and infrastructure would occur near scenic resources, including historical buildings and scenic rock outcroppings, and could damage these scenic resources if construction occurs adjacent to or near these resources (Impact AES-2).

Implementation of the proposed Plan would also result in land use changes and the construction of transportation network improvements that would substantially degrade the character of an area, including adding a visual element of urban character to an existing rural or open space area and the addition of new light and glare sources (Impacts AES-3 and AES-4, respectively). These visual impacts would occur in each horizon year analyzed (2035 and 2050). Therefore, these impacts related to aesthetics and visual resources as a result of the proposed Plan are significant.

Impacts of Related Projects

The Southern California and Northern Baja region is an area of abundant and varied scenic resources. The topography, panoramic views, scenic roadways, open spaces, and significant landscape features found throughout this region contribute greatly to the overall character and quality of the existing visual setting. Projects planned in

the Southern California and Northern Baja region, such as the Navy Old Town Campus Revitalization Project, San Diego International Airport Development Plan, California High Speed Rail Train (HST) project, border/POE facility improvements, port/maritime improvements associated with the Port Master Plan Update, and long linear projects, such as rail pipeline or energy transmission infrastructure, would result in impacts related to blocking panoramic views or views of significant landscape features or landforms, or result in degradation of visual character and the addition of new light and glare sources. For example, the HST project in the San Diego region would result in bridges, elevated guideways, or other features that may introduce visual contracts that could block existing views or result in shadow impacts (HSRA 2005). The EIR prepared for the HST project determined that the project would result in significant cumulative impacts on aesthetic and visual resources. The EIR for the San Diego International Airport Development Plan identified aesthetic impacts, but found them to be less than significant (SDCRAA 2019).

The EIR for the Navy Old Town Campus Revitalization Project evaluated several alternatives and determined that the project would result in significant impacts on aesthetics and visual resources associated with the construction of new facilities for Naval Information Warfare Systems Command along with private mixed-use development with buildings up to 240 feet tall. The SCAG 2020-2045 RTP/SCS EIR analyzed project environmental effects of the proposed Plan in the Southern California region. The EIR found potential aesthetic impacts on scenic vistas, scenic resources, and light or glare to be significant and unavoidable. Thus, some of these related projects would have adverse effects on aesthetic and visual resources in the San Diego region in 2035 and 2050.

Impacts of Projections in Adopted Plans

The SCAG 2020-2045 RTP/SCS EIR identified significant impacts on visual resources. By increasing mobility and including land use and transportation measures that influence the pattern of future development, the 2020-2045 RTP/SCS would obstruct views of scenic resources or scenic vistas; alter the appearance of scenic resources along or near designated scenic highways and vista points; create significant contrasts with the overall visual character of the existing landscape setting or add urban visual elements to an existing natural, rural, and open space area; and result in shade/shadow or light and glare impacts. At the regional scale, the 2020-2045 RTP/SCS EIR identified cumulatively significant impacts on the overall visual character of the existing landscape setting (SCAG 2020).

Adopted land use plans and ordinances for local jurisdictions in Southern California would support the construction of new development and redevelopment through policy changes, general plan updates, and zoning amendments that encourage and facilitate growth and land use changes. As in Table 4.1-4, visual resource protection ordinances often exist at the local level, and local land use plans often contain policies related to design guidelines and review. All discretionary projects would be subject to these local visual resource protection ordinances, design guidelines, and building requirements/restrictions.

Cumulative Impacts and Impact Conclusions

2035

Substantial Adverse Effect on a Scenic Vista

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, the related projects, and impact projections from adopted plans in the Southern California were significant when considered together, even if not independently significant. The forecasted regional growth and land use changes, coupled with the transportation network improvements, included in the proposed Plan for 2035 would result in significant impacts related to aesthetic and visual resources through substantial adverse effects on scenic vistas of an area.

In addition, significant aesthetic and visual impacts were also identified in the HST project environmental analysis and in the SCAG 2020-2045 RTP/SCS EIR. The Port, SDCRAA, and Navy projects would also have adverse aesthetic and visual impacts, such as future POE projects, airport, and maritime improvements associated with Port for All. Therefore, the combination of the aesthetic and visual resource–related impacts from these projects and SCAG's adopted 2020-2045 RTP/SCS that would affect the Southern California and Northern Baja region. when added to

the proposed Plan's impacts, would result in significant cumulative aesthetic and visual impacts based on Impact AES-1 regarding scenic vistas.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2035 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact C-AES-1).

Damage Scenic Resources within a State Scenic Highway or Local Route

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, the related projects, and impact projections from adopted plans in the Southern California and Northern Baja region were significant when considered together, even if not independently significant. The forecasted regional growth and land use changes, coupled with the transportation network improvements, included in the proposed Plan for 2035 would result in significant impacts related to damage to scenic resources in a state scenic highway.

In addition, significant aesthetic and visual impacts were also identified in the HST project environmental analysis and in the SCAG 2020-2045 RTP/SCS EIR. The Port, SDCRAA, and Navy projects would also have adverse aesthetic and visual impacts, such as future POE projects, airport, and maritime improvements associated with Port for All. Therefore, the combination of the aesthetic and visual resource–related impacts from these projects and SCAG's adopted 2020-2045 RTP/SCS that would affect the Southern California and Northern Baja region, when added to the proposed Plan's impacts would result in significant cumulative aesthetic and visual impacts based on Impact AES-2 regarding scenic resources in a state scenic highway.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2035 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact C-AES-1).

Degrade the Existing Visual Character or Quality

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, the related projects, and impact projections from adopted plans in the Southern California and Northern Baja region were significant when considered together, even if not independently significant. The forecasted regional growth and land use changes, coupled with the transportation network improvements, included in the proposed Plan for 2035 would result in significant impacts related to degradation of visual character of an area.

In addition, significant aesthetic and visual impacts were also identified in the HST project environmental analysis and in the SCAG 2020-2045 RTP/SCS EIR. The Port, SDCRAA, and Navy projects would also have adverse aesthetic and visual impacts, such as future POE projects, airport, and maritime improvements associated with Port for All. Therefore, the combination of the aesthetic and visual resource–related impacts from these projects and SCAG's adopted 2020-2045 RTP/SCS that would affect the Southern California and Northern Baja region, when added to the proposed Plan's impacts would result in significant cumulative aesthetic and visual impacts based on Impact AES-3 regarding substantial degradation of the visual character of an area by 2035.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2035 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact C-AES-31.

Light and Glare

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, the related projects, and impact projections from adopted plans in the Southern California and Northern Baja region were significant when considered together, even if not independently significant. The forecasted regional growth and land use changes, coupled with the transportation network improvements, included in the proposed Plan for 2035 would result in the introduction of new light sources that would affect dark skies would have significant impacts.

In addition, significant aesthetic and visual impacts were also identified in the HST project environmental analysis and in the SCAG 2020-2045 RTP/SCS EIR. The Port, SDCRAA, and Navy projects would also have adverse aesthetic and visual impacts, such as future POE projects, airport, and maritime improvements associated with Port for All. Therefore, the combination of the aesthetic and visual resource–related impacts from these projects and SCAG's adopted 2020-2045 RTP/SCS that would affect the Southern California and Northern Baja region. when added to the proposed Plan's impacts, would result in significant cumulative aesthetic and visual impacts based on Impact AES-4 regarding light and glare impacts.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2035 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact C-AES-1).

2050

Substantial Adverse Effect on a Scenic Vista

The cumulative analysis presented above for year 2035 would be applicable to year 2050, and significant impacts on aesthetic and visual resources would occur. By 2050, increases in regional growth, land use changes, and the number of transportation network improvements implemented over those that occurred by 2025 and 2035 would result in additional opportunities for adverse impacts on panoramic views, views of significant landscape features. The 2050 time period is beyond the planning horizon of the adopted SCAG 2020-2045 RTP/SCS. However, with long-term growth and development throughout the region, similar land use impacts would likely continue throughout the region. The combination of the aesthetic and visual resource–related impacts from the projects and adopted plans described above that would affect the Southern California and Northern Baja region. when added to the proposed Plan's impacts, would result in significant cumulative aesthetic and visual impacts, based on Impact AES-1 regarding scenic vistas impacts.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2050 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact-C-AES-1).

Damage Scenic Resources within a State Scenic Highway or Local Route

The cumulative analysis presented above for year 2035 would be applicable to year 2050, and significant impacts on aesthetic and visual resources would occur. By 2050, increases in regional growth, land use changes, and the number of transportation network improvements implemented over those that occurred by 2025 and 2035 would result in additional opportunities for adverse impacts on scenic resources from scenic highways to occur. The 2050 time period is beyond the planning horizon of the adopted SCAG 2020-2045 RTP/SCS. However, with long-term growth and development throughout the region, similar land use impacts would likely continue throughout the region. The combination of the aesthetic and visual resource–related impacts from the projects and adopted plans described above that would affect the Southern California and Northern Baja region, when added to the proposed Plan's impacts, would result in significant cumulative aesthetic and visual impacts, based on Impact AES-2 regarding scenic resources in a state scenic highway.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2050 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact-C-AES-1).

Degrade the Existing Visual Character or Quality

The cumulative analysis presented above for year 2035 would be applicable to year 2050, and significant impacts on aesthetic and visual resources would occur. By 2050, increases in regional growth, land use changes, and the number of transportation network improvements implemented over those that occurred by 2025 and 2035 would

result in additional opportunities for adverse impacts on visual character to occur. The 2050 time period is beyond the planning horizon of the adopted SCAG 2020-2045 RTP/SCS. However, with long-term growth and development throughout the region, similar land use impacts would likely continue throughout the region. The combination of the aesthetic and visual resource–related impacts from the projects and adopted plans described above that would affect the Southern California and Northern Baja region, when added to the proposed Plan's impacts, would result in significant cumulative aesthetic and visual impacts, based on Impact AES-3 regarding substantial degradation of the visual character of an area by 2050.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2050 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact-C-AES-3).

Light and Glare

The cumulative analysis presented above for year 2035 would be applicable to year 2050, and significant impacts on aesthetic and visual resources would occur. By 2050, increases in regional growth, land use changes, and the number of transportation network improvements implemented over those that occurred by 2025 and 2035 would result in additional opportunities for adverse impacts from light and glare to occur. The 2050 time period is beyond the planning horizon of the adopted SCAG 2020-2045 RTP/SCS. However, with long-term growth and development throughout the region, similar land use impacts would likely continue throughout the region. The combination of the aesthetic and visual resource–related impacts from the projects and adopted plans described above that would affect the Southern California and Northern Baja region, when added to the proposed Plan's impacts, would result in significant cumulative aesthetic and visual impacts, based on AES-4 regarding light and glare impacts.

Because cumulative aesthetic and visual resource impacts throughout the Southern California and Northern Baja region by 2050 would be significant and because the proposed Plan's incremental aesthetic and visual resource impacts are significant, the proposed Plan's incremental aesthetic and visual resource impacts are also cumulatively considerable and therefore significant (Impact-C-AES-4).

MITIGATION MEASURES

2035, 2050

Implementation of Mitigation Measures AES-1a, AES-1b, AES-2a, AES-2b, AES-3a, AES-3b, AES-4a, and AES-4b, BIO-2a would reduce significant impacts on scenic vistas, scenic resources within a state scenic highway, degradation of the visual character of an area, and light and glare. However, as outlined above, these mitigation measures would not guarantee that all proposed Plan impacts on scenic vistas, scenic resources within a state scenic highway, degradation of the visual character of an area, and impacts from light and glare would be less than significant. Therefore, the proposed Plan's incremental contributions on visual and aesthetic resources in the years 2035 and 2050 would remain cumulatively considerable post mitigation.

4.2 AGRICULTURE AND FORESTRY RESOURCES

This section evaluates the potential impacts of the proposed Plan on agriculture and forestry resources.

4.2.1 Existing Conditions

AGRICULTURAL RESOURCES

Agriculture is a major industry in California, producing a substantial portion of the nation's food supply. The San Diego region plays an important role, ranking 13th among California counties in terms of agricultural production value. San Diego County has more small farms (fewer than 10 acres) than any other county in the United States, with 62% of its 63,134 farms being fewer than 50 acres (San Diego County Farm Bureau 2025a; National Agricultural Statistics Service 2022). Additionally, 94% of farms in the county are family-owned (San Diego County Farm Bureau 2025b). In 2021, the total value of agricultural commodities in San Diego County was approximately $1.8 billion (San Diego County Farm Bureau 2025a).

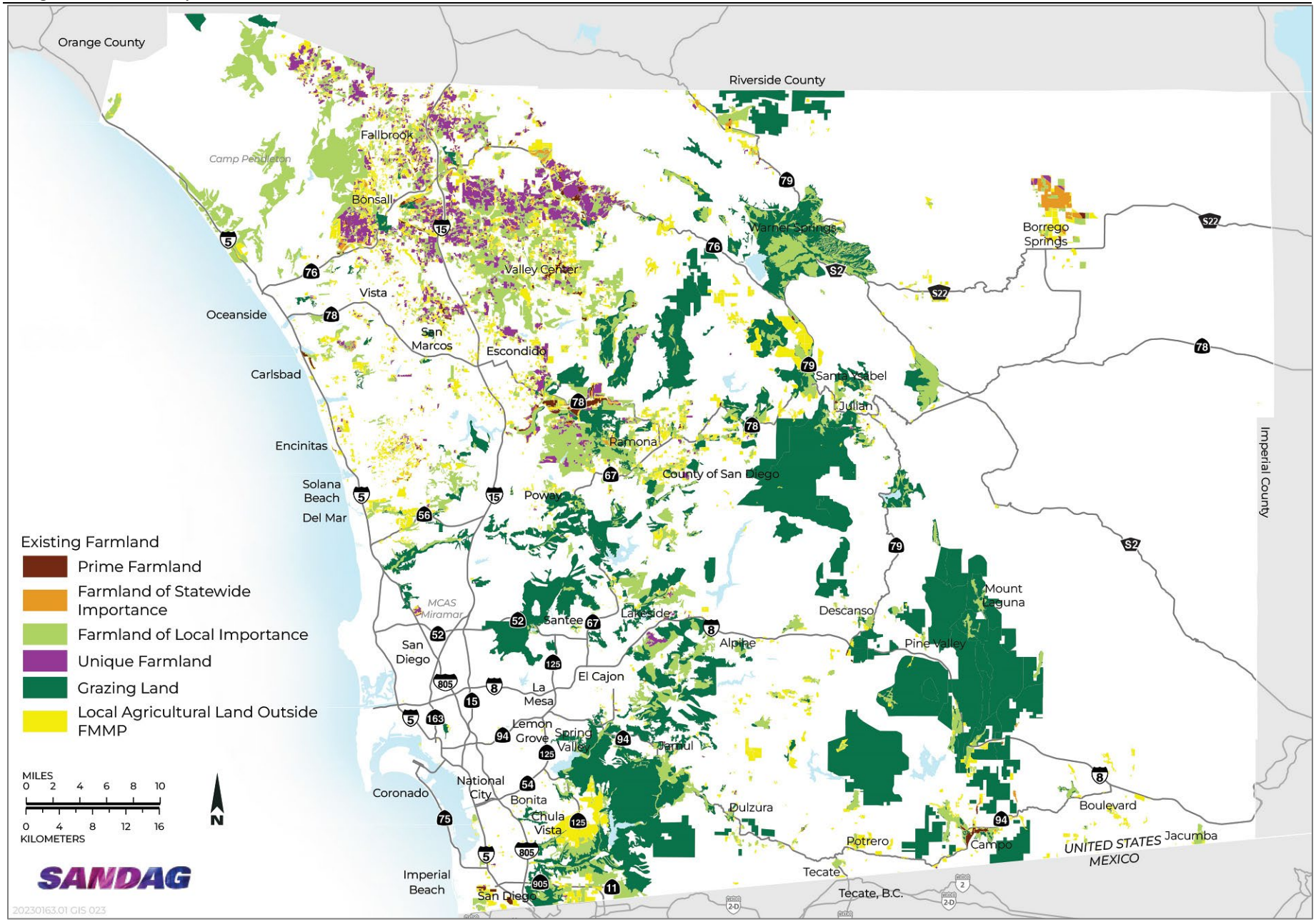
The subtropical climate of the San Diego region supports a diverse range of crops. Key crops include bedding plants, color, perennials, cacti, and succulents, which together account for 24% of the county's agricultural production, followed by ornamental trees and shrubs at 23% (County of San Diego 2023a).

San Diego County also has more certified organic growers than any other county in California, with more than 280 certified organic farms (San Diego County Farm Bureau 2025b). In addition to crop production, agriculture contributes significantly to the local economy, supporting jobs and fostering economic sustainability throughout the region.

Existing Agriculture and Farmlands

SANDAG compiled data available from the sources and years listed below to represent existing conditions for farmland in the San Diego region. Existing agricultural and farmlands parcels of all sizes are identified on Figure 4.2-1.

- SANDAG Land Use, 2025: This set of agricultural data resources includes grazing lands (field crops, grazing lands) and croplands (intensive agriculture, orchards and vineyards, and truck crops) (SanGIS 2025a, SanGIS 2025b).
- San Diego County Agriculture Weights and Measures Agriculture Commodities Data: This database represents field border boundaries of agricultural commodity production sites throughout the region (County of San Diego n.d.).
- State of California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), 2025: These data identify land classified under CEQA as "agricultural land," which includes the following land use categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Lands (DOC 2025b).



Source: Data downloaded from CA Dept of Conservation (FMMP) in 2024; USFS, BLM and SDMMP in 2025; adapted by Ascent in 2025.

Figure 4.2-1 Existing Agricultural Land and Farmland

As shown in Table 4.2-1, there are approximately 569,804 acres of existing agriculture and farmland in the San Diego region. Grazing lands account for about 283,002 acres (approximately 50%) of agricultural lands and are distributed throughout the San Diego region. General agriculture, field crops, and truck crops tend to be in the northern portion of the San Diego region and in the northeast portions of the unincorporated county. Orchard and vineyards are concentrated in the north along Interstate (I) 15.

Table 4.2-1 Existing Agricultural Lands in the San Diego Region

Agricultural Category	Acreage
Prime Farmland	4,972
Farmland of Statewide Importance	6,850
Unique Farmland	38,266
Farmland of Local Importance	159,901
Grazing Lands	283,002
Local agricultural land outside of FMMP	76,813
Total	**569,804**

Note: FMMP = Farmland Mapping and Monitoring Program.

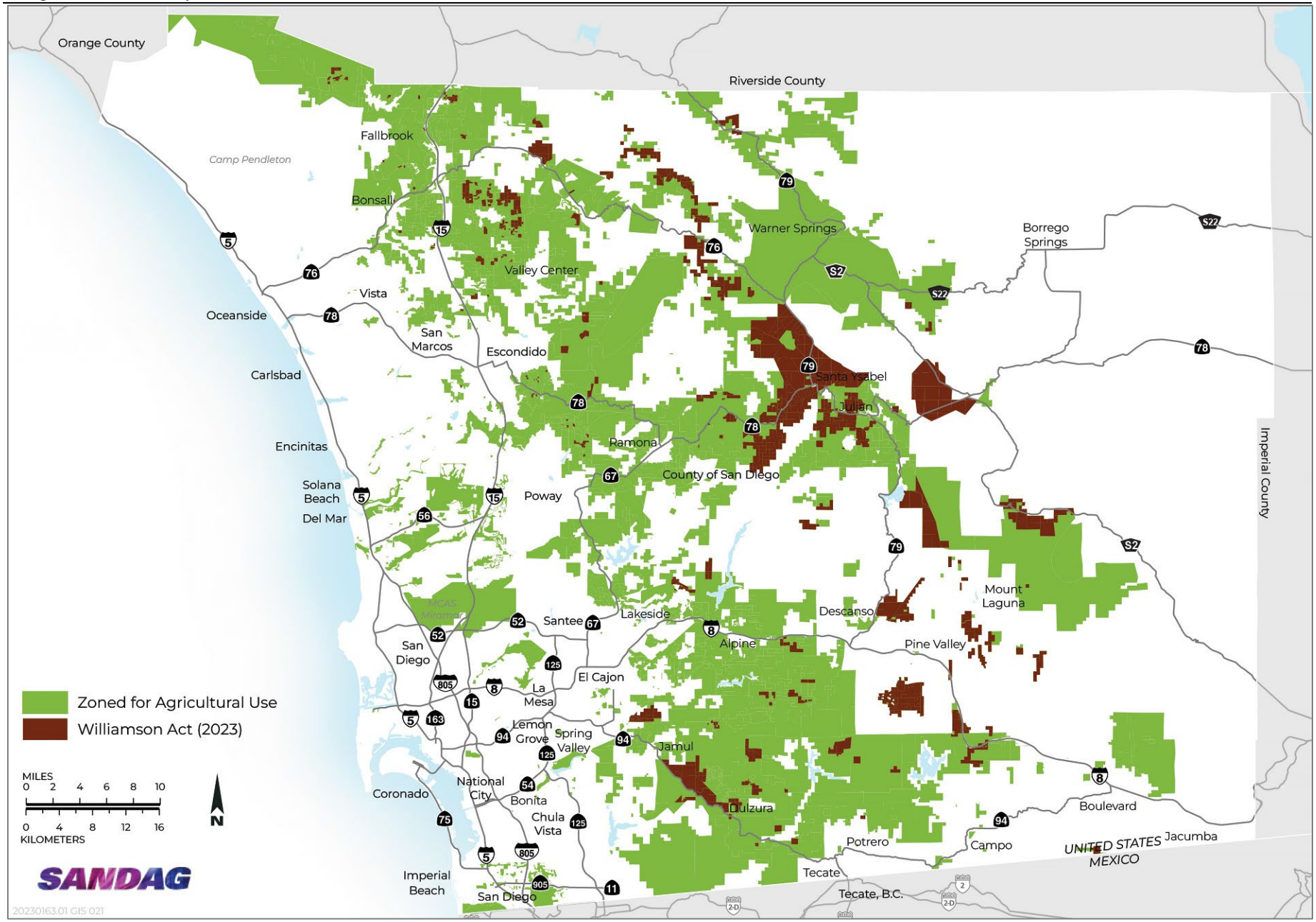
Sources: CA. Dept of Conservation in 2024, SanGIS in 2025, Compiled by Ascent in 2025.

Existing Agriculture Zoning and Williamson Act Lands

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to full market value. As of 2017, the most recent available data, the San Diego region contains 59,420 acres of lands designated under the Williamson Act (SanGIS 2025a, SanGIS 2025b). Figure 4.2-2 shows Williamson Act–designated lands in the San Diego region (these lands are also zoned for agriculture). As shown on Figure 4.2-2, Williamson Act lands are generally located in the eastern portions of the County of San Diego along State Route (SR) 78, SR 79, and SR 76.

Public agencies may acquire Williamson Act–contracted land for a wide range of public improvements. Common reasons for publicly acquiring contracted land include conversion to wildlife habitat, water resource management, public open space, and schools. Public acquisitions have been the second-leading source of contract termination acreage over the current decade. Before acquiring contracted lands, a public agency must make findings that there is no other noncontracted land reasonably feasible for the purpose, and that the lower cost of contracted land is not a primary factor in its decision.

Agricultural zoning and Williamson Act contracts help preserve agricultural lands in the region. Existing land use information was obtained from applicable general plans, and includes lands allowed for various types of agricultural operations (Figure 4.2-2). San Diego County contains 4,031 farms, covering an area of approximately 179,330 acres. Of these farms, approximately 68% are between 1 and 9 acres. San Diego County produces more than 200 different agricultural products, including strawberries, apples, avocados, livestock, and floriculture products (National Agriculture Statistics Service 2022).



Source: Data downloaded from CA Dept of Conservation in 2024; SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.2-2 Zoned Agriculture Williamson Act Lands

FORESTRY RESOURCES

Existing Timberland

The California Timberland Productivity Act of 1982 (Government Code Section 51100 et seq.) defines timberland as privately owned land, or land acquired for state forest purposes, that is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and that is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre. A Timberland Production Zone (TPZ) is an area zoned and used for growing and harvesting timber or for growing and harvesting timber and compatible uses. Compatible uses include those that do not significantly detract from the use of the property for, or inhibit, growing and harvesting timber.

The San Diego region does not contain any land designated as timberland or TPZ (County of San Diego 2023b).

Existing Forest Land

California Public Resources Code (PRC) Section 12220(g) defines "forest land" as land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Forest vegetation communities in the San Diego region include riparian forest/woodland and upland forest/woodland; these vegetation communities are located mainly in the coastal and montane subregions of the San Diego region respectively.

According to the most recent available vegetation data, the San Diego region contains a number of areas that are considered forest land, totaling 252,402 acres (SDMMP 2025). Figure 4.2-3 shows lands designated as forest land in the San Diego region. A number of state and national parks in the region also contain designated forest land.

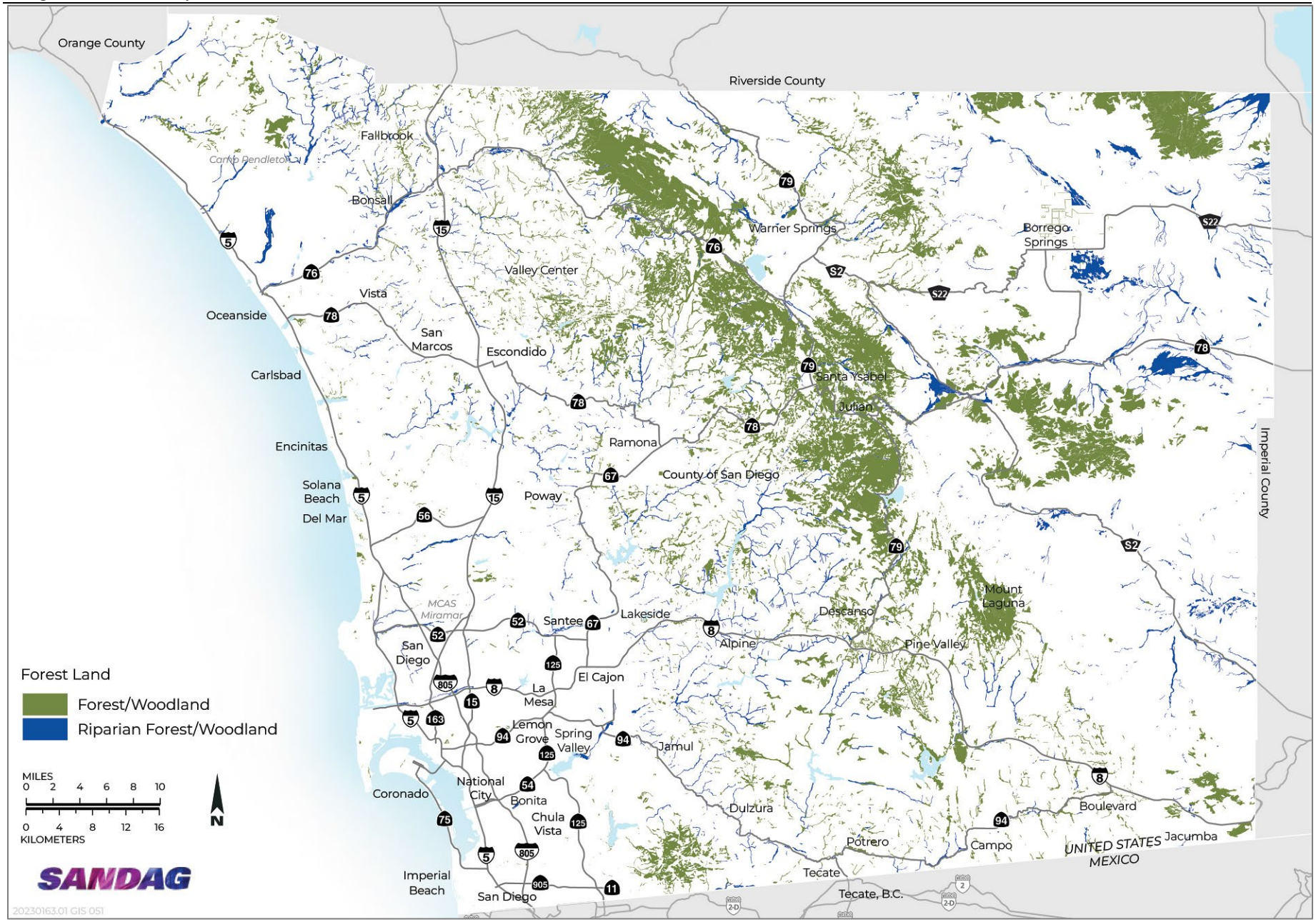
The majority of forest land is located in parks and vacant and undeveloped areas located east of incorporated cities and urbanized communities. A few areas with forest lands are also located near highly urbanized areas. National and state parks with forest resources include the Torrey Pines State Natural Reserve, Cleveland National Forest, Agua Tibia Wilderness, San Mateo Canyon Wilderness, Palomar Mountain State Park, and Cuyamaca Rancho State Park. The following sections describe national and state parks or preserved areas that contain designated forest land.

Torrey Pines State Natural Reserve

Torrey Pines State Natural Reserve, located in the city of San Diego, has more than 2,000 acres of rare native Torrey pine forest and southern maritime chaparral. Recreational uses are managed by the California State Parks system. The trees themselves were identified in the mid-1800s as a separate species of pine and one that grows naturally only along a small strip of coast from Del Mar to La Jolla and on Santa Rosa Island, which lies off the coast about 170 miles to the northwest. The Torrey pine is the rarest pine in the United States and one of the rarest pines in the world. All of the natural features in the reserve are protected under the California State Parks PRC, Section 5019.71 (Torrey Pines State Natural Reserve 2025).

The Cleveland National Forest

The Cleveland National Forest is the southernmost National Forest in California. Consisting of 460,000 acres, the forest offers a wide variety of terrain and recreational opportunities. Portions of the Cleveland National Forest span unincorporated areas of San Diego County across three separate regions, as well as parts of Orange and Riverside Counties. Damaging or removing any tree or forest product except as authorized by a special-use authorization, timber sale contract, or federal law or regulation is prohibited (USFS 2025a).



Source: Data downloaded from SDMMP in 2025; adapted by Ascent in 2025.

Figure 4.2-3 Forest Land

Agua Tibia Wilderness

The Agua Tibia Wilderness is a 17,979-acre protected wilderness area in Riverside and San Diego Counties, mostly within the Palomar Ranger District of the Cleveland National Forest (Martin 1990). The Agua Tibia Wilderness consists of 480 acres of bigcone Douglas-fir–canyon live oak forest. The Aqua Tibia Wilderness was set aside for the study of this forest type in the Peninsular Range province and with emphasis on forest succession, long-range ecological changes, and the effects of resource management practices.

San Mateo Canyon Wilderness

The San Mateo Canyon Wilderness contains 39,413 acres in San Diego and Orange Counties and is managed by the U.S. Forest Service (Aldo Leopold Wilderness Research Institute et al. 2018). The mountains in the wilderness are primarily covered by chaparral and coastal sage vegetation. The area includes several hiking and horse-riding trails with camping available (USFS 2025b).

Palomar Mountain State Park

Coniferous forests cover much of the 1,862 acres of Palomar Mountain State Park, located in north San Diego County (CSP 2025a). Palomar Mountain State Park has a long history of use as a resort and camping destination. Logging operations existed in the past but have never been fully developed, and there are no current reports of active logging (Beckler and Brueggeman 2014; Brueggeman 2024).

Cuyamaca Rancho State Park

Cuyamaca Rancho State Park is a state park located 40 miles east of San Diego in the Laguna Mountains of the Peninsular Ranges. The park's 26,000 acres feature pine, fir, and oak forests, with meadows and streams that exist due to the relatively high elevation of the area compared to its surroundings. The park includes the 6,512-foot Cuyamaca Peak, the second-highest point in San Diego County (CSP 2025b).

4.2.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Farmland Protection Policy Act

Congress passed the Agriculture and Food Act of 1981 (Public Law 97-98) containing the Farmland Protection Policy Act (FPPA) (7 U.S. Code [USC] Section 4202[a]), which is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. The objective of the FPPA is to ensure that—to the extent possible—federal programs are administered to be compatible with state and local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every 2 years (USFS 2017).

Federal Forest Legacy Program

The objective of the Federal Forest Legacy Program is to identify and protect environmentally important forest lands that are threatened by present or future conversion to nonforest uses (USFS 2017). Priority is given to lands that can be effectively protected and managed and that have important scenic, recreational, timber, riparian, fish and wildlife, threatened and endangered species, and other cultural and environmental values. The program is entirely voluntary. Landowners who wish to participate may sell or transfer particular rights, such as the right to develop the property or to allow public access, while retaining ownership of the property and the right to use it in any way consistent with the terms of the easement. The agency or organization holding the easement is responsible for managing the rights it acquires and for monitoring compliance by the landowner. Forest management activities, including timber harvesting, hunting, fishing, and hiking are encouraged, provided that they are consistent with the program's purpose.

The Federal Forest Legacy Program is not solely a protection program. Eligible properties may be "working forests," where forest land is managed for the production of forest products and traditional forest uses are maintained. These forest uses include both commodity outputs and noncommodity values. The purpose of these easements is to maintain these forests intact to provide traditional forest benefits, such as timber production, wildlife habitat, watershed protection, or open space. These forests remain in private ownership, except for the restrictions on development or other uses conveyed by the conservation easement to the agency selected by the landowner.

The Farm and Ranch Land Protection Program

The Farm and Ranch Land Program provides matching funds to help purchase development rights to keep productive farm and ranchland in agricultural uses. Working through existing programs, the U.S. Department of Agriculture (USDA) partners with state, tribal, or local governments and nongovernmental organizations to acquire conservation easements or other interests in land from landowners. USDA provides up to 50% of the fair market easement value of the conservation easement. To qualify, farmland must be part of a pending offer from a state, tribe, or local farmland protection program; be privately owned; have a conservation plan for highly erodible land; be large enough to sustain agricultural production; be accessible to markets for what the land produces; have adequate infrastructure and agricultural support services; and have surrounding parcels of land that can support long-term agricultural production. The USDA Natural Resources Conservation Service manages the program.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

Right to Farm Act

The Right to Farm Act (Civil Code Section 3482.5) is designed to protect commercial agricultural operations from nuisance complaints that may arise when an agricultural operation is conducting business in a "manner consistent with proper and accepted customs." The code specifies that established operations that have been in business for 3 or more years that were not nuisances at the time they began will not be considered a nuisance as a result of a new land use.

California Coastal Act

The California Coastal Act requires the protection of agricultural lands within the coastal zone. It does so by directly mandating that the maximum amount of prime agricultural land be maintained in production, and by supporting various techniques to limit threats to agricultural productivity. These include establishing stable urban-rural boundaries, agricultural buffers, development priority on lands not suitable for agriculture, subdivision restrictions, and public service expansion controls (PRC Section 30241).

California Farmland Conservancy Program

The California Farmland Conservancy Program (CFCP) (PRC Section 10200 et seq.) was formerly known as the Agricultural Land Stewardship Program, which began in 1995. The CFCP provides grants for agricultural conservation easements with the intent to encourage the long-term, private stewardship of agricultural lands through the voluntary use of agricultural conservation easements. The CFCP provides grants to local governments and qualified nonprofit organizations. Easements funded by the CFCP must be of a size and nature suitable for viable commercial agriculture. An agricultural conservation easement is a voluntary, legally recorded deed restriction placed on a property used for agricultural production. The easements are held by land trusts or local governments. The goal is to maintain agricultural land in active production by removing the development pressures from the land. Such easements prohibit practices that would damage or interfere with the agricultural use of the land. Because the easement is a restriction on the deed of the property, the easement remains in effect even when the land changes ownership. While other benefits may accrue because the land is not developed (scenic and habitat values, for example), the primary use of the land is agricultural.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act, better known as the Williamson Act, creates incentives designed to retain agricultural preserves, which can include areas devoted to agricultural use and related open space (Government Code Sections 51200–51297.4). The minimum term for Williamson Act contracts between the local government and participating landowners is 10 years (DOC 2025a). The initial term of 10 years renews automatically each year (local governments can establish initial contract terms for longer periods of time). Generally, any commercial agricultural use will be permitted within any agricultural preserve; however, the Williamson Act also permits land devoted to recreational use and open space, as defined in Government Code Section 51201, within an agricultural preserve. Allowable recreational uses include walking, hiking, picnicking, camping, swimming, boating, fishing, hunting, or other outdoor games or sports available for public participation.

The Williamson Act also includes Farmland Security Zone (FSZ) provisions. An FSZ is an area created within an agricultural preserve by a local government upon request by one or more landowners. FSZ contracts offer landowners greater property tax reduction in return for an initial contract term of 20 years, with renewal occurring automatically each year. Land restricted by an FSZ contract is valued for property assessment purposes at 65% of its Williamson Act valuation, or 65% of its Proposition 13 valuation, whichever is lower. New special taxes for urban-related services must be levied at an unspecified reduced rate unless the tax directly benefits the land or living improvements. Cities and special districts that provide nonagricultural services are generally prohibited from annexing land enrolled under an FSZ contract. Similarly, school districts are prohibited from taking FSZ lands for school facilities.

Payments under the Open Space Subvention Act, discussed below, intended to provide for the partial replacement of local property tax revenue foregone as a result of participation in the Williamson Act have been suspended since 2010 due to revenue shortfalls.

Reinstated Portions of the Williamson Act, Revenue and Tax Code, and Open Space and Subvention Act

Assembly Bill (AB) 1265 (Chapter 90, Statutes of 2011) was approved by the Governor in summer 2011 and essentially reinstated portions of the Williamson Act, Revenue and Tax Code, and Open Space and Subvention Act that allowed eligible counties to recapture 10% of the property tax benefits provided to their owners of Williamson Act lands by decreasing the duration of the Land Conservation Act and FSZ contracts by 1 and 2 years, respectively. Senate Bill (SB) 1353 (Chapter 322, Statutes of 2014), approved by the governor on September 15, 2014, eliminates the January 1, 2016, sunset date and makes the option for participating counties to recapture portions of foregone tax revenue permanent.

Farmland Mapping and Monitoring Program

The FMMP produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is classified as Prime Farmland. The maps are updated every 2 years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance. The goal of the FMMP is to provide consistent and impartial data to decision makers for use in assessing present status, reviewing trends, and planning for the future of California's agricultural land resources (DOC 2025b).

Prime Farmland

Prime Farmland is land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Farmland of Statewide Importance

Farmland of Statewide Importance is land other than Prime Farmland that has a good combination of physical and chemical characteristics for the production of crops. It must have been used for irrigated agricultural production at

some time during the 4 years prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

Unique Farmland

Unique Farmland is land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance and that has been used for the production of specific high economic value crops at some time during the 4 years prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high-quality or high yields of a specific crop when treated and managed according to current farming methods. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers. It does not include publicly owned lands for which there is an adopted policy preventing agriculture use.

Farmland of Local Importance

Farmland of Local Importance is land of importance to the local economy, as defined by each county's local advisory committee and adopted by its Board of Supervisors. Farmland of Local Importance is either currently producing crops, has the capability of production, or is used for the production of confined livestock. Farmland of Local Importance is land other than Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use. San Diego County defines Farmland of Local Importance as "Land that meets all the characteristics of Prime and Statewide, with the exception of irrigation. Farmlands not covered by the above categories but are of significant economic importance to the county. They have a history of good production for locally adapted crops. The soils are grouped in types that are suited for truck crops (such as tomatoes, strawberries, cucumbers, potatoes, celery, squash, romaine lettuce, and cauliflower) and soils suited for orchard crops (avocados and citrus)." (DOC 2025d).

Grazing Land

Grazing lands are lands on which the existing vegetation is suited to the grazing of livestock.

Urban and Built-Up Land

This category describes land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

Other Land

This category encompasses land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; vacant and nonagricultural land surrounded on all sides by urban development; confined livestock, poultry, or aquaculture facilities; strip mines; borrow pits; and water bodies smaller than 40 acres.

Water

This category describes perennial bodies of water with an extent of at least 40 acres.

Z'berg-Nejedly Forest Practice Act of 1973

The Z'berg-Nejedly Forest Practice Act (Forest Practice Act) (PRC, Division 4, Chapter 8) established a nine-member board of forestry whose mandate is to ensure the best economic and environmental practices in timber production in California. The board requires that a Registered Professional Forester prepare a timber harvest plan (THP) before harvesting timber on most nonfederal forestland. The goal of the THP is to ensure that the continual productivity of timberlands is sustained and enhanced by the timber harvesting that takes place on the site, and that related resources are protected to the extent feasible, including watersheds, fisheries, wildlife, recreation, aesthetics, and employment in the region.

Z'berg-Warren-Keene-Collier Forest Taxation Reform Act of 1976 – Timberland Production Zones

Under the Forest Taxation Reform Act (Government Code Section 51110–51119.5), counties must provide for the zoning of land used for growing and harvesting timber as TPZ. A TPZ is a 10-year restriction on the use of timberland, similar to the Williamson Act for agricultural lands. Land use under a TPZ is restricted to growing and harvesting timber or to compatible uses. In return, taxation of timberland under a TPZ will be based only on such restrictions in use.

California Timberland Productivity Act of 1982

The California Timberland Productivity Act (CTPA) (Government Code Sections 51100–51104) describes the powers and duties of local government in protecting timberlands. The law is designed to maintain an optimum amount of timberland, ensuring its current and continued availability by establishing TPZs on all qualifying timberland, which restrict land use to growing and harvesting timber and other compatible uses. The act discourages premature or unnecessary conversion of timberland to urban or other uses and expansion of urban services into timberland, and encourages investment in timberlands based on reasonable expectation of harvest. The CTPA also provides that timber operations conducted in accordance with California forest practice rules shall not be restricted or prohibited due to land uses in or around the location of the timber operations.

Cortese-Knox-Hertzberg Local Government Reorganization Act

The Cortese-Knox-Hertzberg Local Government Reorganization Act (Government Code Section 56000 et seq.) establishes procedures for local government changes of organization, including city incorporations, annexations to a city or special district, and city and special district consolidations. This act's policies provide that development or use of land for any purpose other than open space should be redirected from existing prime agricultural lands in open space use toward areas containing nonprime agricultural lands, unless that action would not promote the planned, orderly, efficient development of an area. In the San Diego region, this act is implemented by the San Diego Local Agency Formation Commission (LAFCO).

Oak Woodlands Conservation Act of 2004

The Oak Woodlands Conservation Act of 2004 (SB 1334) (PRC Section 21083.4) provides funding for the conservation and protection of California's oak woodlands. It requires counties, in determining whether CEQA requires an EIR, negative declaration, or mitigated negative declaration, to determine whether a project in its jurisdiction that may result in a conversion of oak woodlands poses a significant effect on the environment. If a potentially significant effect is identified, the act requires implementation of one or more specified mitigation alternatives to mitigate the conversion of oak woodlands.

California Department of Forestry and Fire Protection's Fire and Resource Assessment Program

The California Department of Forestry and Fire Protection's (CAL FIRE) Fire and Resource Assessment Program (FRAP) assesses the amount and extent of California's forest and rangelands. The program analyzes their condition and identifies alternative management and policy guidelines. The assessment links together state requirements for natural resource inventories and strategies and the federal government's desire to rely more heavily on these state programs in determining priorities for funding (CAL FIRE 2025a).

Open Space Subvention Act

The Open Space Subvention Act (Government Code Section 16140 et seq.) was enacted on January 1, 1972, to provide for the partial replacement of local property tax revenue foregone as a result of participation in the Williamson Act and other enforceable open space restriction programs. Through 2009, participating local governments received annual payments of foregone property tax revenues on the basis of the quantity (number of acres), quality (soil type and agricultural productivity), and for FSZ contracts, location (proximity to a city) of land enrolled under eligible enforceable open space restrictions (DOC 2025c). However, these payments have been suspended since 2010 due to revenue shortfalls.

California Forest Legacy Act

The California Forest Legacy Act (CFLA) (PRC Section 12200 et seq.) was enacted in 2000 and extended in 2007. The CFLA allows CAL FIRE to acquire conservation easements and permits federal agencies, state agencies, local governments, and nonprofit land trust organizations to hold conservation easements acquired pursuant to the California Forest Legacy Program. The California Forest Legacy Program provides funding for conservation easements, with the objective to protect the forest land base, as well as forest resources, such as fish and wildlife habitat and water quality, while ensuring the continuance of traditional uses and protection of landowners' property rights. Landowners participating in the programs are required to prepare a multi-resource management plan that is the equivalent of, or more extensive than, a forest stewardship plan (per U.S. Forest Service guidelines) (CAL FIRE 2025b).

Sustainable Agricultural Lands Conservation Program

The Sustainable Agricultural Lands Conservation Program (SALCP) is a component of the Affordable Housing and Sustainable Communities Program (AHSC), developed and implemented under the Greenhouse Gas Reduction Fund within the California Budget Act of 2014. The goal of the AHSC is to "reduce greenhouse gas (GHG) emissions through projects that implement land use, housing, transportation, and agricultural land preservation practices to support infill and compact development…" (California Strategic Growth Council et al. 2025: 3) It defines eligible projects to include "the acquisition of easements or other approaches or tools that protect agricultural lands that are under pressure of being converted to nonagricultural uses, particularly those adjacent to areas most at risk of urban or suburban sprawl."

Within the AHSC, the SALCP aims to prevent increases in GHG emissions by "limiting opportunities for expansive, vehicle dependent forms of development in favor of more focused, compact, and transit-oriented development within discrete growth boundaries" (State of California n.d.). In the future, SALCP will also fund programs that promote on-farm conservation strategies that reduce GHG emissions. Furthermore, the SALCP intends to leverage past and current agricultural land conservation programs, such as the California Farmland Conservancy Program, the FMMP, the Williamson Act, Revenue and Taxation Code Sections 421–430.5, and PRC Division 9.

The AHSC program began in 2023, and the most recent guidelines for the AHSC grant program were approved by the Strategic Growth Council in February 2025. The guidelines divide project applications into three grant categories: agricultural conservation capacity and project development, agricultural conservation acquisition, and agricultural conservation planning (California Strategic Growth Council et al. 2025).

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

Cities in the proposed Plan area and the County of San Diego, when applicable, have adopted general plans and zoning regulations that address agricultural lands and forestry. The local regulations, plans, and policies related to preservation of lands designated for agricultural uses in the region are provided in Appendix B.

Local jurisdictions' adopted general plans, regulations, and policies also address the preservation and use of open space and biological resources, including forest lands. These plans include the County of San Diego's Multiple Species Conservation Program (MSCP) and associated municipality MSCP subarea plans, Multiple Habitat Conservation Program, *TransNet* Environmental Mitigation Program, and other local biological resources regulations as described in Section 4.4, "Biological Resources."

4.2.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in

the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique characteristics of the proposed Plan.

Checklist questions for agriculture and forestry resources are provided in Section II of CEQA Guidelines Appendix G. To streamline the analysis, the CEQA Guidelines Appendix G questions have been combined and modified as appropriate. Criterion II (a) of Appendix G is addressed in AG-1, which is expanded to include all farmland, not just farmland mapped by the FMMP. Criteria II (b) and (c) related to Williamson Act lands and lands zoned for agriculture are addressed in AG-2. Criteria II (c) and (d) related to forestry resources are addressed in FR-1. Because no timberlands or timberland production zones exist in the proposed Plan area, this resource is not addressed in the impact analysis below. Criterion II (e), addressing other factors that may result in the conversion of agriculture and forestry resources, is addressed in criteria AG-1, AG-2, and FR-1.

Implementation of the proposed Plan would have a significant agriculture and forestry resources impact if it would:

AG-1 Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, or other agricultural lands, to non-agricultural use.

AG-2 Conflict with existing zoning for agricultural use or a Williamson Act contract.

FR-1 Convert or result in the loss of "forest land" as defined in the California Forest Legacy Act of 2007 (PRC Section 12220[g]).

The analysis discloses impacts to agriculture and forestry resources. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's agriculture and forestry resources impacts would be worsened by climate change. Therefore, a climate change analysis for agriculture and forestry resources impacts is not included in this section.

4.2.4 Environmental Impacts and Mitigation Measures

AG-1 CONVERT PRIME FARMLAND, UNIQUE FARMLAND, OR FARMLAND OF STATEWIDE IMPORTANCE (FARMLAND), AS SHOWN ON THE MAPS PREPARED PURSUANT TO THE FARMLAND MAPPING AND MONITORING PROGRAM OF THE CALIFORNIA RESOURCES AGENCY, OR OTHER AGRICULTURAL LANDS,TO NON-AGRICULTURAL USE

Analysis Methodology

This section analyzes the impacts on agricultural lands if implementation of the proposed Plan would convert agricultural lands to nonagricultural use. A significant impact on agricultural lands would occur if any agricultural lands were converted to nonagricultural use as a result of the regional growth and land use change or transportation network improvements under the proposed Plan. Impacts associated with the conversion of agricultural land are quantified, and conversion projections include agricultural parcels of all sizes. In addition to impacts from direct conversion of land, the analysis also considers indirect effects on the viability of continued agricultural production in areas where regional growth and land use change or transportation network improvements would result in indirect impacts on these resources. Projects near or adjacent to agricultural lands could cause land use conflicts that indirectly result in additional agricultural land conversions. These conflicts include noise, odors, water rights and use, chemicals, and runoff. Urban development near agricultural land increases the value of the agricultural land, which makes land purchase for agricultural expansion difficult and provides more incentive to sell the property for nonagricultural use. Commercial, office, or industrial uses would also be incompatible when abutting lands with agricultural operations.

Any nonagricultural growth and land use change within existing agricultural lands is considered a direct impact on these resources. The direct impacts of regional growth and land use change are quantified using geographical information system (GIS) methods by overlaying forecasted regional growth and land use change onto the existing agricultural lands dataset described in Section 4.2.1, "Existing Conditions;" 2025 is used as the baseline year to assess impacts, since this allows a more accurate impact assessment than using NOP conditions in 2022

The analysis quantifies direct impacts on acres of existing agricultural lands using different approaches: (1) growth in land use categories other than Spaced Rural Residential, which is defined as a single-family homes located in rural areas with lot sizes greater than one acre and (2) growth in Spaced Rural Residential. Regional growth and land use change resulting in land categorized as Agricultural, Open Space, Park, and Vacant is assumed to not convert agricultural lands to nonagricultural use (SANDAG n.d.).For growth and land use change (other than growth in the Spaced Rural Residential category), an impact on any part of an existing agricultural parcel is considered a 100% conversion of that parcel to a nonagricultural use. Impacts were calculated separately for each subcategory of agricultural land (e.g., orchards and vineyards, field crops). The analysis of growth in the Spaced Rural Residential land use category is based on a conversion factor that assumes subdivision of agricultural lands results in permanent conversion of 1.5 acres of agricultural lands to nonagricultural use per lot.

Transportation network improvements that would convert existing agricultural lands to nonagricultural use are considered 100% conversion, and are calculated for each project that would have a direct impact on existing agricultural lands. Direct agricultural land impacts from transportation network improvements were evaluated through GIS by overlaying transportation improvement project footprints onto the existing agricultural lands baseline dataset described in Section 4.2.1; 2025 is used as the baseline year to assess impacts. Indirect impacts are not anticipated from transportation network improvements because it would not induce population growth, increase development pressure, or change surrounding land use patterns that could lead to further agricultural land conversion. Transportation improvement project impacts were calculated for each project that requires new construction in undeveloped areas. Transportation improvement project footprints are based on what is known about planned transportation network improvements contained in the proposed Plan at the time of analysis (see Section 2, "Project Description" for a list of transportation improvement projects).

The transportation network footprints are estimated through a coordinated effort by SANDAG transportation modeling, GIS, engineering, and planning staff. Buffer-size assumptions are specific to each travel mode and rely on engineering plan estimates from similar project improvements to calculate footprint width using model input geographies. The assumptions for each travel mode were presented at a peer review, and SANDAG staff are in agreement regarding the overall process and assumptions used.

Highway transportation and regional arterial improvement project footprints are defined by buffering line segment project geographies from the SANDAG highway model network. These layers are an early approximation of the dimensions of the planned improvements, which factor in lane width and buffer/movable barrier size assumptions from engineering drawings of similar projects, and the proposed number of lanes and auxiliary lanes from the SANDAG transportation model network. For highways, it was assumed that each travel lane is 12 feet wide, multiplied by the total number of proposed lanes. Shoulder widths added an additional 24 feet, accounting for a 12-foot outer shoulder and 12-foot inner shoulder in the highway footprint. Express Lane buffers are assumed to be 8 feet, or 4 feet in each direction. Where a movable barrier is assumed, another 4-foot buffer is applied. In addition, where there are ramps or connectors, it is assumed that each lane on the ramp or connector is 12 feet wide with an added 8 feet to account for inner and outer ramp shoulders. For regional arterials, each lane is assumed to be 12 feet wide, and a 4-foot buffer in each direction is assumed to account for sidewalks.

Rail transit improvement project footprints, specifically Trolley, Los Angeles–San Diego–San Luis Obispo (LOSSAN), and SPRINTER lines only in areas where there are new extensions or alignment changes, are defined by a rail-width buffer of 50 feet. Bus transit improvement footprints are not developed because routes would use existing or planned road or highway or Express Lane segments. New bikeway footprints (i.e., active transportation elements) are estimated assuming bikeways are 14 feet wide. Bikeway footprints are not developed in situations where they would occur within existing or planned road or highway segments.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. The City of Oceanside, San Marcos, San Diego, and Chula Vista contain various types of agricultural land, portions of which would be subject to loss due to overlap with project implementation.

Regional growth and land use change between 2025 and 2035 would convert additional agricultural lands to nonagricultural use as shown in Figure 4.2-4. Table 4.2-2 shows that regional growth and land use categories other than Spaced Rural Residential would convert approximately 605 acres to nonagricultural use, including 103 acres of FMMP-designated agricultural land under CEQA (43 acres of Prime Farmland, 1 acre of Farmland of Statewide Importance, and 59 acres of Unique Farmland). Additionally, regional growth in the Spaced Rural Residential land use category would convert an estimated 4,158 acres to nonagricultural use, including about 1,155 acres of FMMP-designated agricultural land.

Table 4.2-2 Conversion of Agricultural Lands to Nonagricultural Use from Regional Growth and Land Use Change, 2025–2035

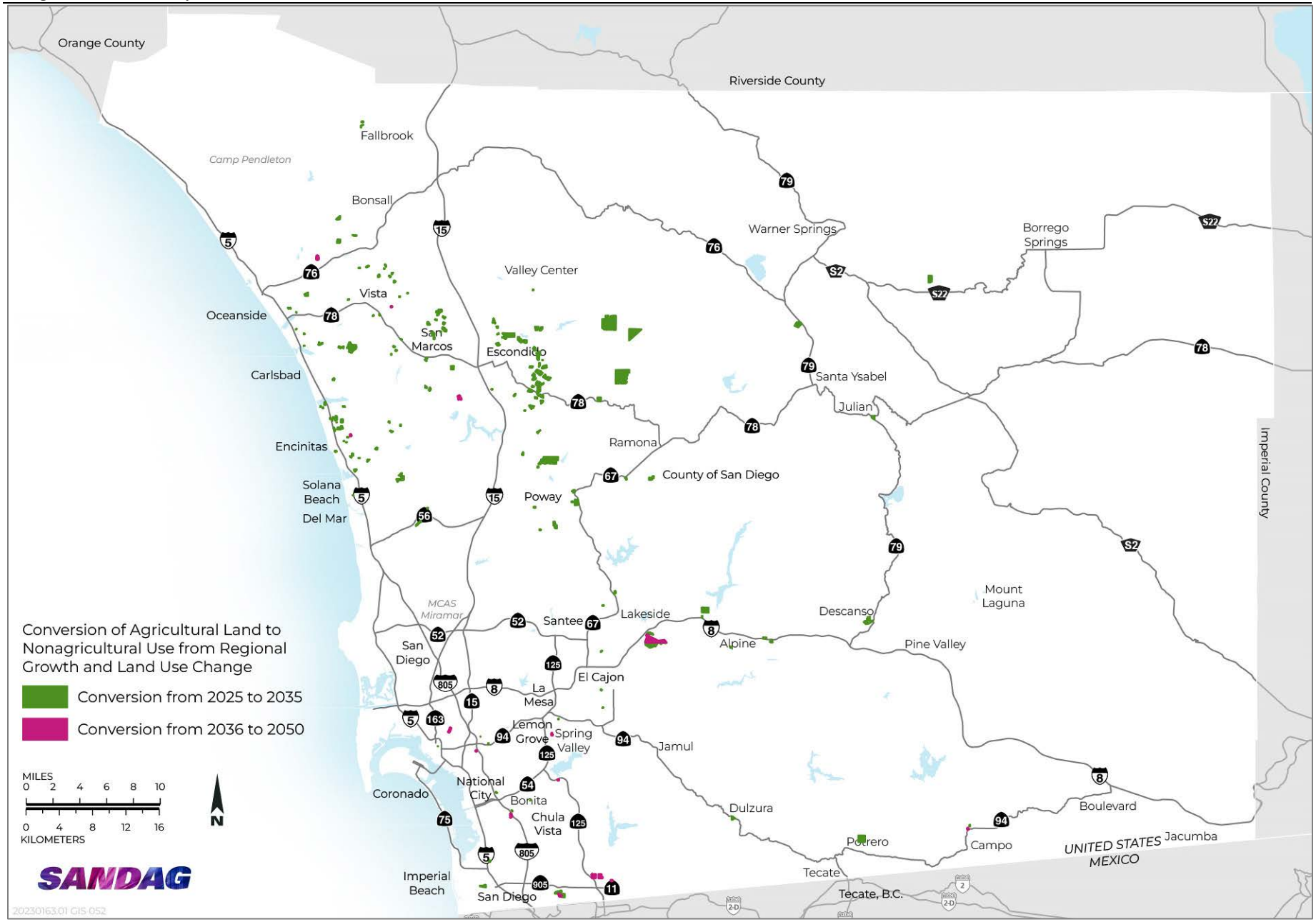
Agricultural Category	2025 Agricultural Lands (acres)	2035 Agricultural Lands (acres)	100 Percent Conversion to Nonagricultural Use (acres)	Spaced Rural Residential Conversion to Nonagricultural Use (acres)	Total Conversion to Nonagricultural Use (acres)
Prime Farmland	4,972	4,889	43	40	83
Farmland of Statewide Importance	6,850	6,755	1	94	95
Unique Farmland	38,266	37,186	59	1,021	1,080
FMMP-designated agricultural land under CEQA	**50,088**	**48,830**	**103**	**1,155**	**1,258**
Farmland of Local Importance	159,901	158,587	172	1142	1,314
Grazing Lands	283,002	282,015	24	964	987
Local agricultural land outside of FMMP	76,813	75,609	306	898	1,204
Other farmland	**519,716**	**516,211**	**502**	**3,003**	**3,505**
Total	**569,804**	**565,040**	**605**	**4,158**	**4,764**

Note: FMMP =Farmland Mapping and Monitoring Program.

Source: Compiled by Ascent in 2025.

Approximately 4,764 acres of existing agricultural land (all parcel sizes) would be converted to nonagricultural uses between 2025 and 2035, including 1,258 acres of FMMP-designated agricultural lands.

As described above, regional growth in proximity to agricultural lands would also cause land use conflicts that would indirectly result in additional agricultural land conversions due to the increase in population and jobs in areas that overlap with agricultural land. Existing laws and programs would protect some agricultural lands and reduce the pressure to convert agricultural lands to nonagricultural use. However, the proposed Plan's regional growth and land use changes would still convert agricultural lands to nonagricultural use, and this impact would be significant.



Source: Data received from SANDAG in 2025; adapted by Ascent in 2025

Figure 4.2-4 Conversion of Agricultural Land to Nonagricultural Use from Regional Growth and Land Use Change

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion. Transportation network improvements projects including rural corridor improvements and Next Gen Rapid projects would overlap with concentrated agricultural areas, resulting in a loss of agricultural land.

Transportation network improvements by 2035 would convert additional agricultural lands to nonagricultural use as shown in Figure 4.2-5. As shown in Table 4.2-3, approximately 308 acres of existing agricultural land would be converted to nonagricultural use as a result of the transportation network improvements and programs planned between 2025 and 2035, including 12 acres of FMMP-designated agricultural land under CEQA (2 acres of Prime Farmland, 1 acre of Farmland of Statewide Importance, and 9 acres of Unique Farmland). The proposed Plan's transportation network improvements and programs would convert agricultural lands to nonagricultural use, and this impact would be significant.

Table 4.2-3 Conversion of Agricultural Lands to Nonagricultural Use from Planned Transportation Network Improvements and Programs, 2025–2035

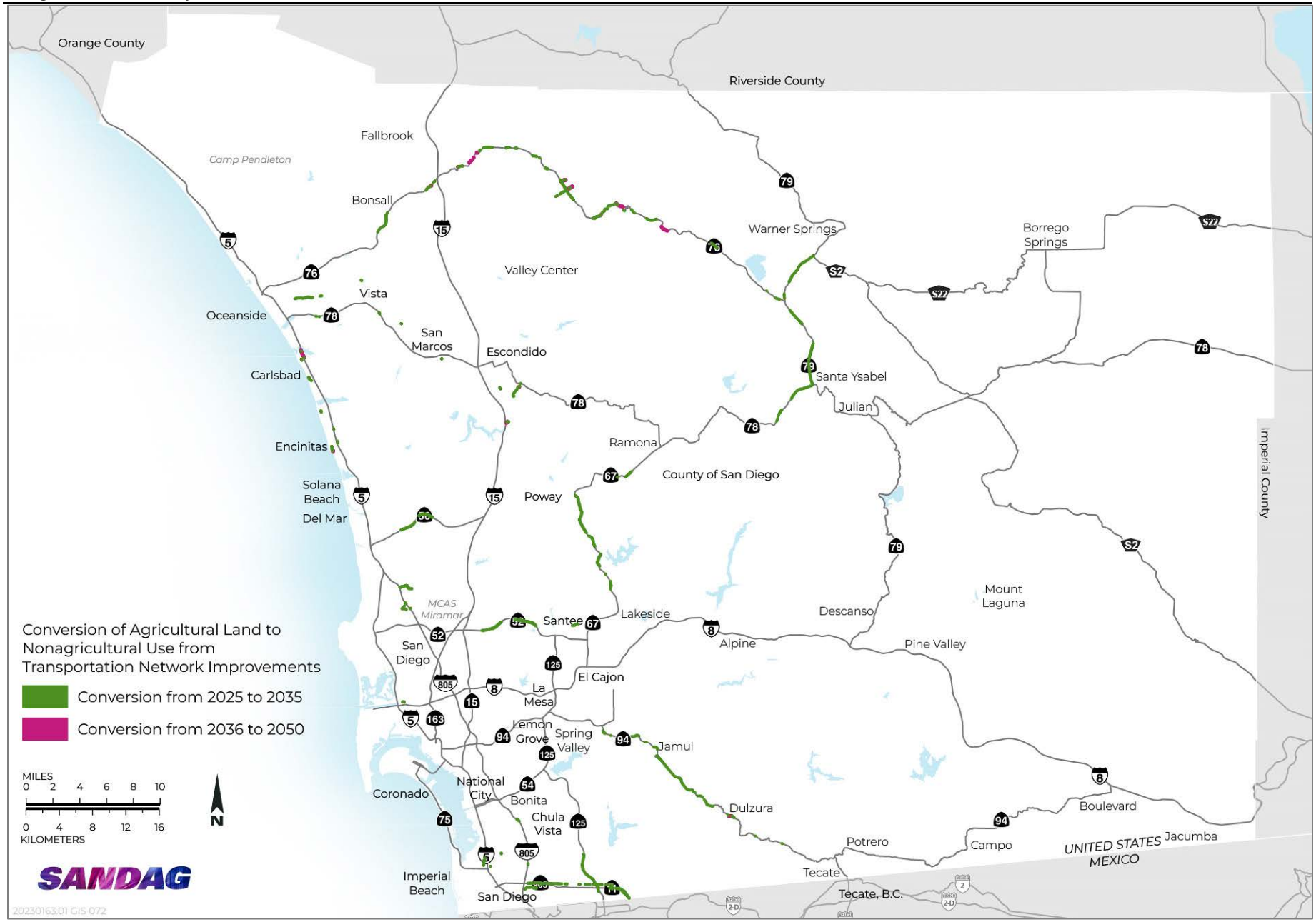
Agricultural Category	2025 Agricultural Lands (acres)	2035 Agricultural Lands (acres)	Total Conversion to Nonagricultural Use (acres)
Prime Farmland	4,972	4,970	2
Farmland of Statewide Importance	6,850	6,849	1
Unique Farmland	38,266	38,257	9
FMMP-designated agricultural land under CEQA	**50,088**	**50,076**	**12**
Farmland of Local Importance	159,901	159,792	109
Grazing Lands	283,002	282,857	145
Local agricultural land outside of FMMP	76,813	76,770	43
Other farmland	**519,716**	**519,419**	**297**
Total	**569,804**	**569,496**	**308**

Notes: Decimals of the land data are omitted in the table, which may result in differences in total number. FMMP =Farmland Mapping and Monitoring Program.

Source: Compiled by Ascent in 2025.

2035 Conclusion

Implementation of forecasted regional growth and land use change and planned transportation network improvements associated with the proposed Plan would convert approximately 5,072 acres of agricultural lands to nonagricultural use, including about 1,270 acres of FMMP-designated agricultural lands under CEQA. In addition, growth and land use change near agricultural lands would indirectly decrease the viability of agriculture production on those lands. Therefore, this impact (AG-1) in the year 2035 is significant.



Source: Data received from SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.2-5 Conversion of Agricultural Land to Nonagricultural Use from Transportation Network Improvements

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. The cities of San Diego, Chula Vista, and incorporated San Diego County, projected to experience the most significant growth, would also overlap with agricultural lands, leading to associated land loss.

Regional growth and land use change between 2036 and 2050 would convert additional agricultural lands to nonagricultural use, as shown in Figure 4.2-4. Table 4.2-4 shows that regional growth and land use categories other than Spaced Rural Residential would convert approximately 735 acres to nonagricultural use, though no FMMP-designated agricultural land under CEQA would be affected. Regional growth in the Spaced Rural Residential land use category would not convert additional agricultural land. Impacts between 2036 and 2050 are distributed in the northern half of the county.

Approximately 337 acres of existing agricultural land (all parcel sizes) would be converted to nonagricultural uses between 2036 and 2050, with 151 acres of FMMP-designated agricultural lands under CEQA being affected. Between 2025 and 2050, about 5,101 total acres of existing agricultural land would in total be converted to nonagricultural use, including 1,409 acres of FMMP-designated agricultural land by regional growth and land use change under the proposed Plan.

As described above, regional growth in proximity to agricultural lands would also cause land use conflicts that would indirectly result in additional agricultural land conversions. Existing laws and programs would protect some agricultural lands and reduce the pressure to convert agricultural lands to nonagricultural use. However, the proposed Plan's regional growth and land use changes would still convert agricultural lands to nonagricultural use, and this impact would be significant.

Table 4.2-4 Conversion of Agricultural Lands to Nonagricultural Use from Regional Growth and Land Use Change, 2036–2050

Agricultural Category	2036 Agricultural Lands (acres)	2050 Agricultural Lands (acres)	100 Percent Conversion to Nonagricultural Use (acres)	Spaced Rural Residential Conversion to Nonagricultural Use (acres)	Total Conversion to Nonagricultural Use (acres)	100 Percent Total 2025-2050 (acres)	Spaced Rural Residential Total 2025-2050 (acres)	Total 2025-2050 (acres)
Prime Farmland	4,889	4,883	5	0	5	48	40	88
Farmland of Statewide Importance	6,755	6,749	7	0	7	8	94	101
Unique Farmland	37,186	37,047	0	139	139	59	1,160	1,219
FMMP-designated agricultural land under CEQA	**48,830**	**48,679**	**12**	**139**	**151**	**115**	**1,294**	**1,409**
Farmland of Local Importance	158,587	158,444	76	67	143	248	1,210	1,457

Agricultural Category	2036 Agricultural Lands (acres)	2050 Agricultural Lands (acres)	100 Percent Conversion to Nonagricultural Use (acres)	Spaced Rural Residential Conversion to Nonagricultural Use (acres)	Total Conversion to Nonagricultural Use (acres)	100 Percent Total 2025-2050 (acres)	Spaced Rural Residential Total 2025-2050 (acres)	Total 2025-2050 (acres)
Grazing Lands	282,015	282,013	1	0	1	25	964	989
Local agricultural land outside of FMMP	75,609	75,567	41	1	42	348	899	1,246
Other farmland	**516,211**	**516,024**	**118**	**69**	**187**	**620**	**3,072**	**3,692**
Total	**565,040**	**564,703**	**130**	**208**	**337**	**735**	**4,366**	**5,101**

Note: FMMP =Farmland Mapping and Monitoring Program.

Source: Compiled by Ascent in 2025.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion. Transportation network improvements projects including managed lanes, active transportation, and rural corridor improvements projects would overlap with concentrated agricultural areas, resulting in a loss of agricultural land.

Transportation network improvements by 2050 would convert additional agricultural lands to nonagricultural use as shown in Figure 4.2-5. As shown in Table 4.2-5, approximately 9 acres of existing agricultural land would be converted to nonagricultural use as a result of the transportation network improvements and programs planned between 2036 and 2050, including 4 acres of FMMP-designated agricultural land under CEQA (1 acre of Prime Farmland, and 3 acres of Unique Farmland). Impacts between 2036 and 2050 would primarily be caused by active transportation projects (including the I-805 connector, the San Luis Rey River Trail, the SR 125 connector, and in the SR 905 corridor), Complete Corridor Managed Lanes projects (including along SR 125, SR 94, I-15, I-5, I-805 and SR 905), and commuter rail projects (including Regional Rail 398 and 598). Between 2036 and 2050, about 9 total acres of existing agricultural land would in total be converted to nonagricultural use, including 4 acres of FMMP-designated agricultural land under CEQA. The proposed Plan's transportation network improvements would convert agricultural lands to nonagricultural use, and this impact would be significant.

Table 4.2-5 Conversion of Agricultural Lands to Nonagricultural Use from Planned Transportation Network Improvements and Programs, 2036–2050

Agricultural Category	2036 Agricultural Lands (acres)	2050 Agricultural Lands (acres)	Total Conversion to Nonagricultural Use (acres)	Total 2025-2050 (acres)
Prime Farmland	4,970	4,969	1	3
Farmland of Statewide Importance	6,849	6,849	0	1
Unique Farmland	38,257	38,254	3	12
FMMP-designated agricultural land under CEQA	**50,076**	**50,072**	**4**	**16**
Farmland of Local Importance	159,792	159,791	1	110

Agricultural Category	2036 Agricultural Lands (acres)	2050 Agricultural Lands (acres)	Total Conversion to Nonagricultural Use (acres)	Total 2025-2050 (acres)
Grazing Lands	282,857	282,857	0	145
Local agricultural land outside of FMMP	76,770	376,767	3	46
Other farmland	**519,419**	**519,415**	**4**	**301**
Total	**569,496**	**569,487**	**9**	**317**

Note: Decimals of the land data are omitted in the table, which may result in differences in total number. FMMP =Farmland Mapping and Monitoring Program.

Source: Compiled by Ascent in 2025.

2050 Conclusion

Implementation of planned transportation network improvements associated with the proposed Plan from 2036 to 2050 would convert approximately 346 acres of agricultural lands to nonagricultural use, including approximately 155 acres of FMMP-designated agricultural land under CEQA. Between 2025 and 2050, about 5,418 total acres of existing agricultural land would in total be converted to nonagricultural use by regional growth, land use change, and transportation network improvements, including 1,425 acres of FMMP-designated agricultural land under CEQA. In addition, growth and land use change near agricultural lands would indirectly decrease the viability of agriculture production on those lands. Therefore, this impact (AG-1) in the year 2050 is significant.

MITIGATION MEASURES

AG-1 CONVERT AGRICULTURAL LANDS TO NONAGRICULTURAL USE

2035, 2050

AG-1a Preserve Existing Agricultural Lands.

During project design and project-level CEQA review of transportation network improvements or development projects, SANDAG shall—and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should—preserve existing agricultural lands by avoiding agricultural land conversion when feasible. If avoidance is not feasible, measures to reduce conversion of agricultural lands to nonagricultural use consist of the following:

- Acquire or dedicate agricultural conservation easements (minimum acreage ratio of 1:1 of comparable quality land). If feasible, locate the easement within or close to areas in which the conversion occurs. Where conversion occurs within the coastal zone, locate the easement within the coastal zone, if feasible. If a project requires cancellation of a Williamson Act contract, acquire or dedicate agricultural conservation easements (minimum acreage ratio of 1:1 of comparable quality land). If feasible, locate the easement within or close to the same city or community in which the cancellation occurs. Where the cancellation occurs within the coastal zone, locate the easement within the coastal zone, if feasible.
- Where agricultural conservation easements are acquired or dedicated, consider the suitability of a specific proposed easement based on its ability to avoid or reduce fragmentation of agricultural land to enhance overall production value and operation viability.
- Where project-specific mitigation described above is not feasible, use other commensurate solutions, such as payment of an agricultural resource impact fee made pursuant to an approved in-lieu fee program. Possible programs include the Purchase of Agricultural Conservation Easement (PACE) Program established by the County of San Diego where the PACE Mitigation Bank can be used to offset impacts.

AG-1b Reduce Transportation Network Improvement and Development Conflicts with Agricultural Operations. During project design and project-level CEQA review of transportation network improvements or development projects, SANDAG shall—and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should—reduce conflicts with agricultural operations. These conflicts shall be reduced through the implementation of project design features and mitigation measures to protect surrounding agriculture, consisting of, but not limited to, the following:

- Provide buffers, berms, setbacks, fencing, or other project design measures to protect surrounding agriculture, topographic features, and open space, and to reduce conflict between transportation network improvements or developments and farming.
- Minimize severance and fragmentation of agricultural land by constructing underpasses and overpasses at necessary intervals to provide property access.
- Align corridors, incorporate buffer zones and setbacks, and design berms and fencing to avoid agricultural lands and to reduce conflicts between transportation projects and agricultural lands.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant impacts on agricultural lands in 2035 and 2050. Although Mitigation Measures AG-1a and AG-1b would reduce direct and indirect impacts associated with the conversion of agricultural lands to nonagricultural use, there is no assurance that the impacts of all development and transportation network improvement projects and programs included in the proposed Plan would be reduced to less-than-significant levels as conversion of agricultural land from implementation of the proposed Plan may still occur. Therefore, agricultural land conversion impacts would remain significant and unavoidable.

AG-2 CONFLICT WITH EXISTING ZONING FOR AGRICULTURAL USE OR A WILLIAMSON ACT CONTRACT

Analysis Methodology

This section analyzes conflicts with lands zoned for agricultural use and lands under Williamson Act contracts. A significant impact would occur under AG-2 if any existing lands zoned for agricultural use or with a Williamson Act contract would be designated for a nonagricultural land use as a result of the regional growth and land use change or transportation network improvements under the proposed Plan. The baseline year used for the lands zoned for agricultural use and lands under Williamson Act contracts is 2025, which reflects the existing conditions. The method for identifying conflicts is the same as described for physical conversion under AG-1, except that for AG-2, 100% of the existing land zoned for agricultural use or under Williamson Act contract that would be redesignated as Spaced Rural Residential if it is identified as a conflict or has a direct impact. Indirect impacts are analyzed qualitatively and occur when growth near agricultural zoned uses would cause land use conflicts. For determining conflicts with Williamson Act contract lands, the analysis assumes that the existing boundaries of these contracts would remain constant during the life of the proposed Plan, through 2050.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the

region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. These growth areas overlap with lands zoned for agricultural use but have minimal to no lands under Williamson Act contracts.

As shown in Table 4.2-6, regional growth land use change between 2025 and 2035 would conflict with an estimated 3,290 acres of land zoned for agricultural use, and would not conflict with Williamson Act contract lands. These impacts are scattered around the northern part of the county, with one concentrated area along SR 79, north of SR 52. See Figure 4.2-6 for locations of these conflicts.

Table 4.2-6 Conflicts with Existing Zoning for Agricultural Use or Williamson Act Contracts from Regional Growth and Land Use Change, All Years (Acres)

Agricultural Category	Conversion by Phase Years 2025–2035	Conversion by Phase Years 2036–2050	Total Impacts 2025-2050
Land Zoned for Agricultural Use	3,290	96	3,386
Williamson Act land	0	0	0

Source: CA Dept of Conservation in 2024; SanGIS in 2025, Compiled by Ascent in 2025.

Regional growth that occurs in proximity to agricultural-zoned lands (as well as lands under Williamson Act contracts) would also cause land use conflicts. These conflicts include, but are not limited to, noise, odors, water rights and use, chemicals, and runoff. Additionally, urban development near agricultural land increases the value of the agricultural land, which makes land purchase for agricultural expansion difficult, and provides more incentive to sell the property for nonagricultural use. Commercial, office, or industrial uses would also be incompatible uses when abutting lands with agricultural operations.

State and local policies and regulations described in Section 4.2.2, "Regulatory Setting," such as the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000, the Williamson Act, and policies outlined in the general plans of local jurisdictions, may reduce conflicts between regional growth and land use change, and land zoned for agricultural use or under Williamson Act contract. However, these policies and regulations would be of limited effectiveness in substantially reducing these conflicts because they are often subject to local government decisions and programs such as LAFCO.

As described above, regional growth in proximity to agricultural lands (as well as lands under Williamson Act contracts) would also cause land use conflicts that would make land purchase for agricultural expansion difficult and would provide more incentive to sell the property for nonagricultural use. State and local policies and regulations may reduce conflicts between regional growth and land use change, and lands zoned for agricultural use or under Williamson Act contract. However, these policies and regulations would be of limited effectiveness in substantially reducing these conflicts because they are subject to terms that require contracts between the local government. Therefore, the designation of lands currently zoned for agricultural use or under a Williamson Act contract for nonagricultural uses as a result of regional growth and land use change is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion. Transportation network improvements projects including managed lanes projects would overlap with concentrated agricultural areas, resulting in conversion of lands zoned for agricultural use and lands under Williamson Act contracts.

As shown in Table 4.2-7, the planned transportation network improvements and programs between 2025 and 2050 would conflict with an estimated 54 acres of existing lands zoned for agricultural use, and would not conflict with lands with Williamson Act contracts. See Figure 4.2-6 for locations of these conflicts. Therefore, the designation of lands currently zoned for agricultural use or under a Williamson Act contract for nonagricultural uses as a result of transportation network improvements is a significant impact.

Table 4.2-7 Conflicts with Existing Zoning for Agricultural Use or Williamson Act Contracts from Planned Transportation Network Improvements, All Years (Acres)

Agricultural Category	Conversion by Phase Years 2025–2035	Conversion by Phase Years 2036–2050	Total Impacts 2025-2050
Land Zoned for Agricultural Use	54	176	230
Williamson Act land	0	1	1

Source: CA Dept of Conservation in 2024; SanGIS in 2025, Compiled by Ascent in 2025.

2035 Conclusion

Between 2025 and 2035, regional growth and land use changes and transportation network improvements and programs associated with the proposed Plan would conflict with approximately 3,344 acres of lands zoned for agricultural use and would have no conflict with Williamson Act contracts. This impact (AG-2) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

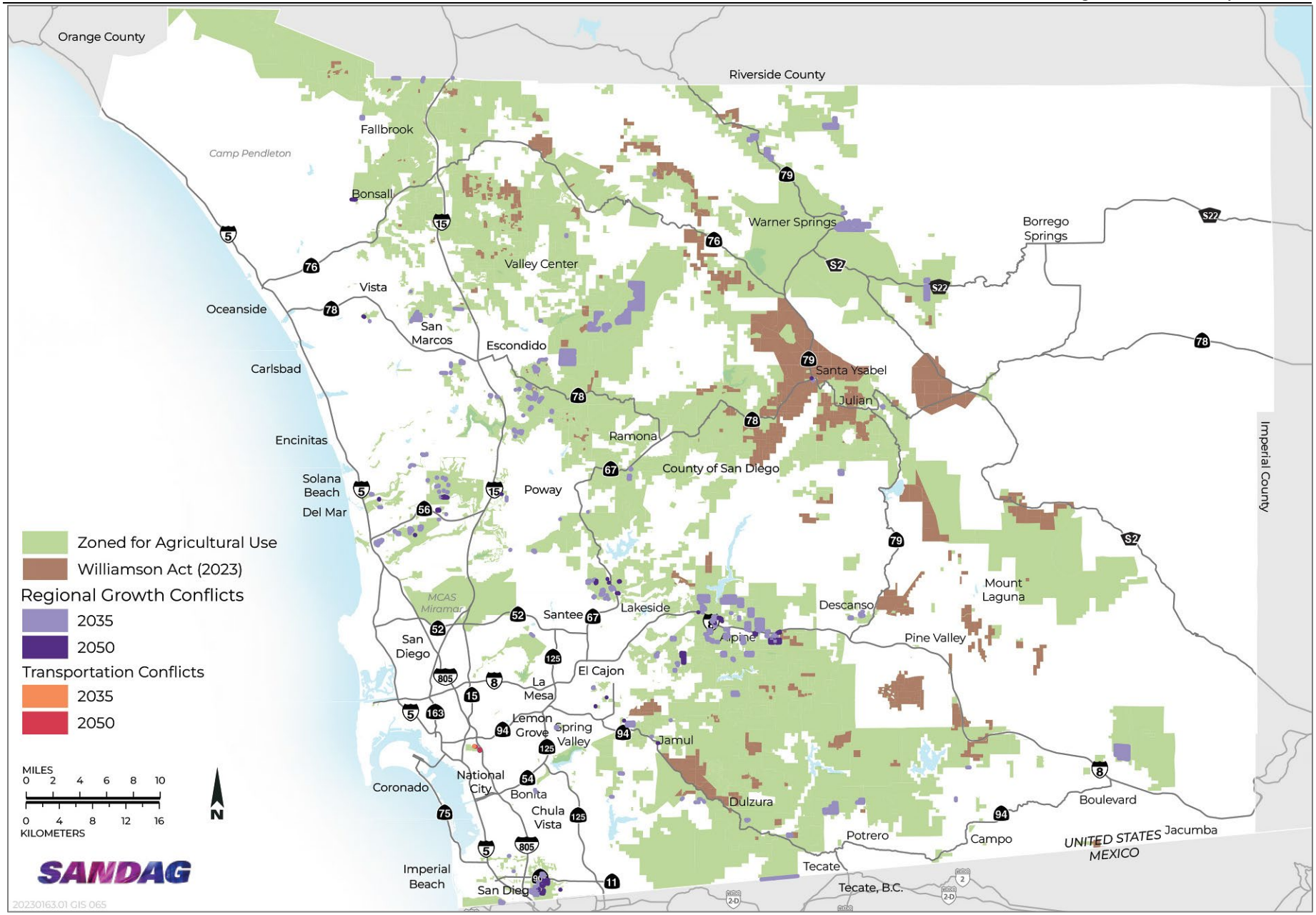
As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. These growth areas overlap with lands zoned for agricultural use and have lands under Williamson Act contracts.

As shown in Table 4.2-6, regional growth and land use change between 2036 and 2050 would conflict with an estimated 96 acres of land zoned for agricultural use and would not conflict with Williamson Act. Between 2025 and 2050, the proposed Plan's regional growth and land use changes would in total conflict with about 3,386 total acres of land zoned for agricultural use but would not conflict with Williamson Act contract lands.

As described above, regional growth in proximity to agricultural lands (as well as lands under Williamson Act contracts) would also cause land use conflicts that would make land purchase for agricultural expansion difficult and would provide more incentive to sell the property for nonagricultural use. State and local policies and regulations may reduce conflicts between regional growth and land use change, and lands zoned for agricultural use or under Williamson Act contract. However, these policies and regulations would be of limited effectiveness in substantially reducing these conflicts. Therefore, this is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion. Transportation network improvements projects including regional active transportation projects would overlap with concentrated agricultural areas, resulting in a conflict of lands zoned for agricultural use and lands under Williamson Act contracts.



Source: Data downloaded from CA Dept of Conservation in 2024; SanGIS in 2025; adapted by Ascent in 2025

Figure 4.2-6 Conflicts with Agricultural Zoning and Williamson Act Contracts from Regional Growth and Land Use Change or Transportation Network Improvements

As shown in Table 4.2-7, the planned transportation network improvements and programs between 2036 and 2050 would conflict with an estimated 176 acres of existing lands zoned for agricultural use and 1 acre of lands with Williamson Act contracts. See Figure 4.2-6 for locations of these conflicts. Between 2025 and 2050, the proposed Plan's transportation network improvements would in total conflict with about 230 total acres of land zoned for agricultural use and 1 acre of land with Williamson Act contracts. This impact is significant.

2050 Conclusion

Between 2036 and 2050, implementation of growth and land use changes and transportation network improvements and programs associated with the proposed Plan would conflict with approximately 272 acres of lands zoned for agricultural use and 1 acre of land with Williamson Act contracts. Between 2025 and 2050 the proposed Plan would in total conflict with about 3,616 total acres of land zoned for agricultural use and 1 total acre of lands with Williamson Act contracts. This impact (AG-2) by the year 2050 is significant.

MITIGATION MEASURES

AG-2 CONFLICT WITH EXISTING ZONING FOR AGRICULTURAL USE OR A WILLIAMSON ACT CONTRACT

2035, 2050

Implement Mitigation Measures AG-1a and AG-1b, as described above.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant impacts by causing conflicts with lands with existing zoning for agricultural use, or under Williamson Act contract, in 2035 and 2050. Although implementation of Mitigation Measures AG-1a and AG-1b would reduce these impact, there is no assurance that the impacts of all development and transportation network improvement projects implementing the proposed Plan would be reduced to less-than-significant levels as conflict with existing zoning for agricultural use or a Williamson Act Contract from implementation of the proposed Plan may still occur. Therefore, conflicts with lands with existing zoning for agricultural use and under Williamson Act contract would remain significant and unavoidable.

FR-1 CONVERT OR RESULT IN THE LOSS OF "FOREST LAND" AS DEFINED IN THE CALIFORNIA FOREST LEGACY ACT OF 2007 (PRC SECTION 12220[G])

Analysis Methodology

This section analyzes the conversion or loss of "forest land," as defined in the California Forest Legacy Act of 2007 (PRC Section 12220[g]), that would directly or indirectly result from the proposed Plan. The baseline year used for forest land is 2025, which reflects the existing conditions. A significant impact on forest land would occur where existing forest lands are designated as land that would be developed as a result of the regional growth and land use changes or developed with a transportation network improvement under the proposed Plan. Forest land includes riparian forest/woodland and upland forest/woodland. Direct impacts are those resulting in damage to or death of vegetation from the direct actions of regional growth and land use changes or transportation network improvements. The methods for estimating conversion or loss of forest land are the same as described for AG-2: 100% of existing forest land that would be designated for development, including Spaced Rural Residential, or developed with a transportation network improvement, is considered a loss of forest land. Indirect impacts are analyzed qualitatively and occur when growth near forest land would cause land use conflicts.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. The growth regions overlap with areas that would experience loss of forest land.

As shown in Table 4.2-8, between 2025 and 2035, regional growth and land use change would result in loss of approximately 1,588 acres of forest lands. The majority of these impacts are located along SR 79 north of SR 52. See Figure 4.2-7 for locations of these impacts. Although adherence to the Federal Forest Legacy Program and the FRAP—as well as additional existing laws, regulations, and programs discussed in Section 4.2.2, "Regulatory Setting"—would reduce impacts on forest land by guiding conservation efforts and informing policy decisions, regional growth and land use changes would still decrease the acreage of, and have adverse indirect impacts on, forest lands. Indirect impacts may occur on forest lands in proximity to areas converted from undeveloped to developed land uses from regional growth and land use change. Changes in hydrology, runoff, sedimentation, fugitive dust, and edge effects (e.g., exotic plant invasion, parasites, disturbance from human activities, pesticides, fuel modification) are examples of indirect impacts which can degrade forest lands. This is a significant impact.

Table 4.2-8 Loss of Forest Land from Regional Growth and Land use Change, All Years

Agricultural Category	Conversion by Phase Years 2025–2035 (Acres of Loss)	Conversion by Phase Years 2036–2050 (Acres of Loss)	Total Impacts 2025-2050 (Acres of Loss)
Forest Land	1,588	48	1,636

Source: Compiled by Ascent in 2025.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion. Transportation network improvements projects including regional managed lanes and Next Gen projects would overlap with concentrated forest land areas, resulting in a loss in forest lands.

The proposed Plan includes a variety of network improvements and programs between by 2035. Although many of the proposed transportation improvements would occur within already established transportation corridors, ground-disturbing activities, such as brush clearing, grading, trenching, excavation, or soil removal of any kind, associated with transportation improvements would impact forest lands. As shown in Table 4.2-9, between 2025 and 2035, transportation network improvements would result in a loss of approximately 0.2 acres of forest lands. Year 2035 impacts would be from local roadway projects, freeway projects and trail projects throughout the county. See Figure 4.2-7 for locations of these impacts. This is a significant impact.

Table 4.2-9 Loss of Forest Land from Transportation Network Improvements and Programs, All Years

Agricultural Category	Conversion by Phase Years 2025–2035 (Acres of Loss)	Conversion by Phase Years 2036–2050 (Acres of Loss)	Total Impacts 2025-2050 (Acres of Loss)
Forest Land	0.2	11	11.2

Source: Compiled by Ascent in 2025.

2035 Conclusion

Between 2025 and 2035, regional growth and land use change and transportation network improvements and programs associated with the proposed Plan would result in a direct loss of approximately 1,588 acres of forest land. This impact (FR-1) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

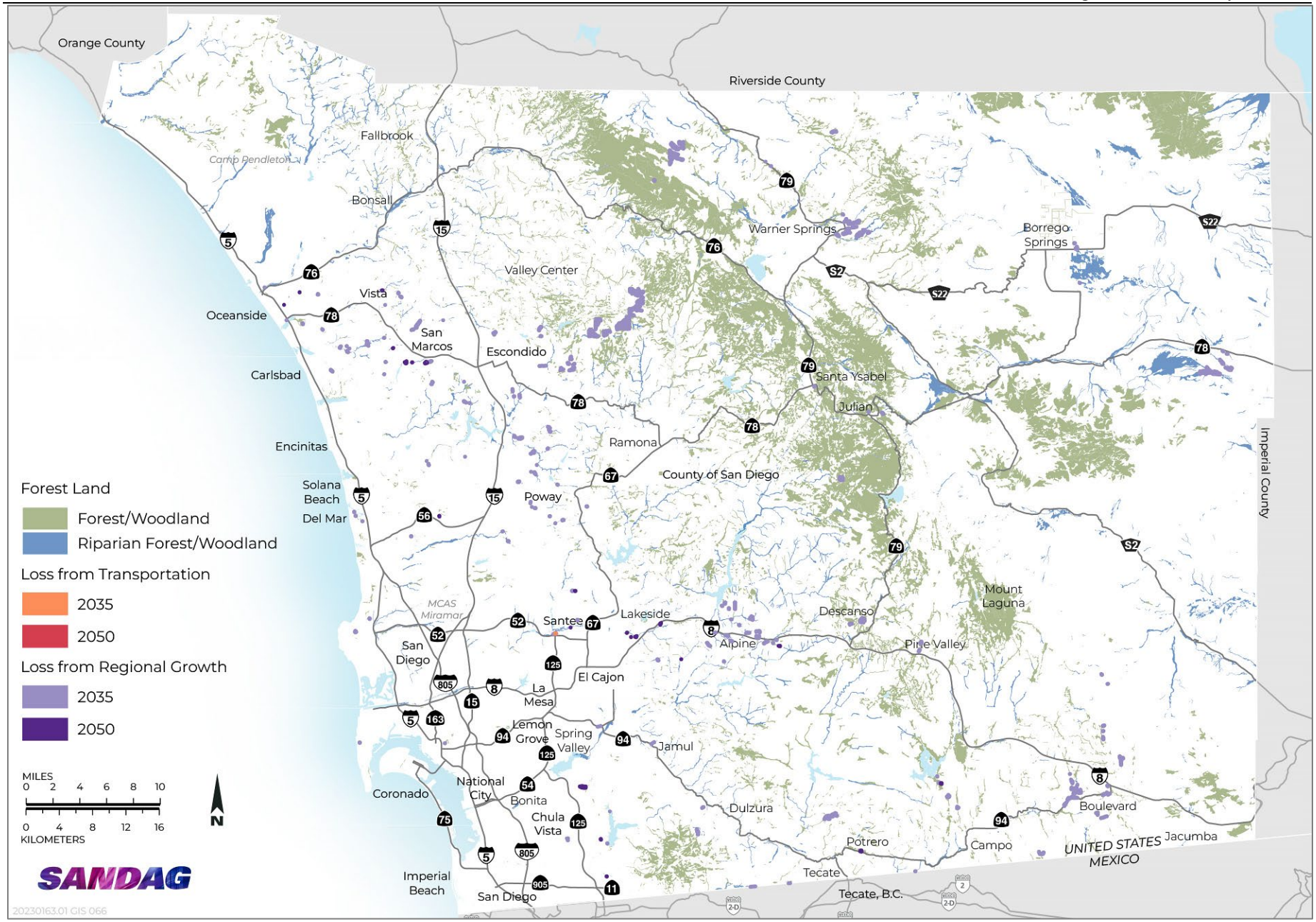
As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. The growth regions overlap with areas that would experience loss of forest land.

As shown in Table 4.2-8, between 2036 and 2050, regional growth and land use change would result in loss of approximately 48 acres of forest lands. Between 2025 and 2050, about 1,636 total acres of forest land would in total be lost. See Figure 4.2-7 for locations of these impacts. As discussed above, adherence to existing laws, regulations, and programs would reduce impacts, both direct and indirect, on forest lands upon implementation of the proposed Plan. However, it cannot be concluded at the current level of analysis that all impacts would be fully avoided or reduced to a level below significance because loss of forest land from implementation of the proposed Plan may still occur. This is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion. Transportation network improvements projects including regional active transportation projects would overlap with concentrated forest land areas, resulting in a loss in forest lands.

The proposed Plan includes a variety of network improvements and programs between 2036 and 2050. As discussed above, construction activities associated with transportation improvements would impact forest lands and other vegetation communities. Between 2036 and 2050, transportation network improvements would result in a loss of approximately 11 acres of forest lands. Year 2050 impacts would be from commuter rail projects, freeway projects, and trail projects throughout the county. See Figure 4.2-7 for locations of these impacts. Between 2025 and 2050, approximately 11.2 total acres of forest land would in total be lost due to transportation network improvements. This is a significant impact.



Source: Data downloaded from SDMMP in 2025; adapted by Ascent in 2025

Figure 4.2-7 Loss of Forest Land due to Regional Growth and Land Use Change or Transportation Network Improvements Loss

2050 Conclusion

Between 2036 and 2050, regional growth and land use change and transportation network improvements and programs associated with the proposed Plan would result in the loss of approximately 59 acres of forest land. Between 2025 and 2050, in total approximately 1,647 total acres of forest land would be lost. This impact (FR-1) in the year 2050 is significant.

MITIGATION MEASURES

FR-1 CONVERT OR RESULT IN THE LOSS OF "FOREST LAND" AS DEFINED IN THE CALIFORNIA FOREST LEGACY ACT OF 2007 (PRC SECTION 12220[G])

2035, 2050

Implementation of Mitigation Measures BIO-1a, Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Communities and Regulated Aquatic Resources, BIO-1b, Provide Compensatory Mitigation, and BIO-1e, Implement Best Management Practices to Avoid Indirect Impacts discussed in Section 4.3, Biological Resources, would also reduce impacts on forest lands.

FR-1 Reduce Impacts on Forest Lands. During project planning, design, and project-level CEQA review of transportation network improvements or development projects, SANDAG shall—and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should—preserve forest lands by avoiding conversion of such lands when feasible and, if not feasible, by implementing measures to reduce impacts on forest lands, consisting of the following:

- Implement Compensatory Mitigation of Forest Lands

Provide compensatory mitigation using mitigation ratios as specified through consultation with resource agencies and in approved natural community conservation plans and habitat conservation plans. Compensatory mitigation outside the coastal zone would be provided either through the purchase of credits at an existing authorized mitigation bank or in-lieu fee program, or through project-specific mitigation. Authorized programs include the San Vicente or San Miguel Conservation Banks, or in-lieu fee options approved under the County's MSCP, depending on habitat type and service area availability (County of San Diego 2025). Compensatory mitigation for impacts inside the coastal zone may not be satisfied through in-lieu fee programs and is required to be located within the coastal zone close to the impact. To the extent allowed by the above plans and ordinances, project-specific mitigation would be provided through on site restoration of temporary impacts, on site or off-site preservation of existing habitats, or off-site restoration.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant forest lands impacts. While implementation of Mitigation Measures FR-1, BIO-1a, BIO-1b, and BIO-1e would reduce direct and indirect impacts on forest lands, there is no assurance that the impacts of all development and transportation network improvement projects implementing the proposed Plan would be reduced to less-than-significant levels as loss of forest land from implementation of the proposed Plan may still occur. Therefore, direct and indirect impacts on forest lands would remain significant and unavoidable.

4.2.5 Cumulative Impacts Analysis

C-AG-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON AGRICULTURE AND FORESTRY RESOURCES

The area of geographic consideration for cumulative impacts on agriculture and forestry resources is the state of California. Agriculture as a whole in California is important because the successful production of many crops is due to the distinctive climates found in the state. Although variable by region, the state of California supports an extensive range of agricultural operations and opportunities.

A hybrid approach for cumulative analysis of agriculture and forest resources allows for an overarching discussion of regional loss of agricultural lands and forest resources associated with general patterns of regional urbanization, growth, and land use changes while also allowing for specific consideration of any projects with known impacts on agriculture. A significant cumulative impact on agriculture and forestry resources would occur if the proposed Plan would result in incremental effects that are considered cumulatively significant when considered in combination with the impact projections in adopted plans, and impacts on agriculture and forest resources resulting from probable future projects. Significant cumulative impacts related to agriculture resources would occur if there were a cumulative loss of existing agriculture resources, including conversion of agricultural lands to nonagricultural use and conflicts with Williamson Act contracts and lands zoned for agricultural use. Significant cumulative impacts related to forest lands would occur if there were a cumulative loss or conversion of forest land as defined in the CFLA of 2007 (PRC Section 12220[g]).

There is an ongoing trend of decreased acres of land in agricultural production in California. The most recent *California Farmland Conversion Report* (2016–2018) issued by the California Department of Conservation found that irrigated farmland in California decreased by 56,186 acres between 2016 and 2018, of which 3,616 acres were in the San Diego region (DOC 2025d). In the San Diego region, land in commercial agricultural crop production decreased from more than 312,000 acres in 2008 to less than 304,000 acres in 2012 (County of San Diego 2013). In the nearby Imperial Valley, areas of crop production served by the Imperial Irrigation District decreased from 463,824 acres in 2021 to 431,809 acres in 2023 (IID 2023).

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan and the Southern California Association of Governments (SCAG) 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final EIR (SCAG 2024) for the Southern California region, including Los Angeles, Orange County, Riverside, and San Bernardino County. The SCAG 2024-2050 RTP/SCS planning horizon is 2050.

Impacts of the Proposed Plan

The forecasted regional growth and land use change and planned transportation network improvements associated with the proposed Plan would convert agricultural lands to nonagricultural use between 2025 and 2035 (5,072 acres), and between 2036 and 2050 (346 acres), for a total of 5,418 acres cumulatively between 2025 and 2050, as detailed in Section 4.2. Implementation of the proposed Plan would also decrease the viability of agriculture on agriculturally designated land. This would be a significant impact on agricultural resources in 2035 and 2050 (Impact AG-1).

Additionally, regional growth and land use change and transportation network improvements would conflict with lands zoned for agriculture (6,726.1 acres between 2025 and 2035, and 254.8 acres between 2036 and 2050, for a cumulative total between 2025 and 2050 of 6,980.9 acres) and lands under Williamson Act contract (0 acres between 2025 and 2035, and 0.6 acre between 2036 and 2050, for a cumulative total between 2025 and 2050 of 0.6 acres). This would be a significant impact on agricultural resources in 2035 and 2050 (Impact AG-2).

Regional growth and land use change would result in new development that would result in the loss of existing forest lands. Proposed transportation network improvements also would require ground-disturbing activities such as brush clearing, grading, trenching, excavation, and/or soil removal that would result in the loss of forest lands. Development associated with regional growth and land use change and transportation network improvements together would result in a direct loss of forest land between 2025 and 2035 (1,588.2 acres), and between 2036 and 2050 (59 acres), for a cumulative total between 2025 and 2050 of 1,647.2 acres. This would be a significant impact (Impact FR-1).

Impacts of Related Projects

Other related regional projects, such as the California High Speed Rail Train (HST), would have similar types of impacts as identified for the proposed Plan transportation improvements. The programmatic environmental document for the HST identified a significant impact related to agriculture and forest resources for the planned segments planned. Implementation of the HST is ongoing and being conducted in phases (HSRA 2005). The EIRs for the SDIA Airport Development Plan Project and the Navy Old Town Campus Revitalization Project did not evaluate agricultural impacts as this resource area was determined to not be significant (SCDRAA 2019).

Other land development and infrastructure projects throughout the region and state, such as petroleum pipeline transportation infrastructure, and freight rail infrastructure, and energy generation and transmission corridors, would also impact agriculture and/or forest resources if these projects expand the right-of-way (ROW) of highway or rail lines and convert agricultural uses or forest lands to other uses.

Impacts of Projections in Adopted Plans

The EIR prepared for the 2020-2045 SCAG RTP/SCS identified impacts related to the loss of agricultural and forest lands due to new transportation infrastructure and associated land development, particularly those constructed outside of urbanized areas where new urban uses could be located on agriculture or forest lands. Additionally, the EIR found that the contribution of the 2020-2045 SCAG RTP/SCS to agriculture and forest impacts would be cumulatively considerable, as the conversion of agricultural land resulting from changes in regional land use patterns has the potential to set a precedent that would affect areas outside the region resulting in the conversion of agricultural lands (SCAG 2020). The 2020-2045 SCAG RTP/SCS planning horizon is 2045. This document and analysis do not account for year 2050 impacts.

Adopted land use plans for local jurisdictions throughout the state of California may enact land pattern changes and zoning amendments that encourage and facilitate new urban development. Some of the land use changes would convert agriculture or forest resources to other uses. Additionally, adopted plans for improvements to arterial networks that widen streets or add or expand transportation facilities, especially those in new or nonurbanized areas, would also convert agriculture or forest resources to other uses.

Cumulative Impacts and Impact Conclusions

2035

Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, or other agricultural lands, to non-agricultural use

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, the related projects, and impact projections from adopted plans within California were significant when considered together, even if not independently significant. As described above, implementation of the regional growth and land use changes and transportation network improvements associated with the proposed Plan in 2035 would significantly impact agricultural resources through the conversion of agricultural lands to nonagricultural use.

As discussed above, significant impacts on agriculture resources have been identified in project-specific environmental documents such as the HST project EIR/EIS and also in the environmental analysis for the 2020-2045 SCAG RTP/SCS. Other related infrastructure projects and land use plans across the state may also contribute to substantial impacts on agriculture resources in a manner similar to the proposed Plan through the expansion of urban uses into areas of agriculture use. When the proposed Plan's impacts are added to the direct impacts from individual projects and adopted plans, cumulative impacts on agriculture resources throughout the state of California by 2035 due to the increased conversion of agricultural land would be significant.

Because cumulative impacts on agriculture resources throughout the state by 2035 would be significant, and because the proposed Plan's incremental impacts on agriculture resources are significant, the proposed Plan's incremental impacts on agriculture resources are also cumulatively considerable in 2035 (Impact C-AG-1).

Conflict with existing zoning for agricultural use or a Williamson Act contract

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, the related projects, and impact projections from adopted plans within California were significant when considered together, even if not independently significant. As described above, implementation of the regional growth and land use changes and transportation network improvements associated with the proposed Plan in 2035 would significantly impact agriculture resources if the Plan conflicts with existing zoning agricultural uses and Williamson Act contracts.

As discussed above, significant impacts on agriculture resources have been identified in project-specific environmental documents such as the HST project EIR/EIS and also in the environmental analysis for the 2020-2045 SCAG RTP/SCS. Other related infrastructure projects and land use plans across the state may also contribute to substantial impacts on agriculture resources in a manner similar to the proposed Plan through the expansion of urban uses into areas of agriculture use. The combination of the direct impacts from individual projects and adopted plans, together with the proposed Plan's impacts, would result in significant cumulative impacts on agriculture resources throughout the state of California by 2035 due to the increased conflict with existing zoning for agricultural use or a Williamson Act Contract.

Because cumulative impacts on agriculture resources throughout the state by 2035 would be significant, and because the proposed Plan's incremental impacts on agriculture resources are significant, the proposed Plan's incremental impacts on agriculture resources are cumulatively considerable and thus significant in 2035 (Impact C-AG-1).

Convert or result in the loss of "forest land" as defined in the California Forest Legacy Act of 2007 (PRC Section 12220[g])

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, the related projects, and impact projections from adopted plans within California were significant when considered together, even if not independently significant. As described above, implementation of the regional growth and land use changes and transportation network improvements associated with the proposed Plan in 2035 would significantly impact forest resources through the conversion of forest lands to nonforest use.

As discussed above, significant impacts on forest resources have been identified in project-specific environmental documents such as the HST project EIR/EIS and also in the environmental analysis for the 2020-2045 SCAG RTP/SCS. Other related infrastructure projects and land use plans across the state may also contribute to substantial impacts on forest resources in a manner similar to the proposed Plan through the expansion of urban uses into areas of forest use. The combination of the direct impacts from individual projects and adopted plans, together with the proposed Plan's impacts, would result in significant cumulative impacts on forest resources throughout the state of California by 2035 due to the increased loss of forest land.

Because cumulative impacts on forest resources throughout the state by 2035 would be significant, and because the proposed Plan's incremental impacts on forest resources are significant, the proposed Plan's incremental impacts on forest resources are cumulatively considerable and thus significant in 2035 (Impact C-AG-1).

2050

Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, or other agricultural lands, to non-agricultural use

Similar to the analysis for 2035, implementation of the regional growth and land use changes and transportation network improvements associated with the proposed Plan in 2050 would significantly impact agriculture resources through the conversion of agricultural lands to nonagricultural use.

As noted above, significant impacts on agricultural resources have been identified in project-specific environmental documents such as the HST project EIR/EIS and also in the environmental analysis for the 2020-2045 SCAG RTP/SCS. Other associated infrastructure projects and land use plans across the state may also contribute to substantial impacts on agricultural lands in a manner similar to the proposed Plan through the expansion of urban uses into agricultural lands such as Sacramento Area Council of Government's 2025 Blueprint which would result in the conversion of agricultural land (SACOG 2025). The combination of these impacts,

together with the proposed Plan's impacts, would result in significant cumulative impacts on agricultural resources throughout the state of California by 2050 by converting agricultural lands to non-agricultural uses.

Because cumulative impacts on agriculture resources throughout the state by 2050 would be significant, and because the proposed Plan's incremental impacts on agriculture resources are significant, the proposed Plan's incremental impacts on agriculture resources are cumulatively considerable and thus significant in 2050 (Impact C-AG-1).

Conflict with existing zoning for agricultural use or a Williamson Act contract

Similar to the analysis for 2035, implementation of the regional growth and land use changes and transportation network improvements associated with the proposed Plan in 2050 would significantly impact agriculture resources if the Plan conflicts with existing zoning agricultural uses and Williamson Act contracts. As noted above, significant impacts on agriculture have been identified in project-specific environmental documents such as the HST project EIR/EIS and also in the environmental analysis for the 2020-2045 SCAG RTP/SCS. Other associated infrastructure projects and land use plans across the state may also contribute to substantial impacts on agriculture and forest resources in a manner similar to the proposed Plan through the expansion of urban uses into areas of agriculture use such as Sacramento Area Council of Government's 2025 Blueprint which would result in conflict with existing zoning for agricultural use or a Williamson Act Contract (SACOG 2025). The combination of these impacts, together with the proposed Plan's impacts, would result in significant cumulative impacts on agriculture resources throughout the state of California by 2050 by conflicting with existing zoning for agricultural use or a Williamson Act Contract.

Because cumulative impacts on agriculture resources throughout the state by 2050 would be significant, and because the proposed Plan's incremental impacts on agriculture resources are significant, the proposed Plan's incremental impacts on agriculture resources are cumulatively considerable and thus significant in 2050 (Impact C-AG-1).

Convert or result in the loss of "forest land" as defined in the California Forest Legacy Act of 2007 (PRC Section 12220[g])

Similar to the analysis for 2035, implementation of the regional growth and land use changes and transportation network improvements associated with the proposed Plan in 2050 would significantly impact forest resources through the conversion of forest lands to non-forest use.

As noted above, significant impacts on forest resources have been identified in project-specific environmental documents such as the HST project EIR/EIS and also in the environmental analysis for the 2020-2045 SCAG RTP/SCS. Other associated infrastructure projects and land use plans across the state may also contribute to substantial impacts on forest resources in a manner similar to the proposed Plan through the expansion of urban uses into areas of forest use such as Sacramento Area Council of Government's 2025 Blueprint which would result in the loss of forest land (SACOG 2025). The combination of these impacts, together with the proposed Plan's impacts, would result in significant cumulative impacts on forest resources throughout the state of California by 2050 by the loss of forest land.

Because cumulative impacts on forest resources throughout the state by 2050 would be significant, and because the proposed Plan's incremental impacts on forest resources are significant, the proposed Plan's incremental impacts on forest resources are cumulatively considerable and thus significant in 2050 (Impact C-AG-1).

MITIGATION MEASURES

C-AG-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON AGRICULTURE AND FORESTRY RESOURCES

The implementation of Mitigation Measures AG-1a, AG-1b, and FR-1, as discussed above, would protect existing agricultural land and avoid the conflicts between regional growth and land use change, and transportation network improvements, with existing agricultural and forestry land to reduce impacts on resources when avoidance is not feasible. However, as outlined above, these mitigation measures would not guarantee that all proposed Plan impacts on agricultural and forestry land would be less than significant. Therefore, the proposed Plan's incremental contributions to cumulative impacts on known agricultural and forestry resources in the years 2035 and 2050 would remain cumulatively considerable post mitigation.

4.3 AIR QUALITY

This section evaluates the potential impacts of the proposed Plan related to air quality. See Appendix C, *Air Quality Technical Report for the 2025 Regional Plan*, for more details on the air quality technical analysis.

4.3.1 Existing Conditions

TOPOGRAPHY AND CLIMATE

The proposed Plan area is within the San Diego Air Basin (SDAB), which includes all of San Diego County. The SDAB covers roughly 4,200 square miles, lies in the southwest corner of California, and encompasses all of the county. The region's population and emissions are concentrated mainly in the western portion of the county (SDAPCD 2024a).

Topography

The topography of the San Diego region is highly varied, comprising coastal plains and lagoons, flatlands and mesas, broad valleys, canyons, foothills, mountains, and deserts. Generally, buildings and structures are located on and in the flatlands, mesas, and valleys, while the canyons and foothills tend to be sparsely developed. This characteristic has led to the region being a conglomeration of separate cities with mostly low-density housing and an automobile-centric character. The topography in the SDAB, along with local meteorology, influences the concentrations of pollutants in the basin. San Diego County also shares an international border with Mexico (SDAPCD 2024a).

Climate

The climate of San Diego is classified as Mediterranean but exhibits substantial diversity because of the varied topography. The climate is dominated by the Pacific high-pressure system, which results in mild, dry summers and mild, wet winters. San Diego experiences an average of 150 days above 70°F and 8-12 inches of rainfall annually (mostly November–March). El Niño and La Niña patterns have large effects on the annual regional rainfall (SDAPCD 2024a).

An El Niño is a warming of the surface waters of the eastern Pacific Ocean. It is a climate pattern that occurs across the tropical Pacific Ocean that is associated with drastic weather occurrences, including enhanced rainfall in Southern California. La Niña is a term for cooler than normal sea surface temperatures across the Eastern Pacific Ocean. San Diego receives less than normal rainfall during La Niña years (SDAPCD 2024a).

The Pacific High drives the prevailing winds in the SDAB. The wind tends to blow onshore in the daytime and offshore at night. In the summer, an inversion layer forms over coastal areas, increasing ozone (O_3) levels. In the winter, San Diego often experiences a shallow inversion layer, which tends to increase carbon monoxide and $PM_{2.5}$ (particulate matter smaller than or equal to 2.5 microns in diameter) concentration levels due to the increased use of residential wood burning (SDAPCD 2024a).

In the fall months, the SDAB is often affected by Santa Ana winds. These winds are the result of a high-pressure system over the Nevada-Utah region that overcomes the westerly wind pattern and forces hot, dry winds from the east to the Pacific Ocean. When they occur, these winds are powerful and incessant. They blow the air basin's pollutants out to sea. However, weak Santa Ana conditions can transport air pollution from the South Coast Air Basin, greatly increasing ozone concentrations in the San Diego area. Strong Santa Ana wind conditions also prime the vegetation for firestorm conditions (SDAPCD 2024a).

POLLUTANTS OF CONCERN

The air quality analysis focuses on the following two types of air pollutants that are of greatest concern for the proposed Plan Area:

- **Criteria Pollutants.** Pollutants for which the US Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have set ambient air quality standards or that are chemical precursors to compounds for which ambient standards have been set. The criteria pollutants associated with Plan implementation are ozone and the precursors thereof (volatile organic compounds [VOC] and oxides of nitrogen [NO_X]), particulate matter (PM) (PM_{10} is PM smaller than or equal to 10 microns in diameter and $PM_{2.5}$ is PM smaller than or equal to 2.5 microns in diameter), carbon monoxide (CO), and sulfur dioxide (SO_2).
- **Toxic Air Contaminants.** The EPA has identified nine air toxic compounds associated with mobile sources as the considerable contributors to background air quality concerns. These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (DPM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter.

Criteria Pollutants

The federal and state governments have established the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for six criteria pollutants: ozone, lead (Pb), CO, nitrogen dioxide (NO_2), SO_2, and PM_{10} and $PM_{2.5}$. The NAAQS and CAAQS for these six criteria pollutants were established with the goal of protecting the public's health from air pollution. Ozone is considered a regional pollutant because its precursors affect air quality on a regional scale. Pollutants such as CO, NO_2, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally. PM is both a local and a regional pollutant. The primary pollutants of concern relative to the proposed Plan are the ozone precursor pollutants VOC and NO_X (which react in the presence of sunlight to create ozone), CO, and PM.

All criteria pollutants can have human health and environmental effects at certain concentrations. The ambient air quality standards for these pollutants (Table 4.3-1) are set to protect public health and the environment with an adequate margin of safety (Clean Air Act Section 109). Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants, and form the scientific basis for new and revised ambient air quality standards.

Principal characteristics and possible health and environmental effects from exposure to the criteria pollutants of concern potentially generated by the proposed Plan are discussed below.

- **Ozone,** a component of urban smog, is not emitted directly into the air, but is created by chemical reactions between NO_X and VOC. This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight (EPA 2025a).

  VOC are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of VOC are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown gas formed by the combination of NO and oxygen. In addition to serving as an integral participant in ozone formation, NO_X also directly acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

  Ozone poses a higher risk to those who already suffer from respiratory diseases (e.g., asthma), children, older adults, and people who are active outdoors. Exposure to ozone at certain concentrations can make breathing more difficult, cause shortness of breath and coughing, inflame and damage the airways, aggravate lung diseases, increase the frequency of asthma attacks, and cause chronic obstructive pulmonary disease. Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues (Bell et al. 2004, Gryparis et. al. 2004). Studies also suggest long-term exposure to ozone may

increase the risk of respiratory-related deaths (Lim et al. 2019). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone, and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggests that sensitive populations (e.g., people with asthma) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (EPA 2025a). The CAAQS and NAAQS for ozone are shown in Table 4.3-1.

In addition to its human health effects, ozone has been linked to crop damage, typically characterized by stunted growth, leaf discoloration, cell damage, and premature death. Ozone can also act as a corrosive and oxidant, resulting in property damage such as the degradation of rubber products and other materials.

- **Nitrogen Oxides** are formed by the combination of NO and oxygen through internal combustion. Short-term exposure to NO_2 can aggravate respiratory diseases, such as asthma, leading to increased hospital admissions, while long-term exposure may contribute to the development of asthma and potentially increase susceptibility to respiratory infections (EPA 2024b). Controlled studies demonstrated effects (airway reactivity) among people with asthma at a short-term (less than 3 hours) exposure to 0.3 parts per million (ppm) NO_2. Effects among healthy individuals occurred at high levels of exposure (1.5 to 2 ppm) (McConnell et al. 2002). For reference, the 1-hour CAAQS for NO_2 is 0.18 ppm (see Table 4.3-1). In addition to human health effects, NO_2 can also reduce visibility and react with water, oxygen, and other chemicals to contribute to acid rain, which can harm sensitive ecosystems (EPA 2024b).
- **Carbon Monoxide** is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. In the proposed Plan Area, high CO levels are of greatest concern during the winter, when periods of light winds combine with the formation of ground-level temperature inversions from evening through early morning. These conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover, motor vehicles exhibit increased CO emission rates at low air temperatures. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation. Exposure to CO at concentrations above the CAAQS or NAAQS (see Table 4.3-1) can also cause fatigue, headaches, confusion, dizziness, and chest pain. There are no ecological or environmental effects of ambient CO (CARB 2025a).
- **Particulate Matter** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulate matter are now regulated—inhalable coarse particles, or PM_{10}, and inhalable fine particles, or $PM_{2.5}$. Particulate matter discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Wind on arid landscapes also contributes substantially to local particulate loading. Additionally, secondary formation of PM, primarily in the form of fine particulate matter, occurs through the chemical transformation of precursors such as NO_X, SO_2, ammonia, and VOC.

  Particulate pollution can be transported over long distances and may have adverse effects on humans, particularly those who are naturally sensitive or susceptible to respiratory problems. Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease. Other symptoms of exposure may include nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms. Exposure to concentrations of PM above the current ambient air quality standards may result in these health effects (EPA 2024c). Similar to ozone, the elderly and those with preexisting heart and lung diseases are at greater risk of the harmful effects of PM exposure. Children are also at increased risk because they breathe faster than adults, and therefore inhale more air per pound of body weight, and tend to spend more time outdoors. The CAAQS and NAAQS for PM are set to protect these sensitive populations and define the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without threatening the health of infants, children, or the elderly (CARB 2024a). The CAAQS and NAAQS for PM are shown in Table 4.3-1.

Depending on composition, both PM_{10} and $PM_{2.5}$ can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (EPA 2024d).

- **Sulfur dioxide** is a product of fuel combustion. The predominant source of SO_2 emissions within the San Diego region is mobile source fuel combustion, primarily aircraft, ocean-going vessels, and on-road vehicles. In recent years emissions of SO_2 have been significantly reduced by the increasingly stringent controls placed on the sulfur content of fuels used in stationary sources and mobile sources. SO_2 is a precursor to fine PM formation in the form of sulfates, such as ammonium sulfate. Short-term exposure to SO_2 can aggravate the respiratory system, making breathing difficult. Controlled laboratory studies indicate that brief exposure (5 to 10 minutes) of people with asthma that are engaged in exercise to an average SO_2 level of 0.4 ppm can result in increases in air resistance (Linn et al. 1987). Healthy adults do not show any symptoms even after up to 3 hours of exposure to SO_2 at levels as high as 1 ppm. Based on the concentration needed to protect sensitive individuals (e.g., people with asthma), CARB and EPA have adopted the CAAQS and NAAQS for SO_2 (see Table 4.3-1). In addition to public health impacts, SO_2 can also affect the environment by damaging foliage and decreasing plant growth (EPA 2024e).
- **Lead** is a soft metal that was previously added to gasoline and emitted to the environment through motor vehicle exhaust. Since lead was removed from gasoline, emissions have declined, and the primary source of emissions is now metal processing facilities and leaded aviation gasoline. Lead can also be resuspended into the air when contaminated soil or paints are disturbed. Lead emissions can be inhaled and ingested, leading to accumulation of lead particles in bones. Lead exposure can lead to cognitive function decrements, behavioral problems, kidney and heart disease, decreased immunity and red blood cell counts, and reproductive and developmental effects (CARB 2024b).

CAAQS have been established for other criteria pollutants, including sulfates, hydrogen sulfide, and vinyl chloride (see Table 4.3-1). However, these criteria pollutants are not affected by the proposed Plan and are not quantified. Vinyl chloride is associated with industrial processes, such as the production of polyvinyl chloride (PVC) plastic and vinyl products. Hydrogen sulfide is associated with natural gas extraction and processing, and natural emissions from geothermal fields. Moreover, while sulfates are primarily emitted from fossil fuel combustion, sulfates are part of $PM_{2.5}$; thus, they are included in $PM_{2.5}$ estimates herein. Additionally, while lead has both a CAAQS and a NAAQS, lead emissions are primarily associated with manufacturing, combustion of some aviation fuels, and battery recycling and manufacturing plants. Because lead is no longer a component in gasoline, lead emissions would be unaffected by the proposed Plan.

Toxic Air Contaminants

Toxic air contaminants (TACs) are pollutants that have the potential to increase cancer and acute or chronic health risks. The most relevant TAC associated with the proposed Plan is DPM. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk-free (17 California Code of Regulations (CCR) Section 93000). Therefore, no NAAQS or CAAQS exist for TACs. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). Adverse health effects of TACs can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

The State Air Toxics Program (Assembly Bill [AB] 2588) identified over 200 TACs. EPA has assessed this expansive list of toxics and identified a master list of TACs as Mobile Source Air Toxics (MSATs) (EPA 2006). MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted into the air when the fuel evaporates or passes through the engine unburned. Other TACs are emitted from the incomplete combustion of fuels or as secondary combustion products. Metallic TACs also result from engine wear or from impurities in oil or gasoline.

Under the federal Clean Air Act (CAA), controlling air toxic emissions became a national priority, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants (HAPs). The EPA

assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (EPA 2007) and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System.

In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment. These nine compounds include: 1,3-butadiene, acetaldehyde, acrolein, benzene, DPM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. The EPA also maintains a database called SPECIATE, which is used to estimate emissions of all known HAPs.

Health effects from TACs and HAPs, including cancer and chronic noncancer risks from on-road traffic, have been associated primarily with diesel PM, benzene, and 1, 3-butadiene. In addition to these three compounds, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient TAC risk for which data are available within California. However, other TACs, including those listed in SPECIATE, also contribute to some risk.

For purposes of this analysis, pollutants that have the potential to increase the risk of developing cancer or acute or chronic health risks are referred to as TACs.

Diesel Particulate Matter Exposure and Human Health Impacts

Most of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being DPM. DPM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. DPM is emitted from both mobile and stationary sources. Diesel exhaust consists of two phases: gas and particles, and both contribute to the health risk. The gas phase is composed of many of the urban TACs, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particle phase is also composed of many different types of particles by size and composition. Fine and ultrafine diesel particulates are of the greatest health concern and may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals, and other trace elements.

Exposure to DPM comes from both on-road and off-road engine exhaust that is either directly emitted from the engines or aged through lingering in the atmosphere. Diesel exhaust causes health effects from both short-term or acute exposures, and long-term chronic exposures. The type and severity of health effects depend upon several factors, including the amount of chemical exposure and the duration of exposure. Individuals also react differently to different levels of exposure.

DPM emissions are believed to be responsible for about 70 percent of California's estimated known cancer risk attributable to TACs. DPM comprises about 8 percent of outdoor $PM_{2.5}$ concentrations, which is a known health hazard. DPM contributes to numerous health impacts that have been attributed to PM exposure, including increased hospital admissions, particularly for heart disease, but also for respiratory illnesses, and premature death. CARB estimates that diesel PM contributes to approximately 1,400 (95 percent confidence interval: 1,100-1,800) premature deaths from cardiovascular disease annually in California. Additionally, exposure to diesel exhaust may contribute to the onset of new allergies; a clinical study of human subjects has shown that diesel exhaust particles, in combination with potential allergens, may produce new allergies that did not exist previously (CARB 2021a).

Ultrafine Particulate Matter

Ultrafine particulate matter (UFP) refers to a subfraction of currently regulated $PM_{2.5}$ and PM_{10} size particles. Although the operational definition of UFP varies in scientific literature, it is generally accepted that particles with size less than 100 nanometers (0.1 micrometer) are labeled as UFPs (Baldaulf et al. 2015). Although UFPs contribute only a small amount to total PM mass, they have a large surface area and often very high concentrations. Because of its small size, a given mass of UFP contains thousands to tens of thousands more particles, with a correspondingly larger surface area, than an equivalent mass of $PM_{2.5}$ or PM_{10}. This means that a given mass of UFP can impact a larger surface area of lung tissue than an equal mass of $PM_{2.5}$ or PM_{10}, thus increasing exposure (EPA 2024c). The predominant source of UFP is fuel combustion in on-road vehicles, off-road vehicles, and stationary sources (CARB 2006). Concentrations of UFP have been found to be substantially higher at locations proximate to

and downwind of high-volume roadways, particularly roadways travelled by diesel-powered vehicles (Health Effects Institute 2013). Studies have also shown that commuters using non-automobile travel (e.g., bicycles) have a higher risk of exposure and adverse health impacts if commuting occurs along roadways (Panis et al. 2010). Moreover, evidence suggests that UFP can penetrate the microclimate within vehicles, causing increasingly more exposure to UFP among those with long commutes (Bigazzi and Figliozzi 2012).

Other Air Toxics

Other TACs are emitted from the combustion of non-diesel fuels, primarily gasoline. In total, the EPA has identified 188 pollutants, which include known TACs from sources, including fuel combustion, as well as tire and brake wear emissions. SPECIATE includes not only the nine priority TACs from mobile sources from FHWA (1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter), but also various other compounds that are known TACs and HAPs (e.g., arsenic, nickel, selenium).

CARB notes that DPM, which is composed of black carbon and numerous organic compounds (i.e., polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene), is responsible for 70 percent of the total known cancer risk related to air toxics in California (CARB 2025b.).

Odors

Odor sources commonly associated with negative human response include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, food packaging plants, and cannabis growing activities. Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

Sensitive Receptors

Sensitive receptors are locations where individuals with pollutant-sensitive conditions may reside. CARB has identified the following groups as being most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and individuals with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder-care facilities, elementary schools, and parks. Health studies indicate that health effects on sensitive receptors are the highest within 1,000 feet of emission sources (CARB 2005).

Ambient Air Quality Conditions

The federal CAA requires EPA to designate areas within the country as either attainment or nonattainment for each criteria pollutant based on whether the NAAQS have been achieved. Similarly, the California CAA (CCAA) requires CARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. If a pollutant concentration is lower than the state or federal standard, the area is classified as being in attainment for that pollutant. If a pollutant violates the standard, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data show that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events (e.g., wildfires) are not considered violations of a state standard and are not used as a basis for designating areas as nonattainment. CAAQS and NAAQS, as well as the attainment status for each, are summarized in Table 4.3-1.

The CAA identifies two types of NAAQS: primary and secondary. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as people with asthma, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Only the primary standards are presented in Table 4.3-1 because those standards are set to protect public health.

Table 4.3-1 Ambient Air Quality Standards and Current SDAB Attainment Status

Pollutant	Averaging Time	Ambient Air Quality Standards			Attainment Status	
		California (CAAQS)[a,b] Standards	National (NAAQS)[c] Standards - Primary[b,d]	National (NAAQS)[c] Standards – Secondary [b,d]	California (CAAQS)[a,b]	National (NAAQS)[c]
Ozone	1-hour	0.090 ppm (180 µg/m^3)	—	—	Nonattainment	—
	8-hour	0.070 ppm (137 µg/m^3)	(2015) 0.070 ppm (137 µg/m^3)	Same as Primary	Nonattainment	Severe Nonattainment
			(2008) 0.075 ppm (148 µg/m^3)	(Same as Primary		Severe Nonattainment
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—	Attainment	Attainment
	8-hour	9 ppm[f] (10 mg/m^3)	9 ppm (10 mg/m^3)	—	Attainment	Attainment
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as Primary	Attainment	Attainment
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—	Attainment	Attainment
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	—	—	Attainment	—
	3-hour	—	—	0.5 ppm (1300 µg/m^3)	Attainment	—
	1-hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—	Attainment	Attainment
Respirable particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	—	—	Attainment	—
	24-hour	50 µg/m^3	150 µg/m^3	Same as Primary	Nonattainment	Unclassified/ Attainment
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	9.0 µg/m^3	15 µg/m^3	Nonattainment	Unclassified/ Attainment
	24-hour	—	35 µg/m^3	Same as Primary	—	Unclassified/ Attainment
Lead [e]	Calendar quarter	—	1.5 µg/m^3	—	—	Attainment
	30-Day average	1.5 µg/m^3	—	—	Attainment	—
	Rolling 3-Month Average	—	0.15 µg/m^3	0.15 µg/m^3	—	Attainment
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m^3)	—	—	Unclassified	No national standards
Sulfates	24-hour	25 µg/m^3	—	—	Attainment	
Vinyl chloride [e]	24-hour	0.01 ppm (26 µg/m^3)	—	—	Unclassified	
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km	—	—	Unclassified	

Notes: µg/m^3 = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million (by volume).

[a] California standards for ozone, carbon monoxide, SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[c] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. The $PM_{2.5}$ 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[d] National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. This allows for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Sources: CARB 2023; CARB 2024a; EPA 2025b.

Air quality is monitored by the San Diego County Air Pollution Control District (SDAPCD) at various monitoring sites throughout the region. The monitoring network has been designed to provide criteria pollutant monitoring coverage for most of the inhabited areas of the region. The purpose of air monitoring is to identify areas where pollutant levels exceed federal and state ambient air quality standards, then develop strategies and regulations to achieve the emission reductions necessary to meet all NAAQS and CAAQS. Data from the ambient monitoring network are then used to indicate the success of the regulations and control strategies in terms of the rate of progress towards attaining the standards or to demonstrate that standards have been attained and maintained.

Table 4.3-2 below displays the ambient air quality monitoring stations operated by the SDAPCD, along with the pollutants measured at each location.

Annual air quality data from the monitoring stations are summarized in SDAPCD's Annual Air Quality Monitoring Network Reports and Five-Year Air Quality Summary. The most recent Air Quality Monitoring Network Report at the time of Draft EIR preparation was the 2023 Annual Report, which summarizes monitoring concentrations, exceedances, and the number of days during the 2021-2023 time period (SDAPCD 2024a). Monitoring data are also reported to CARB and maintained within CARB's statewide Aerometric Data Analysis and Management (ADAM) air quality database (CARB 2025c). The Annual Report provides data by monitoring station, whereas the ADAM database also provides a summary of the data for the entire SDAB. Notably, CARB no longer monitors CO concentrations in the SDAB due to declining emissions resulting from an increasingly cleaner vehicle fleet and local air district rules for stationary sources). However, the EPA still monitors CO at three locations within the SDAB: 11403 Rancho Carmel Drive in Carmel Mountain Ranch, 533 First Street in El Cajon (Lexington Elementary School), and 198 W. San Ysidro Blvd in San Ysidro. In addition, the EPA monitors SO_2 at a single location: 533 First Street in El Cajon (Lexington Elementary School).

A summary of monitoring data is provided in Table 4.3-3. The data includes a summary of data from CARB (for all pollutants except CO and SO_2) and EPA (for CO and SO_2). For each pollutant, the value shown is the maximum of the observed concentrations in the SDAB for each year.

Based on data provided by SDAPCD (Canter pers. comm.), the Donovan station is in violation of the 24-hour PM_{10} and the revised annual $PM_{2.5}$ NAAQS, and the Sherman Elementary station is in violation of the annual $PM_{2.5}$ NAAQS. There are no violations of the PM_{10} and $PM_{2.5}$ NAAQS at the other monitoring stations. Currently, all stations except for Rancho Carmel exceed the annual PM_{10} CAAQS, all stations except for Lexington Elementary exceed the 24-hour PM_{10} CAAQS, and only Donovan exceeds the annual $PM_{2.5}$ CAAQS.

Table 4.3-2 Ambient Air Monitoring Stations in The San Diego Region

Monitoring Station	Pollutant Measured						
	O_3	PM_{10}	$PM_{2.5}$	CO	NO_2	SO_2	Lead
Alpine	✓		✓		✓		
Camp Pendleton	✓		✓		✓		
Chula Vista	✓	✓	✓		✓		
Donovan-Otay Mesa	✓	✓	✓		✓		
El Cajon-Lexington Elementary School	✓	✓	✓	✓	✓	✓	
Kearny Mesa-Kearny Villa Road	✓	✓	✓		✓		
Boulevard-La Posta	✓						
Palomar-McClellan Airport							✓
San Diego-Rancho Carmel Drive				✓	✓		
San Diego-Sherman Elementary	✓		✓		✓		
San Diego-San Ysidro				✓			

Source: CARB 2025d; EPA 2025c.

Table 4.3-3 Summary of Annual Ambient Air Quality Data (2018–2023) – San Diego Air Basin

Pollutant Standards	2018	2019	2020	2021	2022	2023
Carbon Monoxide (CO)						
Maximum concentration (1-hour, ppm)	1.9	4.1	3.3	3.0	2.2	2.7
Number of days national standard exceeded (1-hour)	0	0	0	0	0	0
Maximum concentration (8-hour, ppm)	1.4	2.5	1.7	1.8	1.2	2.1
Number of days national standard exceeded (8-hour)	0	0	0	0	0	0
Nitrogen Dioxide (NO_2)						
Maximum concentration (1-hour, ppm)	55.0	86.0	58.0	61.0	64.6	63.2
Number of days state standard exceeded (1-hour)	0	0	0	0	0	0
Number of days national standard exceeded (1-hour)	0	0	0	0	0	0
Annual Average (ppm)	15	14	14	13	15	13
Ozone (O_3)						
Maximum concentration (1-hour, ppm)	0.102	0.110	0.123	0.099	0.114	0.104
Number of days state standard exceeded (1-hour)	2	2	5	2	2	3
Maximum concentration (8-hour, ppm)	0.083	0.085	0.102	0.080	0.088	0.086
Number of days state standard exceeded (8-hour)	22	18	28	15	24	32
Number of days national standard exceeded (8-hour)	20	16	24	15	24	27
Particulate Matter (PM_{10})						
Maximum concentration (24-hour, µg/m^3)	55	199	179	123	151	75
Number of days state standard exceeded (24-hour)	3	8	*	*	*	*
Number of days national standard exceeded (24-hour)	0.0	6.6	15.0	0.0	0.0	*
Annual average (µg/m^3)	26.3	31.4	50.8	43.0	42.1	19.2

Pollutant Standards	2018	2019	2020	2021	2022	2023
Particulate Matter ($PM_{2.5}$)						
Maximum concentration (24-hour, µg/m^3)	41.9	23.8	51.9	30.2	28.9	40.7
Number of days national standard exceeded (24-hour)	1	0	3	0	0	1
Annual average (µg/m^3)	10.0	8.6	10.7	9.7	9.0	9.0
Sulfur Dioxide (SO_2)						
Maximum concentration (1-hour, ppb)	3.5	0.8	1.7	1.6	0.8	0.7
Maximum concentration (24-hour, ppb)	0.4	0.3	0.4	0.3	0.3	0.3

Notes: * = data not available.

Sources: CARB 2024c; EPA 2025d.

Attainment Status

As noted in Table 4.3-1, the San Diego region is currently designated as a severe nonattainment area for the 2008 8-hour ozone NAAQS and a severe nonattainment area for the 2015 8-hour ozone NAAQS (EPA 2024f). The SDAB is also classified as a nonattainment area with respect to the 1-hour ozone, 8-hour ozone, $PM_{2.5}$, and PM_{10} CAAQS. Accordingly, the SDAPCD (discussed in more detail below) is required to prepare and submit to the EPA, through CARB, a plan identifying control measures and associated emission reductions as necessary to demonstrate attainment for each ozone standard as part of the State Implementation Plan (SIP) (CARB 2020a).

As for other NAAQS, the San Diego region became an attainment area (along with every other area of the state except for the South Coast Air Basin) for CO on June 1, 2018, following a 20-year maintenance period. Accordingly, because conformity only applies to nonattainment and maintenance areas, transportation conformity requirements for CO in the San Diego region ceased on June 1, 2018 (EPA 2024g). The San Diego region is in attainment for all other NAAQS, including NO_2, ozone, PM_{10} and $PM_{2.5}$, SO_2, and Pb.

On February 7, 2024, the EPA promulgated a revised primary annual $PM_{2.5}$ NAAQS, strengthening the standard from 12.0 micrograms per cubic meters (µg/m^3) to 9.0 µg/m^3. Following promulgation of a new or revised NAAQS, the EPA is required under Clean Air Act Section 107(d) to designate all areas of the country with respect to the standard. The deadline for U.S. EPA to finalize designations is February 6, 2026 (CARB 2024d). As of August 2025, EPA has not issued designations with respect to the new annual $PM_{2.5}$ standard, and San Diego County remains designated as an attainment area for annual $PM_{2.5}$ NAAQS.

Local Air Quality

CARB has developed the California Emissions Projection Analysis Model (CEPAM), which provides historical data as well as projections of future year emissions at different scales of interest in the state. Table 4.3-4 presents the emissions inventory for the SDAB for the year 2022 by CEPAM emission category.

Table 4.3-4 Criteria Pollutant Emissions Inventory for 2022 – San Diego Air Basin

Emission Category	Emissions (tons per day)					
	ROG[1]	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Fuel Combustion	1.1	13.5	3.5	0.2	1.3	1.3
Waste Disposal	1.7	0.2	0.3	0.0	2.7	0.6
Cleaning and Surface Coatings	15.5	—	—	—	—	—
Petroleum Production and Marketing	5.9	—	—	—	—	—
Industrial Processes	2.1	0.3	0.3	0.0	4.7	0.9
Solvent Evaporation	28.6	—	—	—	—	—
Miscellaneous Processes	6.3	17.4	3.3	0.2	67.4	12.1
On-Road Motor Vehicles	14.7	119.0	24.0	0.3	5.0	2.2
Other Mobile Sources	24.0	192.1	26.8	0.5	2.7	2.5

Emission Category	Emissions (tons per day)					
	ROG[1]	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Natural Sources	80.2	110.1	4.6	1.5	12.8	10.8
Total	180.1	452.5	62.8	2.9	96.7	30.5

[1] The terms VOC and ROG are used interchangeably, although ROG is used in this table because CARB uses the term ROG in its CEPAM modeling.

Source: CEPAM 2019v1.04, CARB 2024e.

SOURCES OF AIR POLLUTION

Emission sources are normally grouped into four main categories: stationary, area-wide, mobile, and natural sources. Generally, stationary and area-wide sources are those attached to the ground, while mobile sources, as the name implies, are those involved in the movement of people and goods. Natural emission sources refer to emissions that are non-anthropogenic (not human-caused) sources. Each of these categories is usually further divided into major source categories and then summary categories. The sections below provide a brief description of these four main categories.

Stationary Emission Sources

Stationary source emissions, also referred to as point-source emissions, are emissions from major industrial, manufacturing, and processing plants. This category also includes emissions from electric utilities; waste burning; solvent use; petroleum processing, storage, and transfer; and industrial processes.

Mobile Emission Sources

There are two major categories under mobile emissions:

- **On-Road Mobile Sources**: This major source category accounts for the emissions from all types of vehicles licensed to travel on public roads and highways. This includes passenger cars, light- and medium-duty trucks, heavy-duty gas and diesel trucks, heavy-duty urban diesel buses, and motorcycles.
- **Off-Road Mobile Sources**: This major category accounts for vehicular emissions from construction equipment, farm tractors, off-road recreational vehicles, trains, ships, aircraft, mobile equipment, utility equipment, and lawn mowers.

Area-Wide Emission Sources

Area-wide sources are those that individually emit small quantities but collectively result in substantial emissions when aggregated over a larger area. Emissions result from landscaping; natural gas consumption; small industrial engines; solvent use in dry cleaning; auto repair, auto body, and paints; wood burning; industrial coatings; consumer products; printing; bakeries and restaurants; asphalt paving; and fugitive dust.

Natural Emission Sources

Natural sources are non-anthropogenic emission sources, which include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees.

Anticipated Effects Of Climate Change

The Intergovernmental Panel on Climate Change (IPCC) predicts that the global mean surface temperature increase by the end of the 21st century (2081–2100), relative to 1986–2005, could range from 0.5 to 8.7 °F (IPCC 2023). In the San Diego region, this translates to wetter winters and more intense precipitation that can lead to increased flooding, more frequent and intense droughts, more intense heat waves and annual average temperatures increases of up to 4.8°F by 2050, and a longer and less predictable fire season (Climate Education Partners and San Diego Foundation [CEP and SDF] 2015, Kalansky et al. 2018, Ocean Protection Council [OPC]

2018). Climate change may worsen air quality in the San Diego region by influencing the increase of ground-level ozone, wildfire, and droughts.

Ground level ozone is a pollutant that is created by chemical reactions between NOx and VOCs that can pose serious risk to human health and the environment. This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight (EPA 2025a). Hot, sunny days can increase ozone levels and higher temperatures increase the risk of ozone-related premature death (Reidmiller et al. 2018). Ozone levels in the United States are often highest in Southern California and given anticipated temperatures rises in the region, higher temperatures will increase ozone pollution (Reidmiller et al. 2018).

Wildfire smoke contains gaseous pollutants (e.g., carbon monoxide), hazardous air pollutants (HAPs) (e.g., polycyclic aromatic hydrocarbons [PAHs]), water vapor, and particle pollution (EPA 2025). Exposure to these pollutants and fine particulate matter ($PM_{2.5}$) can cause mortality and cardiovascular disease and is associated with onset and worsening of respiratory conditions (Law et al. 2025). As climate change exacerbates wildfire risk, $PM_{2.5}$ emissions from wildfires have increased, worsening air quality. Furthermore, precipitation during dry seasons, which can help fight wildfires and may play a part in clearing away air pollution (Western Fire Chiefs Association [WFCA] 2024), is projected to decrease due to climate change (Kalansky et al. 2018).

Droughts, which are anticipated to be longer and more severe in the region, may also cause deteriorated health and air quality issues due to increased levels of dust. Dust pollution leads to an increase in allergies, asthma, and other respiratory issues. Additionally, in the southwestern United States, drier conditions increase the reproduction of Coccidiodes, a fungus found in soils, that leads to coccidioidomycosis (Valley fever) which causes flu-like symptoms (Kalansky et al. 2018).

4.3.2 Regulatory Setting

The Plan Area is subject to air quality regulations developed and implemented at the federal, state, and regional levels. At the federal level, EPA is responsible for implementation of the CAA. Some portions of the CAA (e.g., certain mobile-source and other requirements) are implemented directly by EPA. Other portions of the CAA (e.g., stationary-source requirements) are implemented by state and local agencies.

Responsibility for attaining and maintaining air quality in California is divided between CARB and regional air quality districts. Areas of control for the regional districts are set by CARB, which divides the state into air basins. Plans, policies, and regulations relevant to the proposed Plan are discussed below.

FEDERAL LAWS, REGULATIONS, PLANS AND POLICIES

In March 2025, the current administration announced that the EPA will undertake 31 actions, focusing primarily on reconsidering actions adopted by previous administrations, including numerous actions and regulations related to air quality and the reduction of GHG emissions (which often have the co-benefit of reducing air pollutant emissions). These include, but are not limited to, reconsideration of Air Toxics Standards that target coal-fired power plants, the revised $PM_{2.5}$ NAAQS, and fuel economy standards, among others. As of the writing of this DEIR, none of these regulations have been repealed or replaced with newly adopted regulations. Therefore, these regulations are discussed below.

Federal Clean Air Act

The federal CAA, as amended, is the primary federal law that governs air quality nationwide. The CAA was first enacted in 1963 and has been amended numerous times in subsequent years (1967, 1970, 1977, and 1990). The CAA establishes the NAAQS and specifies future dates for achieving compliance with these standards. The CAA also mandates that each state submit and implement a SIP for local areas not meeting those standards (42 U.S.C. Section 179 [d][1]). The plans must include pollution control measures that demonstrate how the standards will be met.

The federal CAA Amendments of 1990 (amendments made to Section 107 (d) of the CAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution (EPA 2024h). EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, it may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be imposed relative to transportation funding, requirements for stationary air pollution sources, and other consequences.

The sections of the CAA that would most substantially affect the development of the proposed Plan include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. Table 4.3-1 shows the NAAQS currently in effect for each criteria pollutant. The NAAQS were amended in July 1997 to include an 8-hour standard for ozone and adopt a standard for $PM_{2.5}$. The 8-hour ozone NAAQS was further amended in October 2015 to lower the standard to 0.070 parts per million. Additionally, EPA amended the $PM_{2.5}$ annual arithmetic mean standard to 9 $\mu g/m^3$in 2024 (down from 12.0 $\mu g/m^3$previously). In accordance with the requirements of CAA Section 107 (d), States were expected to submit initial recommendations of areas that do not attain this standard to the EPA by February 2025, and EPA is expected to finalize area designations by February 2026 (40 CFR 51). $PM_{2.5}$ SIPs will be due 18 months after the effective date of designations, with attainment required at the end of the calendar year six years after designations, unless an area is reclassified to Serious - Nonattainment. As of January 2025, CARB staff recommend that San Diego County, along with various other areas of the State, be designated as nonattainment for the 9.0 $\mu g/m^3$ annual $PM_{2.5}$ standard. As noted above, the current administration has stated its intent to review the most current $PM_{2.5}$ NAAQS, which may affect the designation process for areas throughout the state. The deadline for U.S. EPA to finalize designations is February 6, 2026 (CARB 2024f).

California's SIP is updated periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The 2022 State SIP Strategy, adopted on September 22, 2022, is the most current SIP and is a compilation of plans and regulations that govern how the state and regions will comply with the CAA requirements to attain and maintain the NAAQS for ozone and $PM_{2.5}$.

California's CAA Preemption Waiver

The CCAA allows California to seek authorization to enforce its own standards for new nonroad engines and vehicles, despite the preemption which prohibits states from enacting emission standards for new nonroad engines and vehicles. According to the CCAA Section 209 - State Standards, EPA shall grant an authorization under section 209(e)(2), unless the Administrator finds that California:

- was arbitrary and capricious in its finding that its standards are, in the aggregate, at least as protective of public health and welfare as applicable federal standards;
- does not need such standards to meet compelling and extraordinary conditions; or
- California's standards and accompanying enforcement procedures are not consistent with this section.

The CCAA also allows other states to adopt California's motor vehicle emission standards under section 177. Section 177 requires, among other things, that such standards be identical to the California standards for which a waiver has been granted. States are not required to seek EPA approval under the terms of section 177.

The CCAA also allows other states to adopt California's nonroad vehicle or engine emission standards under section 209(e)(2)(B). Section 209(e)(2)(B) requires, among other things, that such standards be identical to the California standards for which an authorization has been granted. States are not required to seek EPA approval under the terms of section 209(e)(2)(B).

Please see the "Fuel Economy and Emissions Standards" section below regarding recent legal developments affecting some of the recent California CAA waivers.

Transportation Conformity

Transportation conformity is required by the CAA Section 176(c) (42 USC Section 7506[c]) to ensure that federal funding and approval are given to highway and transit projects that are consistent with (and conform to) the air quality goals established by a SIP. The conformity requirement prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to SIP for attaining the NAAQS. Conformity means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS (EPA 2024g).

Transportation conformity applies to highway and transit projects and is assessed on two levels: the regional (or planning and programming) level and the project level. Regional conformity is used to assess how well the regional transportation system supports plans for attaining the NAAQS. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the CAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the CAA.

Note that this EIR does not address Regional Plan CAA conformity. Conformity documentation was prepared separately by SANDAG and is contained within Appendix C of the proposed Plan.

Project-level conformity requirements only apply in areas that are designated nonattainment or maintenance areas with respects to particulate matter ($PM_{2.5}$ and PM_{10}) and CO NAAQS. The San Diego region is currently designated as attainment for particulate matter ($PM_{2.5}$ and PM_{10}) and CO NAAQS. Therefore, project level conformity does not apply and no further is provided.

Title III of the CAA and Hazardous Air Pollutants

The 1990 Amendments to the CAA included the addition of Title III, a provision to address air toxics. Under Title III of the CAA, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants (NESHAPs), which are nationally uniform standards oriented toward controlling particular HAPs. Section 112(b) of the CAA identifies 189 "Air Toxics" (HAPs, since modified to 187 pollutants), directs EPA to identify sources of the HAPs, and establishes a 10-year time period for EPA to issue technology-based emissions standards for each source category. Emission standards have been developed for all of the stationary source categories under 40 Code of Federal Regulations (CFR) Part 63. The purpose of Title III of the CAA provides for a second phase under which EPA is to assess residual risk after the implementation of the first phase of standards and to impose new standards, when appropriate, to protect public health.

The EPA regulates TACs through statutes (i.e., 42 USC Section 7412[b]) and regulations that generally require the use of the maximum achievable control technology or best available control technology for toxics to limit emissions. The emissions standards enumerated herein also have a measurable effect on emissions of TACs, particularly diesel PM.

Fuel Economy and Emission Standards

EPA has adopted regulations to improve fuel economy and limit emissions from all sources of pollutants. EPA regulates the emissions from mobile sources by setting standards for the specific pollutants being emitted. Emissions standards set limits on the amount of pollution a vehicle or engine can emit. Mobile source emission standards have been established for light-duty vehicles, trucks, and motorcycles; heavy duty trucks; and non-road engines, including aircraft, locomotives, marine vessels, and recreational engines and vehicles. The EPA has also established gasoline and diesel fuel standards (EPA 2025e).

A description of fuel economy and emission standards for sources analyzed in this EIR is included herein.

Corporate Average Fuel Economy Standards

The Corporate Average Fuel Economy Standards (CAFE) were first enacted in 1975 to improve the average fuel economy of cars and light duty trucks. In 2024, CAFE standards were finalized for model years (MYs) 2027 through 2031. The final rule establishes standards that require an industry-wide fleet average of approximately 49 miles per gallon (mpg) for passenger cars and light trucks. The final rule establishes standards that would require an industry-wide fleet average of approximately 50.4 mpg in MY 2031 for passenger cars and light trucks and an industry fleet-wide average for heavy-duty pickup trucks and vans (HDPUVs) of roughly 2.851 gallons per 100 miles in MY 2035. The final CAFE standards increase at a rate of 2 percent per year for passenger cars in MYs 2027–2031 and 2 percent per year for light trucks in model years 2029–2031. The final HDPUV fuel efficiency standards increase at a rate of 10 percent per year in MYs 2030–2032 and 8 percent per year in MYs 2033–2035 (NHTSA 2024).

Multi-Pollutant Emissions Standards for Light— and Medium-Duty Vehicles

The EPA has established a series of increasingly strict emission standards for new light-duty vehicle engines. These standards were phased-in over four tiers:

- Tier 1 standards were published as a final rule on June 5, 1991, and phased-in progressively between 1994 and 1997 (40 CFR Part 86).
- Tier 2 standards were adopted on December 21, 1999, with a phase-in implementation schedule from 2004 to 2009 (40 CFR Part 80).
- Tier 3 standards were finalized on March 3, 2014, to be phased-in between 2017 and 2025 (40 CFR Parts 79, 80, 85, 86, 600, 1036, 1037, 1039, 1042, 1048, 1054, 1065, and 1066).
- Tier 4 standards were finalized on March 20, 2024, with a phase-in schedule from 2027 through 2033 (40 CFR Parts 85, 86, 600, 1036, 1037, 1066, and 1068).

Tier 1 standards applied to all new light-duty vehicles (LDV) of less than 8,500-pound gross vehicle weight rating (GVWR). The Tier 2 rule extended the applicability of the light-duty emission standards to medium-duty passenger vehicles (MDPV) with GVWR between 8,500 and 10,000 pounds. Tier 3 and Tier 4 regulations additionally include emission standards for chassis-certified heavy-duty vehicles up to 14,000 pounds (Class 2b and Class 3). The successive tiers of emission regulations do not begin with a sharp cut-off date. Rather, each new tier of emission standards is phased in over a number of years. During the phase-in period, manufacturers are required to certify an increasing percentage of their new vehicle fleet to the new standards, with the remaining vehicles still certified to the preceding tier of emission regulations (EPA 2024i).

Emission Standards for Medium- and Heavy-Duty Vehicles

EPA and NHTSA also set fuel efficiency and GHG standards for medium- and heavy-duty trucks. In 2011, EPA and NHTSA finalized a joint rule that established a national program to reduce GHG emissions and improve fuel economy for new medium- and heavy-duty engines and vehicles. These standards have the co-benefit of reducing air pollutants related to medium- and heavy-duty trucks. This rule—called the Phase 1 standards—requires fuel efficiency standards for engines in model years 2014 through 2018 (40 CFR Parts 85, 86, 1036, 1037, 1065, 1066, and 1068). In 2016, EPA and NHTSA adopted the Phase 2 standards, which require fuel efficiency standards for engines in model years 2018 through 2027 (40 CFR Parts 9, 22, 85, 86, 600, 1033, 1036, 1037, 1039, 1042, 1043, 1065, 1066, and 1068) (EPA 2016).

Emission Standards for Non-Road Diesel Engines

EPA established a series of increasingly strict emission standards for new non-road diesel engines. Tier 1 standards were phased in on newly manufactured equipment from 1996 through 2000 (year of manufacture), depending on the engine horsepower category (40 CFR Part 89). Tier 2 standards were phased in on newly manufactured equipment from 2001 through 2006 (40 CFR part 89). Tier 3 standards were phased in on newly manufactured equipment from 2006 through 2008 (40 CFR part 89). Tier 4 standards, which require advanced emission control technology to attain them, were phased in between 2008 and 2015 (40 CFR Part 1039). These emissions standards

apply to all non-road (off-road) equipment that is anticipated to be used to construct elements of the Regional Plan (EPA 2004).

Emission Standards for Locomotives

The EPA established a series of increasingly strict emission standards for new or remanufactured locomotive engines (63 FR 18997-19084). Tier 0 standards, effective as of 2000, applied to engines manufactured or remanufactured from 1973 to 2001. Tier 1 standards applied to engines manufactured/remanufactured from 2002 to 2004. Tier 2 standards applied to engines manufactured/remanufactured after 2004.

In 2008, EPA strengthened the Tier 0 through 2 standards to apply to existing locomotives and introduced more stringent Tier 3 and 4 emission requirements (73 FR 88 25098-25352). Tier 3 standards, met by engine design methods, were phased in between 2011 and 2014. Tier 4 standards, which are expected to require exhaust gas after-treatment technologies, became effective starting in 2015. These standards apply to locomotives that are propelled by engines with total rated horsepower (hp) of 750 kilowatts (kW) (1,006 hp) or more (EPA 2009).

These emissions standards apply to all locomotive engines greater than 750 kW (1,006 hp) in the San Diego region. Engines smaller than 750 kW, including the 440-hp diesel-multiple unit (DMU) engines that power some Coaster and Sprinter activity, are regulated under the emission standards for non-road diesel engines, discussed above. All freight (BNSF) and intra-regional passenger (Amtrak and Metrolink) trains are regulated under these standards.

Public Law No. 119-15

On June 12, 2025, Public Law 119-15, enacting House Joint Resolution 87, was signed into law. The law utilized the Congressional Review Act to disapprove EPA's rule that had granted California a waiver to enforce stricter emissions standards for heavy-duty vehicles under the Clean Air Act. The disapproved rule included programs such as the Advanced Clean Trucks regulation and zero-emission requirements for airport shuttles. Passed under the Congressional Review Act, the law prevents EPA from implementing or reissuing the same or similar rules without new congressional authorization. This effectively blocks California, and other states that follow its standards, from enforcing these specific vehicle emission and warranty regulations. The implications of this law on the State's capability to enforce its independent heavy-duty vehicle regulations are uncertain at this time, as the California Attorney General filed a lawsuit challenging P.L. No. 119-15 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the heavy-duty vehicle regulations during the legal process. Notably, as discussed under the analysis of project impacts in Section 4.3.3, "Environmental Impacts and Mitigation Measures," the conformity analysis prepared for the proposed Plan uses EMFAC2017 and the EIR uses EMFAC2021 to estimate mobile source emissions. EMFAC2017 does not account for California's stricter emissions standards for heavy-duty vehicles because these regulations had not yet been adopted at the time the EMFAC2017 methodology was last updated, and thus were not factored into the modeling. Although EMFAC2021 does assume implementation of California's heavy-duty vehicle regulations, EIR mobile source emissions were calculated prior to the June 12, 2025 disapproval of California's emissions standards for heavy-duty vehicles, there is legal uncertainty about enforceability of the federal disapproval of these regulations, and CARB had provided no guidance on how to address this issue in EMFAC2021 modeling at the time of EIR preparation. Given these considerations, at the time of EIR preparation, EMFAC2017 and EMFAC2021 were the most appropriate methodologies for the EIR to use to calculate mobile source emissions.

Public Law No. 119-16

Similarly on June 12, 2025, Public Law No. 119-16, enacting House Joint Resolution 88, became law. The law also relied on the Congressional Review Act to disapprove the EPA's December 2024 waiver under the CAA that allowed California to implement and enforce the Advanced Clean Cars II (ACC II) regulation. ACC II included a zero-emission vehicle (ZEV) mandate targeting 100% new light-duty ZEV sales by 2035. P.L. No. 119-16 marks the first ever occurrence that waivers under the CAA have been revoked under the Congressional Review Act. The implications of this law on the State's capability to enforce its independent fuel economy standards are uncertain at this time, as the California Attorney filed a lawsuit challenging P.L. No. 119-16 on June 12, 2025. Whether this

action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the ACC II regulation during the legal process. Notably, as discussed under the analysis of project impacts in Section 4.3.3, "Environmental Impacts and Mitigation Measures," the conformity analysis prepared for the Project,1 uses EMFAC2017 and the EIR uses EMFAC2021 to calculate mobile source emissions estimates. These analyses do not account for ACC II because ACC II had not yet been adopted at the time the EMFAC2017 or EMFAC2021 methodologies were last updated, and thus were not factored into the modeling.

Public Law No. 119-17

Public Law 119–17, enacted on June 12, 2025, disapproves, under the Congressional Review Act, of the EPA's rule titled "California State Motor Vehicle and Engine and Nonroad Engine Pollution Control Standards; The 'Omnibus' Low NOX Regulation; Waiver of Preemption; Notice of Decision." The law disapproves the EPA's January 6, 2025, Low-NO_x rule that would have granted California a waiver to enforce stricter emissions standards for both on-road and non-road heavy-duty engines. Similar to the other CRA resolutions listed above targeting emissions waivers, this law prohibits the EPA from reissuing the same or substantially similar rule without new authorization from Congress. The law effectively blocks California, and any states following its standards, from implementing this omnibus Low-NO_X regulatory package. The implications of this law on the State's capability to enforce its low NO_X rule are uncertain at this time, as the California Attorney filed a lawsuit challenging P.L. No. 119-1 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the low NO_x rule during the legal process.

Notably, as discussed under the analysis of project impacts in Section 4.3.3, "Environmental Impacts and Mitigation Measures," the conformity analysis prepared for the Project uses EMFAC2017 and the EIR uses EMFAC2021 to calculate mobile source emissions estimates. Although the EMFAC2017 post-processing adjustment factor and EMFAC2021 both assume implementation of the Low NO_X rule, EIR mobile source emissions were calculated prior to the June 12, 2025 disapproval of the Low NO_X rule, there is legal uncertainty about enforceability of the federal disapproval of these regulations, and CARB had provided no guidance on how to address this issue in EMFAC modeling at the time of EIR preparation. Given these considerations, at the time of EIR preparation, EMFAC2017 and EMFAC2021 were the most appropriate methodologies for the EIR to use to calculate mobile source emissions.

Endangerment Finding

As mentioned in Section 4,8, "Greenhouse Gas Emissions," on December 7, 2009, the EPA administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. On July 29, 2025, EPA announced a proposal to rescind the Endangerment Finding and, repeal all GHG emission standards for light-duty, medium-duty, and heavy-duty vehicles and engines pursuant to CAA section 202(a). The proposed rule would remove GHG-related provisions from 40 CFR part 600 without affecting provisions related to CAFE standards and fuel economy labeling. In general, the proposed rule would remove MY 2012 and later GHG emission standards for passenger cars and light trucks, and MY 2014 and later GHG emission standards for medium-duty vehicles (EPA 2025b). These regulatory repeals would also affect motor vehicle criteria pollutant emissions estimates using EMFAC2017 (used for the conformity analysis) and EMFAC2021 (used for the EIR mobile source emissions estimates), which both assumed implementation of certain federal emissions standards proposed for repeal. As of writing this EIR, EPA has not adopted this proposal (EPA 2025b), and CARB had provided no guidance on how to address this issue in emissions modeling. Given these considerations, at the time of EIR preparation, EMFAC2017 and EMFAC2021 were the most appropriate methodology for the EIR to use to estimate air quality impacts.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

The State of California has adopted numerous laws addressing various aspects of air quality. CARB is the primary air resources agency, whose mission is to reduce air pollution and protect. CARB establishes state regulations to reduce emissions from all major sources of emissions air pollution. A summary of key State laws, regulations, plans, and policies, are relevant to the proposed Plan is provided below, organized by general categories.

California Clean Air Act

Mulford-Carrel Act

CARB was established when the California Legislature passed the Mulford-Carrell Act in 1967, which combined two bureaus within the Department of Health: the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board. CARB's mission is to promote and protect public health, welfare, and ecological resources through the effective and efficient reduction of air pollutants, while recognizing and considering the effects on the state's economy. CARB also oversees the activities of 35 local and regional air pollution control districts. These districts regulate industrial pollution sources. They also issue permits, develop local plans to attain healthy air quality, and ensure that industrial operations in their area adhere to air quality mandates (CARB 2025d).

California Clean Air Act

In 1988, the state legislature adopted the CCAA, which established a statewide air pollution control program. CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the federal CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfate, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The CAAQS and NAAQS are listed together in Table 4.3-1.

CARB and local air districts are responsible for achieving California's air quality standards, which are to be achieved through district-level air quality management plans that are incorporated into the SIP. In California, the EPA has delegated authority to prepare SIPs to CARB, which, in turn, has delegated that authority to individual air districts. CARB traditionally has established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies (HSC Sections 40000 and 40001), requires air districts to prepare air quality plans (HSC Section 40918), and grants air districts authority to implement transportation control measures (HSC Section 40717[a]). The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures.

On-Road Vehicle Standards and Programs

- **Advanced Clean Cars Program (passenger vehicles).** AB 1493 of 2002 (known as Pavley I, Chapter 200, Statutes of 2002) provided the nation's first GHG standards for automobiles. AB 1493 required CARB to adopt vehicle standards that lowered GHG emissions from new light-duty automobiles to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards referred to as the Advanced Clean Cars (ACC) Program's Low Emission Vehicle (LEV) III Regulation was adopted for vehicle model years 2017–2025 in 2012 (13 California Code of Regulations [CCR] Section 1900 et seq.).

  The ACC Program also includes the Zero Emission Vehicle Program and the Clean Fuels Outlet Regulation. The Zero Emission Vehicle Program is designed to achieve California's long-term emission reduction goals by requiring manufacturers to offer for sale specific numbers of ZEVs, which include battery electric, fuel cell, and plug-in hybrid electric vehicles. The Clean Fuels Outlet regulation is intended to ensure that fuels, such as electricity and hydrogen, are available to meet the fueling needs of new advanced technology vehicles as they come to market. The Advanced Clean Cars II (ACC II) Program was adopted by CARB in August 2022 and provides the regulatory framework for ensuring the sales requirement goal of EO N-79-20 to ultimately reach 100% ZEV sales in the state by 2035. The EPA granted CARB its California's CAA waiver request on December 18, 2024; however, as noted above, P.L. 119-16 rescinded California's waiver under the CAA.

- **AB 126:** Signed by Governor Newsom on October 7, 2023, AB 126 includes provisions to provide, upon appropriation by the legislature, funding in the form of grants, revolving loans, loan guarantees, loans, or other appropriate funding measures to various private and public entities to help attain the state's climate

change policies. AB 126 is intended to facilitate the development and deployment of zero-emission technology and fuels in the marketplace where feasible and near-zero-emission technology and fuels elsewhere. Provisions related to electric vehicles (EVs) and EV infrastructure include creation of the Air Quality Improvement Program (HSC Section 44274[a]) to provide funding for zero-emission fuel projects where feasible and near-zero-emission fuel projects elsewhere to develop and improve zero-emission and near-zero-emission fuels (Health and Safety Code [HSC] Section 44272 [h][1]), a program to provide funding for homeowners who purchase a plug-in electric vehicle to offset costs associated with modifying electrical sources to include a residential plug-in electric vehicle charging station (HSC Section 44272 [h][13]). Awardees of funding for EV-charging infrastructure are required to report to the California Energy Commission (CEC) "the source and greenhouse gas emissions intensity, on an annual basis, of the electricity used and dispensed by electric vehicle charging stations at the meter" (HSC Section 44272 [m]). Funding is also authorized to be provided toward incentives for medium- and heavy-duty vehicles and equipment mitigation, including electric, hybrid, and plug-in hybrid on-road and off-road medium- and heavy-duty equipment (HSC Section 44274 [c][4]).

- **Low Carbon Fuel Standard.** The Low Carbon Fuel Standard (LCFS) originally mandated that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 (17 CCR Section 95480 et seq.). In September 2018, to help achieve SB 32's emission reduction target, the LCFS regulation was amended to increase the statewide goal to a 20% reduction in carbon intensity of California's transportation fuels by at least 2030. Note that most of the emissions benefits from the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe) (CARB 2024g). On January 3, 2025, CARB submitted the final proposed amendments to the LCFS regulation to the Office of Administrative Law (OAL) for review in accordance with Government Code Section 11349.1 (CARB 2025d). On February 18, 2025, OAL issued a routine disapproval of amendments to the LCFS regulation on technical grounds, not on the merits of the regulation. CARB staff made necessary revisions and resubmitted the regulation for OAL approval on May 16, 2025 (CARB 2025d). On June 27, 2025, OAL approved this rulemaking and filed it with the Secretary of State with an effective date of July 1, 2025 (CARB 2024g).
- **Truck and Bus Regulation**. The Truck and Bus Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles (referred to as the Truck and Bus Regulation) (13 CCR Section 2025) requires fleet owners to upgrade their vehicles to meet specific performance standards for NO_X and PM. The regulation applies to diesel-fueled trucks and buses that are privately owned, federally owned, and to publicly and privately owned school buses, that have a manufacturer's gross vehicle weight rating (GVWR) greater than 14,000 pounds. Nearly all of the vehicles affected by the regulation are on-road vehicles, however, the regulation also applies to yard trucks with off-road engines used for agricultural operations and two-engine street sweepers with such engines. The Truck and Bus Regulation targets emissions reductions through 2010 Model Year Emissions Equivalent Engine requirements, PM Best Available Control Technology (BACT) requirements, and Verified Diesel Emission Control Strategy (VDECS) requirements. EPA approved the revision to the SIP to include the Truck and Bus Regulation on April 4, 2012 (40 CFR 52).
- **Zero-Emission Trucks.** In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). As an ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs. CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). These regulations include the Advanced Clean Fleets regulation, the Advanced Clean Trucks Regulation, and the Innovative Clean Transit (ICT) regulation, discussed separately in this section. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel particulate matter [diesel PM]) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations)

and control technologies. With implementation of CARB's Risk Reduction Plan and other regulatory programs, CARB estimates that by 2035, emissions of diesel PM will be less than half of those in 2010 (CARB 2025b).

- **Advanced Clean Trucks**. CARB adopted the Advanced Clean Trucks (ACT) Regulation in March 2021, with minor amendments in 2024. The regulation aims to accelerate the sales of heavy-duty EVs. The regulation consists of two parts: a manufacturer component and a fleet reporting component. Manufacturers are required to sell an increasing percentage of heavy-duty ZEV between 2024 and 2035. By 2035, 40% of Class 8 truck purchases will be required to be zero emission. Fleets with 50 or more vehicles will be required to report on their fleet's composition and activities in order to help CARB craft new strategies to hasten the adoption of ZEV (CARB 2021b). EPA granted the waiver request for the ACT regulation on April 6, 2023 (EPA 2023). However, P.L. 119-15 retroactively revoked the state's waiver issued by EPA under the CAA to implement the Advanced Clean Trucks regulation.
- **Advanced Clean Fleets.** CARB's 2022 Advanced Clean Fleets regulation was developed to reduce diesel PM through the transition of medium- and heavy-duty trucks to become fully electric by 2045. At the time of the writing of this Draft EIR, California has withdrawn its request for a waiver and authorization for the addition of the Advanced Clean Fleets regulation to its emissions control program (CARB 2025e). CARB is not enforcing the existing portions of the Advanced Clean Fleets regulation that require a federal waiver or authorization, such as the portions of the Advanced Clean Fleet regulation that apply to high-priority and drayage fleets. However, not all elements of the Advanced Clean Fleets regulation require a federal waiver or authorization (CARB 2025e). State and local government fleets will still be required to be fully electric by 2045.
- **Innovative Clean Transit.** The Innovative Clean Transit (ICT) regulation was adopted in 2018 and requires all public transit agencies to incrementally reduce fleet vehicle tailpipe emissions and prioritize first- and last-mile connectivity and improved mobility for transit riders. Additionally, the ICT regulation provides various exemptions and compliance options to provide safeguards and flexibility for transit agencies through this emission reduction schedule. The ICT regulation was developed to align with other state policies, including the Sustainable Communities and Climate Protection Program (SB 375), and SB 350. SB 375 creates initiatives for increased development of transit-oriented communities, better-connected transportation, and active transportation. SB 350 provides an opportunity for transportation electrification, including wide use of zero-emission buses. The California Public Utilities Commission (CPUC) is collaborating with CARB and CEC to implement requirements set forth by SB 350 to support widespread transportation electrification. Through the deployment of zero-emission technologies, the ICT regulation will provide significant benefits across the state, including:
  - reducing NO_x and GHG emissions for all Californians, especially transit-dependent and disadvantaged communities; most of these benefits will be in the state's most populated and impacted areas where transit buses are most prevalent
  - increasing penetration of the first wave of zero-emission heavy-duty technologies into applications that are well suited to their use to further achieve emission reduction benefits
  - saving energy and reducing dependency on petroleum and other fossil fuels
  - expanding the ZEV industry to bring high-quality green jobs to local communities and trained workforce to California
  - providing other societal benefits by encouraging improved mobility and connectivity with zero-emission transportation modes and reduced growth in light-duty VMT.

  The goal of this program is for transit agencies to maximize these benefits, while providing flexibility and sufficient time for transit agencies to address potential challenges and use available funds. This regulation strives to not just maintain but enhance transit service through increased mobility options and has built-in technological and financial safeguards to ensure transit service or fares are not adversely impacted by the regulation (13 CCR 2023).

Off-Road Vehicle Standards

- **In-Use Off-Road Diesel-Fueled Fleets Regulation** The In-Use Off-Road Diesel-Fueled Fleets Regulation (In-Use Offroad Regulation) applies to all existing self-propelled off-road diesel vehicles 25 horsepower or greater used in California and most two-engine vehicles (except on-road two-engine sweepers). This includes vehicles that are rented or leased (rental or leased fleets) (13 CCR Section 2449). The In-Use Off-Road Regulation primarily targets air pollutant reductions by imposing limits on equipment idling; requiring all vehicles to be reported to CARB through the online DOORS reporting system; requiring fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies; and implementing a phase-out schedule for older, high-emissions engines.
- **Transportation Refrigeration Units**. CARB's 2022 amendments to the 2004 Transport Refrigeration Unit (TRU) Airborne Toxic Control Measure (2022 TRU Amendments) increases the stringency of TRU $PM_{2.5}$ standards and requires the electrification of diesel-powered TRU trucks by 2029. On January 3, 2025, U.S. EPA granted California Clean Air Act authorization of elements of its TRU Regulation (90 FR 2000). In its action, EPA did not act on the Regulation's requirements for the turnover of at least 15 percent of diesel-fueled truck TRU fleet to zero emissions by December 31, 2023, (and each year thereafter) within the 2022 TRU Amendments (EPA 2025f). As of January 2025, CARB has withdrawn its request for the requirements of the TRU Regulation (CARB 2025h).
- **CARB Zero-Emission Forklift Regulation.** In June 2024, CARB approved for adoption the Zero-Emission Forklift Regulation. The measure was identified in CARB's Mobile Source Strategy, SIP, and Sustainable Freight Action Plan as one of several near-term actions intended to help California meet its air quality and climate goals through zero-emission technology. The regulation requires California fleets to phase out forklifts that utilize large spark-ignition (LSI) engines with a lift capacity of up to 12,000 pounds over time. The regulation implements a restriction on the purchase of LSI forklifts starting on January 1, 2026, and phase-out requirements starting on January 1, 2028, for existing LSI forklifts.
- **Heavy-Duty Low-NO_X Omnibus Regulation:** Adopted by CARB in 2021 (effective December 22, 2021; amended in May 2024), mandates steep reductions in NO_X and PM emissions from new medium- and heavy-duty diesel and Otto-cycle engines starting with model year 2024. The rule requires NO_X emissions to drop from 0.20 grams per brake horsepower per hours (g/bhp-hr) (2010 baseline) to 0.050 g/bhp-hr from 2024–26, and further down to 0.020 g/bhp-hr by 2027, while tightening PM standards to 0.005 g/bhp-hr. It also revamps in-use testing (including low-load conditions), extends engine useful-life and warranty periods, and labels engines meeting "Clean Idle" standards. By full rollout, the regulation is projected to eliminate approximately 17–23 tons/day of NO_X by 2031, prevent thousands of premature deaths and hospitalizations, and produce tens of billions in health-related benefits. As noted above, P.L. 119-17 rescinded California's waiver to implement this regulation.

Toxic Air Contaminants

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act), the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). Toxic Air Contaminant Identification and Control Act of 1983, and the Diesel Risk Reduction Plan of 2000.

- Toxic Air Contaminant Identification and Control Act (Tanner Act [California Health and Safety Code Section 39650 et seq.]). In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics.
- Air Toxics "Hot Spots" Information and Assessment Act (California Health and Safety Code Section 44300 et seq.). The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people who were exposed to a significant health risk, and facility plans to reduce these risks. The "Hot Spots" Act requires OEHHA to develop an approach for health risk assessments that can be used to determine the "likelihood of risks." The resultant guidance manual is titled Air Toxics Hot-Spots Program Guidance Manual for the Preparation of Health Risk Assessments (OEHHA 2015).

- Diesel Risk Reduction Plan and Related Regulatory Programs. In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). As an ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs. CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). These regulations include the Advanced Clean Fleets Regulation, the Advanced Clean Trucks Regulation, and the ICT Regulation, discussed separately in this section. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies.

California State Priority Action Plan

California's State Priority Action Plan (PCAP) was developed to achieve GHG reductions across the geographic extent of California from nearly every economic sector, and would also achieve reductions of air pollutants (CARB 2024h). The PCAP includes several elements: a 2021 statewide GHG emissions inventory, an overview of the State's overarching GHG targets codified by AB 32 and AB 1279, an overview of the State's approach to low-income and disadvantaged community benefits analysis, workforce considerations, and GHG reduction measures that target reduction in the transportation, industrial, energy, high global warming potential, agriculture, natural and working lands, and waste sectors. The PCAP was developed to support statewide GHG reduction target through implementation of the following reduction measures:

Transportation Measures:

- Create a Holistic, Heavy-Duty Zero-Emissions Vehicle Buydown Program
- Install Truck Charging to Support Zero-Emissions Goods Movement at California Ports and Warehouse Districts
- Advance the Deployment of Clean Off-Road Equipment
- Bolster Investments in the State's Sustainable Port and Freight Infrastructure
- Support Mobility Projects Uplifted by Communities
- Allow for Local Deployment of ZEV Infrastructure and Low-Income ZEV Support

Industrial Measure:

- Accelerate Industrial Decarbonization by expanding the existing Industrial Decarbonization and Improvement to Grid Operations Program

Energy Measures:

- Expand Decarbonization through the Energy Conservation Assistance Act
- Create a Funding Program to Upgrade the Capacity of Distribution Systems
- Expand the Success of California's Self Generation Incentive Program for Behind the Meter Energy Storage
- Bolster Healthy Landscapes and Resilient Communities through Expanding the Biomass to Carbon Negative Biofuels Program
- Deploy Equitable Building Decarbonization 6. Implement Bioenergy Projects
- Enable Renewable Microgrids for Rural Communities and Tribes

High Global Warming Potential Gases Measure:

- Expand F-gas Reduction Incentive Program

Agriculture Measures:

- Expand California's Healthy Soils Practices
- Reduce Methane Emissions by Expanding California's existing Dairy Digester Research and Development Program

Natural and Working Lands Measures:

- Bolster California's Forest Health Program
- Expand Urban and Community Forest Projects
- Expand the State's Wetland Restoration Program

Waste Measures:

- Food Waste Prevention and Edible Food Recovery Program
- Bolster Organics Recycling Infrastructure

California Sustainable Freight Action Plan

The Sustainable Freight Action Plan (Sustainable Freight Action Plan or Action Plan) provides an integrated action plan that establishes clear targets to improve freight efficiency, transition to zero-emission technologies, and increase the competitiveness of California's freight system. The Action Plan was developed by several state agencies and is a recommendation document that integrates investments, policies, and programs across several state agencies to help realize a singular vision for California's freight transport system. This Action Plan provides a recommendation on a high-level vision and broad direction to the Governor to consider for state agencies to utilize when developing specific investments, policies, and programs related to the freight transport system that serves California's transportation, environmental, and economic interests. Furthermore, CARB's *2022 Scoping Plan* incorporates actions from the Action Plan that provide GHG emissions reduction benefits, such as 100 percent line haul ZEV locomotive sales by 2035 (CARB 2016a).

Senate Bill 535 and Assembly Bill 1532 of 2012

Senate Bill 535 requires the California Environmental Protection Agency to identify disadvantaged communities based on geographic, socioeconomic, public health, and environmental hazard criteria. It also requires that the investment plan developed and submitted to the Legislature pursuant to AB 1532 allocate no less than 25 percent of available proceeds from the carbon auctions held under AB 32 to projects that will benefit these disadvantaged communities. At least 10 percent of the available funds from these auctions must be directly invested in such communities. The CalEnviroScreen tool has been developed to identify areas disproportionately affected by pollution and those areas whose populations are socioeconomically disadvantaged. The most current version of the tool is CalEnviroScreen 4.0, released in October 2021 (OEHHA 2023).

CARB Climate Change Scoping Plan

The first CARB Scoping Plan (Scoping Plan) was adopted in 2008 and updated in 2014, 2017, and 2022. The first Scoping Plan laid out the state's strategy for achieving the 2020 GHG reduction target. It includes numerous recommended measures to reduce GHG emissions from a variety of activities and sources, including on-road transportation, electricity generation, and building energy use. In 2017, the Scoping Plan was updated to reflect the state's 2030 GHG reduction target. CARB adopted the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 16, 2022. The 2022 Scoping Plan traces the state's pathway to achieve its goals of carbon neutrality and an 85 percent reduction in 1990 emissions goal by 2045, as codified by AB 1279 in September 2022. These targets are in line with scientifically established levels to limit the rise in global temperature to no more than 2 degrees Celsius (°C), the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the

temperature increase even further to 1.5 °C (United Nations 2015). The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals. The 2022 Scoping Plan details a multitude of strategies for reducing GHG emissions in each of these sectors which would have the co-benefit of reducing air pollutant emissions by shifting the state energy profile away from fossil fuels. Examples of strategies include achieving a per capita VMT reduction of at least 25 percent below 2019 levels by 2030 and 30 percent below 2019 levels by 2045 to reduce GHGs from the transportation sector, and achieving three million all-electric and electric-ready homes by 2030 and seven million by 2035, with six million heat pumps installed statewide by 2030 to reduce GHG emissions in the commercial and residential building sector.

While the Scoping Plan itself is a plan to reduce GHG emissions, many of the measures and strategies implemented to reduce GHGs from across the economy also result in significant reductions in criteria pollutants (CARB 2022).

California State Implementation Plan

2016 SIP

The 2016 Eight-Hour Ozone Attainment Plan (2016 SIP) addresses the requirements for attaining the 2008 8-hour ozone NAAQS. The 2016 SIP complies with the previous moderate nonattainment area classification for the planning requirements and includes demonstrations for attainment of the 2008 ozone NAAQS by July 20, 2018 (2017 attainment year) (CARB 2016b). Despite substantial air quality improvements, the region did not attain the 2008 ozone NAAQS (75 ppb) by the attainment deadline; as a result, EPA reclassified San Diego County as a severe nonattainment area for that standard with a new attainment date of July 20, 2027 (2026 attainment year).

2020 SIP

The 2020 Plan for Attaining the National Ozone Standards (2020 SIP) addresses the requirements for attaining the 2008 and 2015 8-hour ozone NAAQS. The 2020 SIP complies with the severe nonattainment area classification planning requirements and includes demonstrations for attainment of the 2008 and 2015 ozone NAAQS by 2026 and 2032, respectively. The 2020 SIP includes updated inventories of ozone precursor emissions (VOC and NO_X) for the 2017 base year (the year from which future-year inventories are projected) and the 2026 and 2032 attainment years (SDAPCD 2020).

Section 2.1 of the 2020 SIP identifies emission budgets for transportation conformity, and Section 3.1.2 of the 2020 SIP identifies emission budgets for transportation conformity. The conformity budgets for ozone precursors NO_X and VOC were developed in consultation with SANDAG, SDAPCD, CARB, and EPA based on vehicle miles travel (VMT) data provided by SANDAG.

Air Quality and Land Use Handbook (2005) and Technical Advisory (2017)

CARB prepared a guidance document that includes recommendations for siting of sensitive receptors in proximity of emission sources. The Air Quality and Land Use Handbook: A Community Health Perspective (Land Use Handbook) provides guidance to the public and decision-makers to provide information on the siting of "sensitive land uses" near specific sources of air pollution (CARB 2005); namely:

- high traffic freeways and roads,
- distribution centers,
- rail yards,
- ports,
- refineries,
- chrome plating facilities,

- dry cleaners, and
- large gas dispensing facilities.

The recommendations are provided in Table 4.3-5. The Land Use Handbook includes various limitations, and notes that the recommendations are advisory and that land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

CARB supplemented the Land Use Handbook in April 2017 to provide local planners and stakeholders with information regarding reducing exposure to traffic emissions near high-volume roadways in order to protect public health and promote equity and environmental justice. The Technical Advisory: Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways (Technical Advisory) includes various strategies to reduce pollution exposure through practices and technologies to reduce traffic emissions, increase dispersion of traffic pollution (or the dilution of pollution in the air), or remove pollution from the air (CARB 2017).

The Technical Advisory includes seven effective strategies, divided into the following three general categories (CARB 2017).

Strategies that Reduce Traffic Emissions

1. Speed reduction mechanisms including roundabouts
2. Traffic signal management
3. Speed limit reductions on high-speed roadways (>55 miles per hour [mph])

Strategies that Reduce the Concentration of Traffic Pollution

1. Urban design that promotes air flow and reduces the concentration of pollution along street corridors
2. Solid barriers such as sound walls
3. Vegetation that reduces the concentration of pollution

Strategies that Remove Pollution from Indoor Air

1. Indoor high efficiency filtration that removes pollution from the air

Senate Bill (SB) 656 (Health and Safety Code Section 39614)

Senate Bill (SB) 656 (Health and Safety Code Section 39614) of 2003 required CARB, in consultation with local air districts, to develop and adopt, by January 1, 2005, a list of the most readily available, feasible, and cost-effective control measures that could be employed by CARB and the air districts to reduce PM_{10} and $PM_{2.5}$ (collectively referred to as PM). Measures adopted as part of SB 656 complement and support those required for federal $PM_{2.5}$ attainment plans, as well as for state ozone plans. This will ensure continuing focus on PM reduction and progress toward attaining California's more health protective standards. The list of air district control measures was adopted by CARB on November 18, 2004. CARB also developed a list of state PM control measures for mobile and stationary sources, including measures for adoption as part of CARB's Diesel Risk Reduction Plan (discussed above).

Public Resources Code Section 21151.8

State law (Public Resources Code Section 21151.8) prohibits the siting of a school within 500 feet of a freeway unless "the school district determines, through analysis based on appropriate air dispersion modeling, that the air quality at the proposed site is such that neither short-term nor long-term exposure poses significant health risks to pupils." The siting of schools is also regulated in the California Code of Regulations. According to 5 CCR Section 14010(e): "The site shall not be adjacent to a road or freeway that any site-related traffic and sound level studies have determined will have safety problems or sound levels which adversely affect the educational program."

Air Toxics Control Measures (Health and Safety Code Division 26)

Under Health and Safety Code, Division 26 (Air Resources), CARB is authorized to adopt regulations to protect public health and the environment through the reduction of TACs and other air pollutants with adverse health effects. As such, CARB has promulgated several mobile and stationary source airborne toxic control measures that identify specific measures designed to reduce emissions and therefore the exposure of individuals to TACs emitted from a variety of sources.

Specifically, CARB has adopted regulations governing diesel emissions from compression-ignition engines (17 CCR Section 93115 et seq.), portable engines (17 CCR Section 93116 et seq.), and locomotives and marine vessels (17 CCR Sections 93117, 93118 et seq., and 93119; and 13 CCR section 2299 et seq.), and emissions from offroad engines, including construction equipment, cargo handling equipment, and recreational vehicles (13 CCR Section 2400 et seq.).

Assembly Bill 617 of 2017

AB 617, signed into law in 2017, established the Community Air Protection Program (CAPP), which requires new community-focused and community-driven action to reduce air pollution and improve public health in communities that experience disproportionate burdens from exposure to air pollutants. Developed in collaboration with local stakeholders, the CAPP includes two key guiding documents: the Community Emissions Reduction Program (CERP) and the Community Air Monitoring Plan (CAMP). The CERP sets community goals to reduce air pollution emissions and identifies strategies to help achieve emission reduction goals. The CAMP broadly outlines how and where pollution data will be gathered and shared (SDAPCD n.d.).

Communities identified for monitoring include the Portside Community, which includes the neighborhoods of Barrio Logan, Logan Heights, and Sherman Heights in the City of San Diego, and West National City within National City, and the International Border Communities of San Ysidro and Otay Mesa (collectively, "Border Communities"). The Portside Community was selected by CARB for an air pollution monitoring program in 2018 and for an emissions reduction program in 2019. The Border Communities were selected to participate in the CAPP in February 2022. The CERPs for each of these communities are summarized below under "Local Laws, Regulations, Plans, and Policies." The SDAPCD administers funds to projects identified by local stakeholders have approved of, including zero-emission school buses/tugboats/off-road equipment, on-road heavy duty vehicle replacements, agricultural tractor replacements, upgraded marine vessels, and zero-emission infrastructure (SDAPCD 2022).

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

San Diego Air Pollution Control District Rules and Regulations

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management districts and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The Plan area is located within the SDAB and is subject to the guidelines and regulations of SDAPCD. SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

- **Regulation 2, Rule 20.2—New Source Review Non-Major Stationary Sources:** establishes Air Quality Impact Analysis (AQIA) Trigger Levels, which set emission limits for non-major new or modified stationary sources.
- **Regulation 2, Rule 20.3—New Source Review Major Stationary Sources and Prevention of Significant Deterioration Stationary Sources**: establishes AQIA Trigger Levels, which set emission limits for major new or modified stationary sources or Prevention of Significant Deterioration stationary sources. Major sources are defined in Regulation 8 as sources that emit 100 tons per year of PM_{10}, SO_X, CO, and lead; and 50 tons per year of NO_X and volatile organic compounds (VOC) in federal ozone nonattainment areas.

- **Rule 50—Visible Emissions:** establishes limits for the opacity of emissions within the SDAPCD. The proposed project is subject to Rule 50(d)(1) and (6) and should not exceed the visible emission limitation.
- **Rule 51—Nuisance:** prohibits emissions that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; endanger the comfort, repose, health, or safety of any such persons or the public; or cause injury or damage to business or property.
- **Rule 52—Particulate Matter:** establishes limits for the discharge of any particulate matter from nonstationary sources.
- **Rule 54—Dust and Fumes:** establishes limits for the amount of dust or fume discharged into the atmosphere in any 1 hour.
- **Rule 55—Fugitive Dust Control:** sets restrictions on visible fugitive dust from construction and demolition projects.
- **Rule 67—Architectural Coatings:** establishes limits to the VOC content for coatings applied within the SDAPCD.
- **Rule 67.7—Cutback and Emulsified Asphalts:** establishes general provisions and limits to the VOC content for asphalt materials applied within the SDAPCD.
- **Regulation 8, Rules 1200–1210:** establishes rules and procedures governing new, relocated, or modified emission units that may increase emissions of one or more TAC. While the project is not necessarily subject to the requirements of this regulation, the risk assessment guidelines and procedures published as part of this regulation are used in the health risk assessment herein.

Air Toxics "Hot Spots" Program

The SDAPCD implements CARB's Air Toxics "Hot Spots" Program locally. The program requires facilities emitting toxic substances to quantify emissions, identify impacted areas, notify individuals exposed to elevated risks, and then develop and implement strategies to reduce potential significant risks. SDAPCD produces an annual report, which summarizes the latest results regarding emission estimates, the results of local Health Risk Assessments (HRAs), and the current status of public notifications and risk reduction requirements. The latest report is for the year 2023 (SDAPCD 2024b). Approximately 3,000 facilities within the county are required to comply with the program.

San Diego Regional Air Quality Strategy and State Implementation Plan

CARB, SDAPCD, and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB (CAA Section 176(c) (42 USC Section 7410)). The San Diego Regional Air Quality Strategy (RAQS) outlines SDAPCD's plans and control measures designed to attain and maintain the state standards, while San Diego's portions of the SIP are designed to attain and maintain federal standards. The RAQS was initially adopted in 1991 and is updated on a triennial basis. The RAQS was updated in 1995, 1998, 2001, 2004, 2009, 2016, and 2022. On March 9, 2023, SDAPCD adopted the revised 2022 RAQS for San Diego County (SDAPCD 2022, SDAPCD 2023). The RAQS plan demonstrates how the San Diego region will further reduce air pollution emissions to meet state health-based standards for ground-level ozone. The 2022 RAQS guides the SDAPCD in deploying tools, strategies, and resources to continue reducing pollutants that are precursors to ground-level ozone, including NOx and VOC. The 2022 RAQS emphasizes ozone control measures but also identifies complementary measures and strategies that can reduce emissions of GHGs and PM. The RAQS also includes new analyses exploring ozone and its relationship to public health, mobile sources, under-resourced communities, and GHGs and climate change. There are six federally approved TCMs in the RAQS that must be implemented in the San Diego region, which the SIP refers to as transportation tactics. These TCMs include ridesharing, transit improvements, traffic flow improvements, and bicycle facilities and programs. The TCMs have been fully implemented. Four of these TCMs–ridesharing, transit, bicycling, and traffic flow improvements continue to be funded. Furthermore, the 2022 RAQS identifies strategies to expand SDAPCD regional partnerships, identifies more opportunities to engage the public

and communities of concern, and integrates environmental justice and equity across all proposed measures and strategies (SDAPCD 2022).

The RAQS does not directly address the state air quality standards for PM10 or PM2.5, although some RAQS strategies indirectly result in reductions of PM_{10} and $PM_{2.5}$. SDAPCD has also developed the SDAB's input to the SIP, which is required under the federal CAA for areas that are out of attainment of air quality standards. The SIP is also updated on a triennial basis. The 2020 Plan for Attaining the National Ozone Standards (2020 SIP) addresses the requirements for attaining the 2008 and 2015 8-hour ozone NAAQS. Both the RAQS and SIP demonstrate the effectiveness of CARB measures (mainly for mobile sources) and SDAPCD's plans and control measures (mainly for stationary and area-wide sources) for attaining the ozone NAAQS. SDAPCD and CARB adopted the 2020 SIP and as well as the Reasonable Available Control Technology Demonstration for the 2008 and 2015 8-hour ozone NAAQS on November 19, 2020 (CARB 2020b). The modeling for the conformity budgets in the 2020 SIP indicates that by 2026, on-road motor vehicle NOx and VOC emissions in the San Diego region are projected to decrease 54 percent relative to 2017 levels (SDAPCD 2020). In addition, the Measures to Reduce Particulate Matter in San Diego County report (SDAPCD 2005) proposes measures to reduce PM emissions and recommends measures for further detailed evaluation and, if appropriate, future rule development (or non-regulatory development, if applicable), adoption, and implementation in San Diego County, in order to attain PM CAAQS.

4.3.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of Initial Study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions in CEQA Guidelines Appendix G. According to Appendix G of the CEQA Guidelines, an impact on air quality is considered significant if implementation of the proposed Plan would do any of the following:

- conflict with or obstruct implementation of the applicable air quality plan;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- expose sensitive receptors to substantial pollutant concentrations; or
- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan.

Checklist questions for air quality are provided in Section III of Appendix G. To better focus the potential impacts associated with the proposed Plan, the Appendix G questions have been combined and modified. Specifically, air quality criterion (c) has been expanded to three items herein to better focus the potential impacts of similar criterion ("substantial pollutant concentrations") that require different modeling and result in varying degrees of health outcomes. Specifically, substantial pollutant concentrations of PM_{10} and $PM_{2.5}$ are included in Impact AQ-4, substantial pollutant concentrations of TACs are included in Impact AQ-5, and substantial pollutant concentrations of CO hotspots are included in Impact AQ-6. The other air quality checklist items (a, b, and d) have been revised to focus the impact determination on actual impacts associated with the proposed Plan.

Therefore, implementation of the proposed Plan would have a significant air quality impact if it would:

AQ-1 Conflict with or obstruct implementation of the Regional Air Quality Strategy, the State Implementation Plan, and/or the Community Emissions Reduction Plan

AQ-2 Result in an operations-related cumulatively considerable net increase in nonattainment or attainment criteria pollutants, including VOC, NO_X, PM_{10}, $PM_{2.5}$, and SO_X

AQ-3 Result in construction-related emissions above regional mass emission thresholds

AQ-4 Expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations

AQ-5 Expose sensitive receptors to substantial TAC concentrations

AQ-6 Expose sensitive receptors to carbon monoxide hot spots

AQ-7 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

4.3.4 Environmental Impacts and Mitigation Measures

AQ-1 CONFLICT WITH OR OBSTRUCT IMPLEMENTATION OF THE REGIONAL AIR QUALITY STRATEGY, STATE IMPLEMENTATION PLAN, AND/OR COMMUNITY EMISSIONS REDUCTION PLANS

Analysis Methodology

The SDAB is currently designated as a severe nonattainment area for both the 2008 8-hour ozone and the 2015 8-hour ozone NAAQS. The SDAB is also classified as a nonattainment area with respect to the 1-hour ozone, 8-hour ozone, $PM_{2.5}$, and PM_{10} CAAQS. Therefore, the SDAPCD is required to prepare and submit to the EPA, through CARB, a plan that identifies control measures and associated emission reductions as necessary to demonstrate attainment of the NAAQS, and to prepare and submit to CARB a plan to attain the CAAQS. The applicable air quality attainment plans include the 2020 SIP and the 2022 RAQS. While the SDAB is designated as a nonattainment area for the PM_{10} and $PM_{2.5}$ CAAQS, the CCAA does not require the preparation of attainment plans for these pollutants, and no such plans have been prepared.

Regional Growth and Land Use Change

The analysis evaluates whether forecasted regional growth and land use change(s) under the proposed Plan would conflict with or obstruct implementation of programs and rules and regulations adopted as part of the RAQS and SIP. The growth forecast used in the RAQS and ozone SIPs is compared to forecasted growth under the proposed Plan. In addition, the analysis describes whether forecasted regional growth and land use change would conflict with or obstruct implementation of any of the applicable control measures contained within the 2020 SIP or the 2022 RAQS.

Attachments D and E of the 2020 SIP includes a list of control measures adopted by CARB between 1985 and 2019 to reduce emissions of ozone precursors.

Transportation Network Improvements and Programs

The SANDAG transportation conformity analysis provided in Appendix C of the proposed Plan is used to determine whether implementation of planned transportation network improvements and programs would conflict with or obstruct implementation of the 2020 SIP. Modeled motor vehicle emissions resulting from implementation of the proposed Plan are compared to the emissions budgets established in the SIP. Consistency with the TCMs in the RAQS was also evaluated.

The emissions for regional conformity were calculated using CARB's on-road mobile source emission estimation model, EMFAC2017. At the time of EIR preparation, EMFAC2017 was the most appropriate methodology for to calculate conformity analysis mobile source emissions, for the reasons stated in Section 4.3.2, Regulatory Setting.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population

increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

The 2022 RAQS is based on the Series 14 Regional Growth Forecast found within the 2021 RTP, which forecast growth in the region (relative to 2016) of 161,338 people by the year 2025, 310,838 people by the year 2035, and 436,563 people by the year 2050. Total population was projected to be 3.7 million in 2050.

The 2020 SIP is based on a number of sources, including EMFAC2017. Growth in EMFAC2017 modeling is based on Department of Finance (DOF) forecasting and SANDAG assumptions in Series 13. The Series 13 Regional Growth Forecast and the 2015 Regional Plan forecast growth in the region (relative to 2012) of approximately 300,000 people by 2020, 700,000 people by 2035, and 925,000 people by 2050. Total population was projected to be 4.1 million in 2050 (SANDAG 2015).

The proposed Plan is based on the Series 15 Regional Growth Forecast, which aligns with DOF forecasting from January 2020 (SANDAG 2024). Growth projections included within the proposed Plan, relative to 2016, show a growth of approximately 160,000 people by the year 2025, 310,000 people by the year 2035, and 435,000 people by the year 2050. Total population is now projected to be 3.7 million in 2050, which represents an 8 percent reduction from the estimate assumed in the RAQS and a 15 percent reduction from the estimate assumed in the SIP.

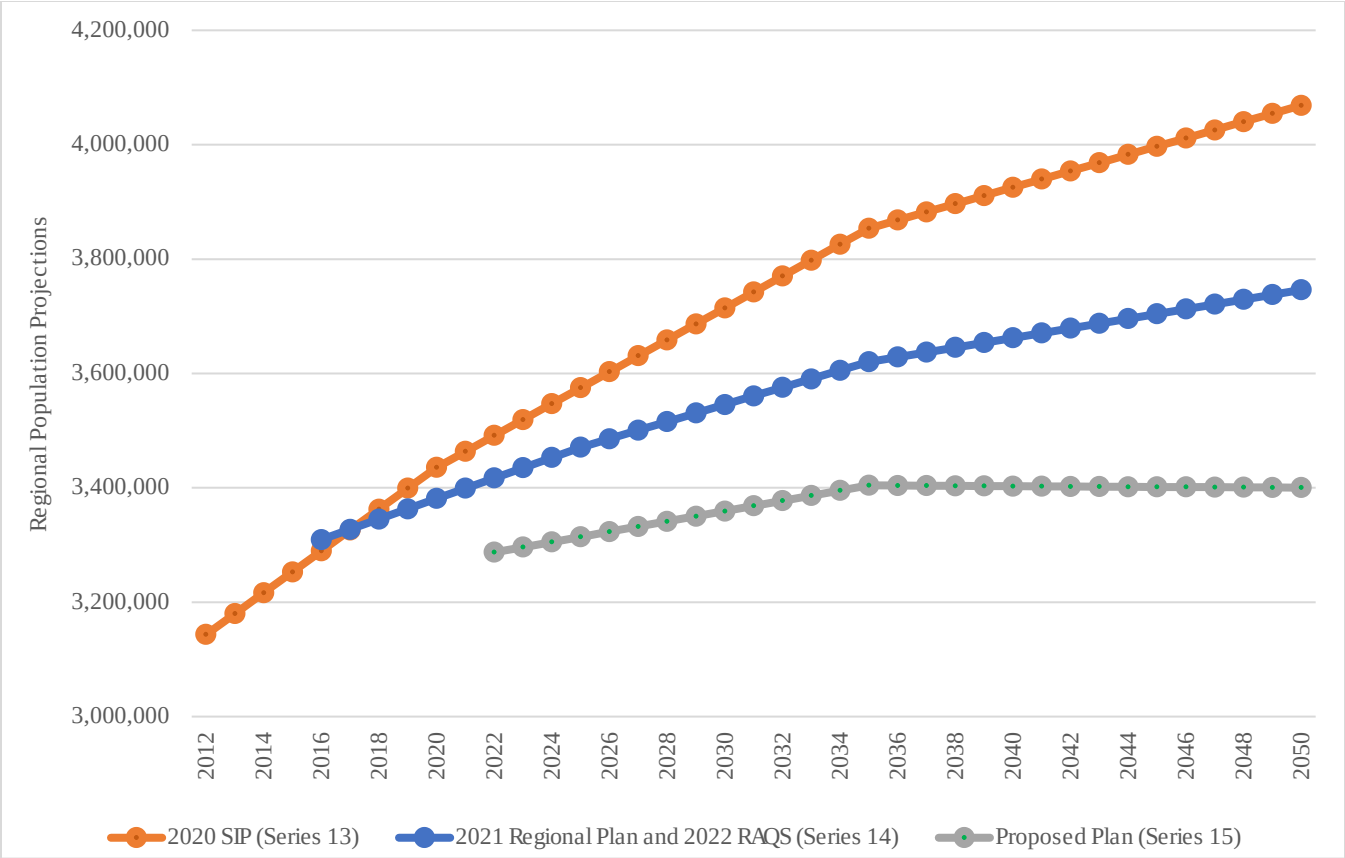
Figure 4.3-1 summarizes the growth projections assumed in Series 13 (assumed in the 2020 SIP), and Series 14 (assumed in the 2022 RAQS and the 2021 Regional Plan EIR) and Series 15 (assumed in the Proposed Plan). As shown, the projections for the proposed Plan are lower than assumed in the prior growth forecasts in 2025. Thus, because the proposed Plan's growth forecast is below that assumed in the RAQS, the proposed Plan's growth forecast does not conflict with the growth forecast in the RAQS.

Regarding consistency with regulations, applicable regulations are summarized below. The SDAPCD control measures that apply to stationary sources various measures related to area and stationary source emissions, such as control on automotive finishes, wood coatings, and controls on boilers, process heaters, generators, and turbines (SDAPCD 2025):

In addition, Attachment H of the RAQS includes a re-evaluation of all feasible stationary sources control measures that have been adopted to reduce emissions of VOCs and NOx within the region. These measures include controls on landfill flares, controls on turbines and other stationary engines, controls on furnaces, and additional controls on marine coatings. Other possible future rules considered include a rule on indirect (e.g., mobile) sources as well as possible rules to regulate emissions from large poultry operations and restaurant cooking (SDAPCD 2025). Moreover, Attachment B of the 2020 SIP includes a list of rules that are being added or supplemented as part of the submittal to EPA. These rules include controls on underground storage tanks at gasoline stations and mobile transport tanks, controls on cold solvent cleaning and stripping operations, as well as a possible future rule related to landfill gas (SDAPCD 2020).

SDAPCD rules are implemented primarily through SDAPCD permitting processes that are specific to each facility or operation. These measures were adopted as part of the RAQS and SIP to reduce emissions that contribute to ozone formation. SDAPCD and CARB have adopted various strategies within the RAQS and SIP as enforceable requirements, and regional growth and land use changes associated with the proposed Plan are subject to the applicable regulations.

As noted, forecasted growth for each forecast year is less than that assumed in the RAQS and SIP, Land use changes in 2025 under the proposed Plan would be subject to and implement the above regulations, and therefore would not conflict with or obstruct implementation of the RAQS or the SIP. Therefore, regional growth and land use change would not conflict with or obstruct implementation of the applicable air quality plans in 2035. This impact is less than significant.



Source: SDAPCD 2020, SDAPCD 2022, SANDAG 2025.

Figure 4.3-1 Comparison of Regional Population Projections

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line.

Modeled emissions from the transportation conformity analysis are summarized in Table 4.3-5. As shown, ozone precursors ROG and NOx in 2035 are less than the conformity budget emissions for both ROG and NOx in the 2020 SIP. Thus, the transportation network improvements and programs of the proposed Plan would not generate emissions greater than anticipated by relevant federal and state air quality attainment plans.

Table 4.3-5 Air Quality Conformity Emissions (tons per day)

Year	ROG		NOx	
	SIP Budget	Proposed Plan	SIP Budget	Proposed Plan
2026	12.1	10.8	17.3	15.6
2029	11.0	9.7	15.9	13.0
2032	10.0	8.5	15.1	11.1
2035	*10.0*	*7.8*	*15.1*	*10.1*
2040	10.0	6.7	15.1	8.5
2050	10.0	6.0	15.1	7.5

Source: Appendix C

Note: Conformity years for the 2020 SIP (2026, 2029, 2032, 2040, 2050) do not align perfectly with the analysis years for the proposed Plan (2022, 2035, 2050). SIP budgets and emission estimates for the missing year (2035) were estimated by linearly interpolating between the previous (2032) and next (2040) conformity years. Interpolated numbers are shown *in italics*.

There are six federally approved TCMs in the RAQS that must be implemented in the San Diego region, which the SIP refers to as transportation tactics. The TCMs have been fully implemented. Four of these TCMs – ridesharing, transit, bicycling, and traffic flow improvements – continue to be funded, and the level of implementation established in the SIP has been surpassed. Implementation continues for these six TCMs, and emission reductions from these measures are expected to continue over the next three years as funding remains available (SDAPCD 2022).

Transit Improvement and Expansion Program. The RAQS identifies replacing diesel-fueled buses with Compressed Natural Gas buses, increasing bus travel, and increasing rail transit services. The entire Metropolitan Transit System (MTS) fleet of 40- and 60-foot buses uses Renewable Compressed Natural Gas, and MTS recently adopted a plan to transition the entire fleet to zero-emission vehicles by 2040. MTS currently has 25 electric buses in service (MTS 2025).

The proposed Plan includes transit improvements that make public transit a compelling option to driving—fast, convenient, and safe. Improvements include regional rail; light rail; streetcar; a variety of bus options, including Rapid, express, local, local circulator, rural; and an Airport Transit Connection.

Next Generation Rapid is a bus network using special technology and infrastructure to get around traffic. All of the Rapid routes included in the proposed Plan are planned to start by 2035. Regional rail in the proposed Plan includes significantly upgraded rail service with higher-speed trains that are fast and convenient, especially for longer trips. Light rail transit (LRT) includes improvements to existing light rail services and new light rail or streetcar routes. Many of the existing bus and rail services will have increases to their frequencies.

Flexible Fleets are on-demand, shared services that provide different mobility options and vehicles for all types of trips, reducing the need to own a car. Flexible Fleets in the proposed Plan can provide first- and last-mile connections to transit and major destinations, including microtransit and neighborhood electric vehicle (NEV) options.

Through 2035, major transit improvements include the Airport Connection, numerous Rapid bus routes, and various microtransit and NEV projects. As discussed in Section 4.16, the proposed Plan would provide an additional 220,000 miles of transit service and increase transit mode share approximately 1.8 percent while reducing vehicular mode share approximately 3 percent over 2022 levels.

Vanpools. SANDAG would continue to operate its Regional Vanpool Program, providing increased access to carpooling. The programs currently 395 active vanpools, which helped almost 26,000 people commute in 2023 (see Section 4.16).

High Occupancy Vehicle (HOV) Lanes. Managed Lanes (MLs), such as those along the Interstate (I-) 15 corridor, offer priority access to people using transit, carpooling, or vanpooling along with emergency vehicles and low-emission vehicles with appropriate decals. MLs are expanded to all urban and interregional highway corridors in the region. Existing infrastructure is maximized by repurposing shoulders or existing travel lanes to create MLs

where shoulders, high-occupancy vehicle travel lanes, or general-purpose travel lanes exist today. There are various ML projects proposed through 2035. As discussed in Section 4.16, the proposed Plan would increase ML lane miles by 166 miles by 2035.

Park-and-Ride Facilities. The proposed Plan supports the use of carpooling and transit park-and-ride facilities to provide access to alternative modes of transportation and is consistent with this TCM. SANDAG iCommute maintains a park-and-ride webpage. There are no specific park-and-ride lots proposed.

Bicycle Facilities. Projects in the proposed Plan would improve or expand bicycle and pedestrian interconnections between neighborhoods and communities that are currently separated by major transportation corridors. Additionally, projects that support the proposed Plan's Active Transportation improvements reflect the adopted Regional Bike Network and include both on- and off-street improvements to create a safe and comfortable space for people to walk, bike, and ride micromobility options. The proposed Plan includes various bicycle facility projects, and the Plan proposes increasing bike facility lane miles by 2035 by 187 miles (10 percent) and increasing daily bicycle trips by 1,376 trips (1 percent) (see Appendix K to the 2025 Regional Plan).

Traffic Signal Improvements. The proposed Plan also includes transportation technology and Smart Intersection Systems (SIS), which use technology and data to reduce congestion and improve roadway safety. transportation technology can include a wide range of elements, such as traffic signal upgrades, ramp metering, changeable message signs, queue warning systems, and freeway fiber communications. Traffic signal improvements do not reduce VMT but they do reduce intersection delay.

2035 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to conflict with or obstruction of implementation of the applicable air quality plans because regional growth and land use change would be consistent with the SIP growth forecasts, and applicable rules, regulations, and programs adopted as part of the plans by the SDAPCD and CARB. Implementation of the transportation network improvements and programs would also be consistent with the applicable air quality plans because the emissions are less than the conformity emissions budget for ROG and NOx. Also, the transportation network improvements and programs are consistent with the TCMs contained within the SIP and the RAQS. Therefore, this impact (AQ-1) is less than significant in 2035.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

Figure 4.3-1 summarizes the growth projections assumed in Series 13 (assumed in the 2020 SIP), Series 14 (assumed in the 2022 RAQS and the 2021 Regional Plan EIR), and Series 15 (assumed in the Proposed Plan). As shown, the projections for the proposed Plan are lower than assumed in the prior growth forecasts in 2050.

The RAQS and SIP were adopted to reduce emissions that contribute to ozone formation. SDAPCD and CARB have adopted various strategies within the RAQS and SIP as enforceable requirements, and regional growth and land use changes associated with the proposed Plan are subject to the applicable regulations. As noted, forecasted growth for each forecast year is less than that assumed in the RAQS and SIP. Forecasted regional growth and land use change in 2050 under the proposed Plan would be subject to and implement the regulations described in the 2035 analysis above and therefore would not conflict with or obstruct implementation of the RAQS or the SIP.

Therefore, regional growth and land use change would not conflict with or obstruct implementation of the applicable air quality plans. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Modeled emissions from the transportation conformity analysis are summarized in Table 4.3-5. As shown, ozone precursors ROG and NOX in 2050 are less than the conformity budget emissions for both ROG and NOX. Thus, the transportation network improvements and programs of the proposed Plan would not generate emissions greater than those forecasted by relevant federal and state air quality attainment plans. The same RAQS TCMs discussed above under 2035 are applicable to the 2050 time horizon. A discussion demonstrating the proposed Plan's consistency with the six TCMs by 2050 is provided below.

Transit Improvement and Expansion Program. By 2050, transit improvements include improvements to the light rail system, improvements to the regional rail system, with new stations and track improvements, and new streetcar systems. As discussed in Section 4.16, the proposed Plan would provide an additional 226,000 miles of transit service and increase transit mode share by approximately 2.0 percent while reducing vehicular mode share by approximately 5.6 percent over 2022 levels.

Vanpools. SANDAG would continue to operate its Regional Vanpool Program, providing increased access to carpooling. The programs currently 395 active vanpools, which helped almost 26,000 people commute in 2023 (see Section 4.16).

High Occupancy Vehicle (HOV) Lanes. Managed Lanes (MLs), such as those along the Interstate (I-) 15 corridor, offer priority access to people using transit, carpooling, or vanpooling along with emergency vehicles and low-emission vehicles with appropriate decals. MLs are expanded to all urban and interregional highway corridors in the region. Existing infrastructure is maximized by repurposing shoulders or existing travel lanes to create MLs where shoulders, high-occupancy vehicle travel lanes, or general-purpose travel lanes exist today. Most of the ML projects are proposed through the 2035 timeframe, although some, such as MLs for SR-56, are proposed beyond 2035. As discussed in Section 4.16, the proposed Plan would increase ML miles by 334 by 2050.

Park-and-Ride Facilities. The proposed Plan supports the use of carpooling and transit park-and-ride facilities to provide access to alternative modes of transportation and is consistent with this TCM. SANDAG iCommute maintains a park-and-ride webpage. There are no specific park-and-ride lots proposed.

Bicycle Facilities. Projects in the proposed Plan would improve or expand bicycle and pedestrian interconnections between neighborhoods and communities that are currently separated by major transportation corridors. Additionally, projects that support the proposed Plan's Active Transportation improvements reflect the adopted Regional Bike Network and include both on- and off-street improvements to create a safe and comfortable space for people to walk, bike, and ride micromobility options. The proposed Plan includes various bicycle facility projects, and the Plan proposes increasing miles of bike facilities by 2050 1,843 miles (106 percent) and increasing daily bicycle trips by 35,541 (17 percent) relative to 2022.

Traffic Signal Improvements. The proposed Plan also includes transportation technology and Smart Intersection Systems (SIS), which use technology and data to reduce congestion and improve roadway safety. transportation technology can include a wide range of elements, such as traffic signal upgrades, ramp metering, changeable message signs, queue warning systems, and freeway fiber communications. Traffic signal improvements do not reduce VMT but they do reduce intersection delay.

2050 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to conflict with or obstruction of implementation of the applicable air quality plans because regional growth and land use change would be consistent with the SIP growth forecasts, and applicable rules, regulations, and programs adopted as part of the plans by the SDAPCD and CARB. Implementation of the transportation network improvements and programs would also be consistent with the applicable air quality plans because the emissions are less than the conformity emissions budget for ROG and NOx. Also, the transportation network improvements and programs are consistent with the TCMs contained within the SIP and the RAQS. Therefore, this impact (AQ-1) is less than significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

Growth and land use change and transportation network improvements in the region, with future climate change, would continue not to conflict with or obstruct implementation of the regional air quality plans.

MITIGATION MEASURES

No mitigation measures are required for this impact.

AQ-2 RESULT IN AN OPERATIONS-RELATED CUMULATIVELY CONSIDERABLE NET INCREASE IN NONATTAINMENT OR ATTAINMENT CRITERIA POLLUTANT, INCLUDING VOC, NO_X, PM_{10}, $PM_{2.5}$, AND SO_X

Analysis Methodology

This analysis focuses on the criteria pollutants for which the region is classified as nonattainment: NOx and VOC (precursors to ozone) and $PM_{2.5}$ and PM_{10}. Emissions are also projected for criteria pollutants for which the region is in attainment: CO and SOx. Lead is not evaluated herein because lead is no longer a component in gasoline.

Future operational emissions of ozone precursors (VOC and NO_X), PM_{10}, $PM_{2.5}$, CO, and SO_X associated with the implementation of the proposed Plan are identified. Future emissions under the proposed Plan are then compared to 2022 levels. Criteria pollutant emissions were quantified using the methodologies described in detail in Appendix C. Pollutant emissions that show no change or decrease under the proposed Plan would not contribute to a cumulative increase in emissions and therefore are not addressed further in the analysis. Where operational pollutant emissions increase under the proposed Plan, the analysis considers whether the increase is cumulatively considerable. Any incremental increase in pollutant emissions associated with the proposed Plan exceeding County of San Diego screening-level thresholds (SLTs) described below is considered cumulatively considerable; this represents a conservative analysis approach. Cumulative emissions from all sources in the region are reported from the CARB emissions inventory for 2022, 2035, and 2050. Please note that construction emissions are addressed separately under Impact AQ-3.

Appendix G provides that, "[w]here available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the [above] determinations." Here, SDAPCD does not provide CEQA significance thresholds for any air pollutant source it does not directly regulate. SDAPCD regulates emissions from stationary sources and not mobile sources under SDAPCD Regulation II, Rule 20.2, Table 20.2-1, Air Quality Impact Analysis (AQIA) Trigger Levels.

Because SDAPCD does not prescribe CEQA significance thresholds, air quality impacts of the proposed Plan were evaluated based on SLTs within the County of San Diego's Guidelines for Determining Significance: Air Quality. These SLTs are based on the AQIA Trigger Levels in SDAPCD Regulation II, Rule 20.2. For CEQA purposes, these SLTs can be used to determine if a project's total emissions (e.g., stationary and fugitive emissions, as well as emissions from mobile sources) would result in a significant impact to air quality. The daily SLTs are most appropriately used for the standard construction and operational emissions that would be anticipated under the proposed Plan. The SLTs screening-level thresholds are shown in Table 5 of the County's *Guidelines for Determining Significance – Air Quality* (County of San Diego 2007). The County's Guidelines typically inform

environmental reviews for development projects in the County and are used to help determine the significance of impacts. The SLTs are summarized in Table 4.3-6.

Pursuant to the County Guidelines, construction impacts predominantly result from two sources: fugitive dust from surface disturbance activities; and exhaust emissions resulting from the use of construction equipment (including, but not limited to: graders, dozers, backhoes, haul trucks, stationary electricity generators, and construction worker vehicles). One of the pollutants of concern during construction is particulate matter, because PM_{10} is emitted as windblown (fugitive) dust during surface disturbance, and as exhaust of diesel-fired construction equipment (particularly as $PM_{2.5}$). The proposed Plan's construction emissions are evaluated in Impact AQ-3.

On-road emissions were estimated based on emission factors from EMFAC2021, which accounted for the average fleet mix operating in San Diego County, fugitive road dust, and PM_{10} and $PM_{2.5}$ emission factors using the CARB methodology for estimating emissions from road dust. Activity data from SANDAG's activity-based model were also utilized for each analysis year. At the time of EIR preparation, EMFAC2021 was the most appropriate methodology for the EIR to use to calculate Impact AQ-2 mobile source emissions, for the reasons stated in Section 4.3.2, Regulatory Setting. Freight rail emissions were estimated based on CARB's freight emissions model in EMFAC2021 for each analysis year, along with cargo volume forecasts from the U.S. Bureau of Transportation Statistics. Passenger rail emissions were estimated based on rail activity for existing services (e.g., Amtrak, Sprinter, and Coaster), proposed new rail lines, and locomotive fleet turnover for each analysis year, as provided by SANDAG staff (Uchitel pers. comm.), along with EPA emission factors for locomotives.

Note that the focus of this analysis is on those emission sources that would be directly changed by the proposed Plan. The proposed Plan does not directly cause additional regional growth; instead, it envisions a pattern of regional growth and development that reflects smart growth, transit-oriented development, the preservation of natural resources and agricultural lands, and the building of communities that are resilient to the effects of climate change. Other sources of emissions associated with land use development — such as stationary sources (electric utilities, cogeneration, fuel combustion for food and agricultural processing, fuel combustion for service and commercial uses, sewage treatment, landfills, and dry cleaning) and area sources (consumer products use, architectural coatings, pesticides and fertilizers, residential fuel combustion, and cooking) — are therefore not included in the emissions estimates.

Health Impacts

As discussed in Section 4.3.1, all criteria pollutants that would be generated by the proposed project are associated with some form of health risk (e.g., asthma, lower respiratory problems). Criteria pollutants can be classified as either regional or localized pollutants, each with distinct health effects. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. Ozone is considered a regional criteria pollutant, whereas CO, NO_2, and Pb are localized pollutants. Both SO_X, and PM can be both a local and regional pollutants, depending on their composition.

Regional Project-Generated Criteria Pollutants (Ozone Precursors, Regional SO_X, and Regional PM)

Adverse health effects induced by regional criteria pollutant emissions generated by the proposed Plan (ozone precursors, SO_X and PM) are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). For these reasons, ozone precursors (ROG and NO_X) contribute to the formation of ground-borne ozone on a regional scale. Emissions of ROG and NO_X generated in one area may not equate to a specific ozone concentration in that same area. Similarly, some types of particulate matter and SO_X pollution may be transported over long distances or formed through atmospheric reactions. As such, the magnitude and locations of specific health effects from exposure to increased ozone, SO_X, or regional PM concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project. Moreover, exposure to regional air pollution does not guarantee that an individual will experience an adverse health effect—as discussed above, there are large individual differences in the intensity of symptomatic responses

to a specific air pollutant. However, other variables, including the overall health of individuals and underlying medical conditions that cannot be known, strongly influence individual health consequences.

Nonetheless, emissions increases under the proposed Plan, were they to occur, could increase photochemical reactions and the formation of tropospheric ozone, SO_X, and secondary PM, which, at certain concentrations, could lead to increased incidence of specific health consequences, such as various respiratory and cardiovascular ailments, which for the reasons stated above cannot meaningfully be quantified. As discussed previously, air districts develop region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment designations under the NAAQS and CAAQS. The NAAQS and CAAQS are informed by a wide range of scientific evidence that demonstrates there are known safe concentrations of criteria pollutants. Thus, NAAQS and CAAQS are health-based standards.

Localized Project-Generated Criteria Pollutants and Air Toxics)

Localized pollutants generated by a project are deposited and potentially affect populations near the emissions source. Because these pollutants dissipate with distance, emissions from individual projects can result in greater direct health impacts on adjacent sensitive receptors. Localized pollutants include localized PM and TACs. The localized PM analysis is provided in Impact AQ-4. In Impact AQ-4, if the proposed Plan would contribute to an existing violation or create a new air quality standard violation, it would also contribute to these adverse health effects. Health impacts of TACs are analyzed separately in Impact AQ-5.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Forecasted regional growth and land use change and transportation network improvements and programs by 2035 would generate air pollutant emissions directly and indirectly during operation of development and the transportation network. As shown in Table 4.3-6, emissions would decrease from 2022 to 2035 under implementation of the proposed Plan for certain emissions as follows:

- ROG reduced by 13,089 pounds per day, or 43 percent
- NOx reduced by 20,860 pounds per day, or 45 percent
- CO reduced by 112,156 pounds per day, or 43 percent
- $PM_{2.5}$ reduced by 144 pounds per day, or 2 percent
- SOx reduced by 80 pounds per day, or 11 percent

As shown in Table 4.3-7, emissions would increase from 2022 to 2035 under implementation of the proposed Plan for the following:

- PM_{10} increased by 147 pounds per day, or 0.4 percent

This change in PM_{10} emissions is due to changes in emissions from on-road (140 pounds per day increase), freight rail (6 pounds per day), and passenger rail (2 pounds per day). Within the on-road category, this increase is the direct result of an increase in re-entrained PM_{10} road dust (422 pounds per day increase) that overwhelms the decrease in motor vehicle PM_{10} exhaust (283 pounds per day decrease). The end result is an increase in PM_{10} emissions (147 pounds per day increase) that exceeds the daily PM_{10} threshold (100 pounds per day).

Note that in terms of activity, VMT, freight rail, and passenger rail activity are projected to increase between 2022 and 2035. Reductions in emissions across the board are primarily due to federal and state regulations that gradually reduce emissions from vehicles and locomotives. Moreover, as passenger rail activity increases, rail lines, such as Coaster and Amtrak, primarily operate a modern, Tier 4 engine fleet, and this will continue through 2035. Metrolink also plans to replace 20 Tier 2 locomotives with Tier 4 locomotives by 2035, at which point all passenger rail engines in the county will be powered by Tier 4 engines. Moreover, passenger rail activity is expected to

double by 2035, as daily train trips for each provider (Amtrak, Metrolink, Coaster, and Sprinter) are expected to increase from 142 trips per day in total to 280 trips per day in 2035. This increase in passenger rail activity will increase emissions from the passenger rail category.

For on-road sources, the average vehicle fleet in 2035 is assumed to be substantially cleaner than the existing fleet. Therefore, while total VMT would increase approximately 4 percent, emissions of all pollutants decrease except for PM_{10}, and the increase in PM_{10} (0.4 percent) is much lower than the increase in VMT (4 percent). This is because newer vehicles emit less emissions on a per mile basis. It is worth noting that the increase in PM_{10} is due to the re-entrained paved road dust, and emission rates for paved road dust do not follow the same downward trend as vehicle exhaust. Therefore, because VMT increases between 2022 to 2035, PM_{10} emissions are increased, but at a lower rate than the change in VMT. All other pollutants, as well as PM_{10} exhaust, are expected to be lower in 2035 than in 2022.

As shown, emissions from the proposed Plan are reduced for each criteria pollutant except PM_{10}, which is a nonattainment pollutant. The increase in PM_{10} emissions can contribute to short- and long-term human health effects described in Section 4.3-1.

Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease. Broadly, PM contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. However, $PM_{2.5}$ is more of a concern than PM_{10}. CARB states that $PM_{2.5}$ is more likely to travel into and deposit on the surface of the deeper parts of the lung, while the EPA states that $PM_{2.5}$ poses the greatest risk to health (CARB 2025g, EPA 2024c). As shown in Table 4.3-7 and as discussed above, while PM_{10} emissions increase slightly (0.4 percent), $PM_{2.5}$ emissions decrease (2 percent).

Table 4.3-6 Proposed Plan Emission Estimates Prior to Mitigation

Emission Category	Emissions (pounds per day)					
	ROG	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**SO_X**
2022						
On-Road	30,726	43,746	262,664	33,711	9,077	692
Freight Rail	110	1,778	433	70	68	30
Passenger Rail	16	356	403	6	6	28
Total 2022	30,852	45,881	263,500	33,788	9,151	750
2035						
On-Road	17,637	20,718	149,506	33,851	8,926	541
Freight Rail	126	3,685	1,080	75	73	76
Passenger Rail	25	586	750	9	9	53
Total 2035	17,787	24,990	151,336	33,935	9,007	670
Net Change 2035 vs 2022	*-13,064*	*-20,891*	*-112,163*	*+147*	*-144*	*-80*
2050						
On-Road	12,990	18,357	121,821	34,030	8,935	509
Freight Rail	59	1,618	1,382	26	25	97
Passenger Rail	0	0	0	0	0	0
Total 2050	13,049	19,975	123,204	34,056	8,960	606
Net Change 2050 vs 2022	*-17,802*	*-25,906*	*-140,296*	*+268*	*-191*	*-145*
Net Change 2050 vs 2035	*-4,738*	*-5,015*	*-28,133*	*+121*	*-47*	*-64*
Thresholds	**75**	**250**	**550**	**100**	**55**	**250**

Notes: Refer to Appendix C for modeling assumptions, inputs, and results

Source for Thresholds: County of San Diego 2007.

2035 Conclusion

Implementation of the proposed Plan would result in a cumulatively considerable net increase in PM10 emissions in 2035. Therefore, this impact (AQ-1) is significant in 2035.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Forecasted regional growth and land use change and transportation network improvements and programs by 2050 would generate air pollutant emissions directly and indirectly during operation of development and the transportation network. As shown in Table 4.3-6, emissions would decrease from 2022 to 2050 under implementation of the proposed Plan for certain emissions as follows:

- ROG reduced by 17,798 pounds per day, or 58 percent
- NOx reduced by 25,815 pounds per day, or 56 percent
- CO reduced by 140,278 pounds per day, or 53 percent
- $PM_{2.5}$ reduced by 190 pounds per day, or 2 percent
- SOx reduced by 145 pounds per day, or 19 percent

As shown in Table 4.3-7, emissions would increase from 2022 to 2050 under implementation of the proposed Plan for the following:

- PM_{10} increased by 270 pounds per day, or 0.8 percent.

This change in PM_{10} emissions is due to changes in emissions from on-road (319 pounds per day increase), while PM_{10} emissions associated with freight rail (43 pounds per day decrease) and passenger rail (6 pounds per day decrease) would decrease. Within the on-road category, this increase is the result of an increase in in re-entrained PM_{10} road dust (662 pounds per day increase) that overwhelms the decrease in motor vehicle PM_{10} exhaust (343 pounds per day decrease). The end result is an increase in PM_{10} emissions (270 pounds per day increase) that exceeds the daily PM_{10} threshold (100 pounds per day).

Note that in terms of activity, VMT, freight rail, and passenger rail activity are projected to increase between 2022 and 2050. Reductions in emissions across the board are primarily due to federal and state regulations that gradually reduce emissions from vehicles and locomotives. Moreover, as passenger rail activity increases, all passenger rail lines in the Plan area plan to replace diesel locomotives with zero emission electric engines by 2050. Therefore, while passenger rail activity is expected to increase more than double by 2050, as daily train trips for each provider (Amtrak, Metrolink, Coaster, and Sprinter) are expected to increase from 142 trips per day in total to 360 trips per day in 2050, emissions are not expected to increase, as zero emission locomotives result in no emissions at the tailpipe.

For on-road sources, the average vehicle fleet in 2050 is assumed to be substantially cleaner than the existing fleet. Therefore, while total VMT would increase approximately 5 percent, emissions of all pollutants decrease except for PM_{10}, and the increase in PM_{10} (0.8 percent) is much lower than the increase in VMT (5 percent). This is because newer vehicles emit less emissions on a per mile basis. It is worth noting that the increase in PM_{10} is due to the re-entrained paved road dust, and emission rates for paved road dust do not follow the same downward trend as vehicle exhaust. Therefore, because VMT increases between 2022 to 2050, PM_{10} emissions are increased, but at a lower rate than the change in VMT. All other pollutants, as well as PM10 exhaust, are expected to be lower in 2050 than in 2022.

As shown, emissions from the proposed Plan are reduced for each criteria pollutant except PM_{10}, which is a nonattainment pollutant. The increase in PM_{10} emissions can contribute to short- and long-term human health effects described in Section 4.3-1.

Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease. Broadly, PM contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause

serious health problems. However, $PM_{2.5}$ is more of a concern than PM_{10}. CARB states that $PM_{2.5}$ is more likely to travel into and deposit on the surface of the deeper parts of the lung, while the EPA states that $PM_{2.5}$ poses the greatest risk to health (CARB 2021b, EPA 2021). As shown in Table 4.3-7 and as discussed above, while PM_{10} emissions increase slightly (0.8 percent), $PM_{2.5}$ emissions decrease (2 percent).

Additionally, as shown in Table 4.3-6, emissions would decrease from 2035 to 2050 under implementation of the proposed Plan for the following:

- ROG reduced by 4,738 pounds per day, or 15 percent
- NOx reduced by 5,015 pounds per day, or 11 percent
- CO reduced by 28,133 pounds per day, or 11 percent
- $PM_{2.5}$ reduced by 47 pounds per day, or 0.5 percent
- SOx reduced by 64 pounds per day, or 9 percent

As shown in Table 4.3-6, emissions would increase from 2035 to 2050 under implementation of the proposed Plan for the following:

- PM_{10} increased by 121 pounds per day, or 0.4 percent.

2050 Conclusion

Implementation of the proposed Plan would result in a cumulatively considerable net increase in PM_{10} emissions in 2050 compared to both 2022 baseline and 2035 emission. Therefore, this impact (AQ-1) is significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in increases in PM_{10}. Climate change may result in increased wildfire frequency and intensity, which can increase emissions of particulate matter. Precipitation during dry seasons may also decrease under climate change, reducing regional ability to fight wildfires and reduce this source of particulate matter (Reidmiller et al. 2018). Increased droughts would also increase dust emissions (Pu et al. 2022). The increase of PM_{10} emissions as a result of the proposed Plan's projected growth and transportation network improvements would be worsened by climate change-caused increases of these emissions.

MITIGATION MEASURES

AQ-2 RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE IN OPERATIONS-RELATED NONATTAINMENT OR ATTAINMENT CRITERIA POLLUTANTS, INCLUDING VOC, NO_X, PM_{10}, $PM_{2.5}$, AND SO_X

2035, 2050

Implement mitigation measures GHG-4a (Allocate Grant Funding to Projects that Reduce GHG Emissions), GHG-4b (Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans), GHG-4c (Allocate Funding for Zero-Emission Vehicle Infrastructure), GHG-4d (Implement Measures to Reduce GHG Emissions from Transportation Projects, and GHG-4e (Implement Measures to Reduce GHG Emissions from Development Projects), as discussed under Impact GHG-4 in Section 4.8, "Greenhouse Gas Emissions and Climate Change". In addition, implement mitigation measure TRA-2 (Achieve Further VMT Reductions for Transportation and Development Projects), as discussed under Impact TRA-2 in Section 4.16, "Transportation".

AQ-2a. Secure Incentive Funding. SANDAG, in partnership with SDAPCD and the Port of San Diego, and member cities, will seek to secure incentive funding to reduce mobile PM emissions from mobile exhaust, and entrained PM sources such as tire wear, brake wear, and re-entrained road dust. Such incentive funding or programs are:

- Vehicle Registration Fund Program (VRF)

- Carl Moyer Memorial Air Quality Attainment Program
- Community Air Protection Program (CAPP)
- Short-Haul Zero Emission Truck Pilot Project

AQ-2b. Regional Plan VMT Credit/Banking Program. SANDAG shall establish a VMT Credit / Banking program that captures and banks any VMT reductions that may be associated with VMT reducing infrastructure and programs, such as bicycle infrastructure improvements, pedestrian facilities, and expansion of transit services (VMT Reduction Credits). The VMT reduction credits generated through the program could be used to offset VMT-related impacts caused by induced travel demand that are associated with roadway capacity improvements included within the proposed Plan. Additional credits could also be sold to development projects within the region, consistent with the SCS, to offset their land use related VMT impacts. Revenue from the credits sold through the banking program shall be used to help advance the timing of implementation of VMT reducing infrastructure or programs in the proposed Plan, develop new or further expand the VMT reducing infrastructure and programs included in the proposed Plan, or allocate towards grant funding to construct multi-modal infrastructure within the local jurisdictions. This measure would also reduce emissions of PM_{10} and $PM_{2.5}$ by reducing vehicle traffic on all roadways, including those near sensitive receptor locations. SANDAG shall include a pilot version of this program within the 2029 Regional Plan.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

The PM_{10} impact in both 2035 and 2050 is primarily due to re-entrained road dust, which comprises nearly all the PM_{10} emissions (99 percent in 2035 and 98 percent in 2050).

Mitigation has been identified to reduce PM10 emissions. Mitigation measure AQ-2a would reduce PM_{10} emissions from on-road sources by securing funding to implement ways to reduce all emissions, including PM_{10} emissions from mobile sources. Mitigation measure TRA-2 aims to achieve VMT reductions for transportation and development projects by implementing various plans and programs, including requiring TDM strategies, reducing parking minimums, implementing active transportation facilities beyond those in the proposed Plan, and facilitating a VMT exchange program. Implementation of these actions would reduce PM_{10} emissions from on-road sources by reducing VMT throughout the region.

In addition, mitigation measures GHG-4a, GHG-4b, GHG-4c, GHG-4d, and GHG-4e would reduce PM_{10} emissions from tire wear, brake wear, and vehicle exhaust, as discussed in Section 4.8. In addition, mitigation measure TRA-2 would reduce criteria pollutants through project-level VMT reduction measures, as discussed in Section 4.16. Measures to reduce VMT or vehicle exhaust (e.g., EVs) in these mitigation measures would reduce PM_{10} emissions and associated concentrations.

Mitigation that reduces VMT would reduce PM_{10} emissions from road dust. Meanwhile, mitigation that supports ZE vehicles would reduce PM_{10} emissions associated with vehicle exhaust. However, ZE vehicles still emit road dust, so PM_{10} emissions would remain above the thresholds.

However, for mitigation AQ-2a, as well as other mitigation measures presented in Section 4.8 and Section 4.16, it cannot be guaranteed that PM_{10} emissions would be reduced to where they would be less than cumulatively considerable. Therefore, impacts related to cumulatively considerable net increases in air pollutant emissions would remain significant and unavoidable.

AQ-3 RESULT IN CONSTRUCTION-RELATED EMISSIONS ABOVE REGIONAL MASS EMISSION THRESHOLDS

Analysis Methodology

Projects that could be constructed as part of the proposed Plan would generate construction-related criteria pollutant and TAC emissions from mobile and stationary construction equipment exhaust, employee and haul

truck vehicle exhaust, dust from land clearing, and application of asphalt and architectural coatings. However, the specific size, location, and construction techniques and scheduling that would be used for each individual development project occurring from the implementation of the proposed Plan are not currently known. With the horizon year of 2050, development of the various land use changes and transportation network improvements would occur over an extended period of time, depending on factors such as local economic conditions, market demand, and other financing considerations.

The County daily mass emissions SLTs described in the methodology for Impact AQ-2 can be used as thresholds to determine whether the proposed Plan's construction emissions would be significant. At this program level of analysis, it is not possible to quantify the amount of construction emissions from the implementation of the proposed Plan or their health impacts. To the extent that construction emissions would violate ambient air quality standards, they could lead to the health consequences discussed in Section 4.3.1 However, the overall impact on local and regional air quality from any one project or all projects combined would be primarily dependent on the quantity, age, and fuel type of the equipment and the duration of their operation at the construction site or in the region. It should be noted that construction emissions, although not quantified, would add to the concentration impacts in Impacts AQ-4 and AQ-5.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Various transportation and development projects would be constructed by 2035. Construction of land use changes and transportation network improvements would result in emissions of criteria air pollutants, including ROG, NOx, CO, SOx, PM_{10}, and $PM_{2.5}$. Emissions associated with a typical construction project are generally short-term and limited to the construction phase of the project. Construction emission sources include construction equipment, employee commuting, vendor and material deliveries, haul trucks, demolition, grading and other ground disturbing activities, application of paint and other coatings, and paving.

The proposed Plan includes numerous transportation projects by 2035 as part of the SCS, transportation network improvements, and supporting policies and programs. The proposed Plan would also accommodate land use growth to accommodate 137,242 97 housing units, 117,056 new residents, and 67,297 new jobs by 2035 (See Table 2-1, in Section 2.0, "Project Description," of this Draft EIR.). While the construction of each individual project is temporary and limited in nature, the emissions from these projects have the potential to exceed daily thresholds.

EPA and CARB have adopted rules and regulations establishing criteria pollutant and hazardous emissions limits for diesel-powered on-road vehicles and off-road equipment. EPA and CARB regulations will continue to reduce emissions from internal combustion trucks and equipment over the life of the proposed Plan. Further, SDAPCD has rules in place to limit emissions from construction activities, such as Rule 55 (requires measures to minimize fugitive dust during construction and demolition activities) and Rule 51 (restricts the discharge of air contaminants or other material that cause harm, injury, or nuisance). Additionally, construction activities are accounted for in SDAPCD's RAQS and SIP inventories. As demonstrated in the 2020 SIP, and discussed below, total regional emissions of VOC and NOx from construction sources would generally decline through 2050.

Despite regulatory actions from EPA, CARB, and SDAPCD, these regulations cannot ensure that all projects consistent with the proposed Plan would not result in emissions exceeding thresholds. Construction could result in substantial construction-related emissions on a daily or annual basis, exceeding daily thresholds.

2035 Conclusion

The proposed Plan could result in a substantial increase in construction-related emissions exceeding daily thresholds as the various land use changes and transportation network improvements are constructed. Therefore, this impact (AQ-2) would be significant in 2035.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

The proposed Plan includes numerous transportation projects by 2050 as part of the SCS, transportation network improvements, and supporting policies and programs. The proposed Plan would also accommodate land use growth to accommodate 202,819 new housing units, 112,944 new residents, and 170,757 new jobs by 2050 (See Table 2-1, in Section 2.0, "Project Description," of this Draft EIR). While the construction of each individual project is temporary and limited in nature, the emissions from these projects have the potential to exceed daily thresholds.

EPA and CARB have adopted rules and regulations establishing criteria pollutant and hazardous emissions limits for diesel-powered on-road vehicles and off-road equipment. EPA and CARB regulations will continue to reduce emissions from internal combustion trucks and equipment over the life of the proposed Plan. Further, SDAPCD has rules in place to limit emissions from construction activities, such as Rule 55 (requires measures to minimize fugitive dust during construction and demolition activities) and Rule 51 (restricts the discharge of air contaminants or other material that cause harm, injury, or nuisance). Additionally, construction activities are accounted for in SDAPCD's RAQS and SIP inventories. As demonstrated in the 2020 SIP, and discussed below, total regional emissions of VOC and NOX from construction sources would generally decline through 2050.

Despite regulatory actions from EPA, CARB, and SDAPCD, these regulations cannot ensure that all projects consistent with the proposed Plan would not result in emissions exceeding thresholds. Construction could result in substantial construction-related emissions on a daily or annual basis, exceeding daily thresholds.

2050 Conclusion

The proposed Plan could result in a substantial increase in construction-related emissions exceeding daily thresholds as the various land use changes and transportation network improvements are constructed. Therefore, this impact (AQ-2) would be significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in increased construction emissions or criteria pollutants. Construction sites can generate emissions of criteria pollutants such as particulate matter, nitrogen oxides, carbon monoxide, and volatile organic compounds (Sacramento Metropolitan Air Quality Management District 2020). Climate change may exacerbate these effects through wildfire pollutants and longer dry seasons resulting in droughts and dust emissions (Reidmiller et al. 2018, Pu et al. 2022). The proposed Plan's projected growth and transportation network improvements would increase criteria pollutant emissions. The proposed Plan's air quality impacts would be worsened by climate change-caused increases in criteria pollutant emissions.

MITIGATION MEASURES

AQ-3 RESULT IN CONSTRUCTION-RELATED EMISSIONS ABOVE REGIONAL MASS EMISSION THRESHOLDS

2035, 2050

AQ-3a Implement Construction Best Management Practices for Fugitive Dust. During planning, design, and project-level CEQA review of transportation network improvements and programs or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, evaluate the potential for localized particulate (PM_{10} and $PM_{2.5}$) construction impacts that result in exceedances of the numerical mass emission thresholds). If impacts are significant, during project level construction, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement best management practices (BMPs) to reduce impacts, including but not limited to, the following:

- Use fugitive dust control measures to reduce generation from exposed surfaces during construction, as specified in SDAPCD Rule 55 (SDAPCD 2009). SDAPCD Rule 55 includes various requirements, including preventing visible dust beyond the property line for more than 3 minutes in any 60-minute period, applying dust suppressants, removing all track-out/carry-out dust at the conclusion of each workday. Compliance with these regulatory requirements is a performance standard for mitigation of construction activity particulate emissions. Reductions in fugitive dust emissions range from 40 to 80 percent for minimizing track-out to 90 percent for use of tarps or cargo covering when transporting material (SCAQMD 2007; WGA 2006).
- Use additional fugitive dust control measures such as watering or application of dust suppressants to reduce the generation of fugitive dust at active construction sites. Reductions in fugitive dust emissions range from 10 to 74 percent for watering of unpaved surfaces to 84 percent for use of dust suppressants (WGA 2006; CAPCOA 2025).
- Implement controls on haul trucks to reduce emissions from haul trucks transporting soil, sand, or other loose material off site. Reductions in fugitive dust emissions are estimated at 91 percent for use of tarps or cargo covering when transporting material (SCAQMD 2007).
- Remove visible mud or dirt track-out onto adjacent public roads. Reductions in fugitive dust emissions range from 40 to 80 percent for minimizing track-out (WGA 2006).
- Limit vehicle speeds on unpaved surfaces during construction to 15 mph. Reductions in fugitive dust emissions from unpaved surfaces are estimated at 57 percent (WGA 2006).
- Suspend excavation, grading, and/or demolition activities when average wind speeds exceed 20 mph. Reductions in fugitive dust emissions are estimated at 98 percent (WGA 2006).
- Plant vegetative ground cover (e.g., fast-germinating native grass seed) in disturbed areas. Reductions in fugitive dust emissions from wind erosion are estimated at 90 percent (WGA 2006).
- Wash all trucks and equipment, including their tires, prior to leaving the construction site. No quantitative estimate of the effectiveness of this measure is available.

AQ-3b Reduce Diesel Emissions During Construction From Off-Road Equipment. For impacts on air quality from construction exhaust, during planning, design, and project-level CEQA review of transportation network improvements and programs or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement BMPs to reduce criteria pollutant and TAC impacts from off-road equipment, including, but not limited to, the following:

- Ensure off-road equipment greater than 25 horsepower (hp) that will be operating for more than 20 hours during construction meets the following requirements:
  - Ensure engines are zero emissions or equipped with an CARB Level 3 Verified Diesel Emissions Control Strategy, if available for the equipment being used, unless the equipment meets EPA Tier 4 emission standards.
  - If project-specific analysis demonstrates that the above measure would not adequately reduce impacts (as determined by the project-level lead agency), provide engines that meet or exceed either EPA Tier 4 off-road standards.
- Monitor idling time of diesel-powered construction equipment and limit to no more than 2 minutes.
- Maintain and properly tune construction equipment in accordance with the manufacturers' specifications.
- Prohibit portable diesel generators and use grid power when it is available. Use propane or natural gas generators when grid power electricity is not feasible.
- Use late model engines.
- Use low emission diesel products.

- Use alternative fuels in construction equipment.
- Use engine retrofit technology to control emissions from off-road equipment.

AQ-3c Reduce Diesel Emissions During Construction From On-Road Vehicles. For impacts on air quality from construction exhaust as a result of transportation network improvements and programs or development projects, during project-level CEQA review and construction, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement BMPs to reduce criteria pollutant and TAC impacts from on-road vehicles, including but not limited to:

- Monitor idling time of diesel-powered trucks, and limit to no more than 2 minutes.
- Provide clear signage for construction workers at all access points.
- Maintain and properly tune vehicles in accordance with the manufacturers' specifications.
- Ensure that construction activity deliveries are scheduled during off-peak hours (e.g., 10 a.m. to 3 p.m.) and are coordinated to consolidate truck trips. When the movement of construction materials and/or equipment impacts traffic flow, provide temporary traffic control (e.g., flag person) to improve traffic flow.
- Use late model engines (2010 or new model years).
- Use low emission diesel products in on-road vehicles.
- Use zero emission or near-zero emission technologies or alternative fuels in on-road vehicles.
- Use engine retrofit technology on on-road vehicles.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure AQ-3a would reduce the impacts associated with fugitive dust (fugitive PM_{10} and $PM_{2.5}$ emissions) during construction, as well as the impacts associated with exhaust emissions from construction equipment. Mitigation measure AQ-3b would reduce the impacts associated with exhaust emissions from construction equipment. Mitigation measure AQ-3c would reduce diesel emissions from on-road vehicles during construction.

Additionally, mitigation measures GHG-4d and GHG-4e would reduce construction emissions through the use of energy and fuel-efficient vehicles and equipment (see Section 4.8)., Mitigation measures GHG-4a, GHG-4b, and GHG-4c would also facilitate and support the procurement and development of ZEV infrastructure and vehicles, thereby reducing emissions from construction worker vehicles and trucks over time. Although mitigation would reduce impacts, there is no guarantee that all projects' impacts would be reduced to below a level of significance; thus, impacts would be significant and unavoidable.

AQ-4 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL PM_{10} AND $PM_{2.5}$ CONCENTRATIONS

Analysis Methodology

If the proposed Plan would violate the PM_{10} or $PM_{2.5}$ air quality standards or substantially contribute to an existing violation, then it would be considered to expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations, which in turn would contribute to adverse health effects. Under the CAAQS, the SDAB is designated as a state nonattainment area for PM_{10} and $PM_{2.5}$ (as well as ozone). The San Diego region is in attainment of the NAAQS for PM_{10} and $PM_{2.5}$ (as well as other criteria pollutants). This analysis is based on operational emissions associated with forecasted regional growth and land use change and planned transportation network improvements and programs.

Other pollutants that tend to accumulate in the air locally, such as CO, NO_2, SO_2, and Pb, are not quantitatively considered here because they are all considered attainment pollutants, because the San Diego region meets both the NAAQS and CAAQS.

The analysis in this EIR summarizes the assumptions, methodologies, and technical analyses presented in the *Air Quality Technical Report* (Appendix C of this EIR).

The analysis to evaluate whether the proposed Plan would violate any PM_{10} or $PM_{2.5}$ air quality standard or contribute substantially to an existing projected air quality violation involves two main steps.

1. Existing (2022) baseline mass emissions and future mass emissions in 2035, and 2050 under the proposed Plan were estimated for onroad, freight rail, and commuter rail sources. Methods and assumptions for projecting mass emissions are presented in Appendix C of this EIR. Results are presented in Impact AQ-2.
2. Based on these emission estimates, a detailed localized analysis was performed for each analysis year to determine whether the operational emissions of the proposed Plan would violate an air quality standard or contribute substantially to an existing violation.

Because San Diego County is designated as a state nonattainment area for both PM_{10} and $PM_{2.5}$, localized modeling is performed for both of these pollutants.

Given the spatial limitations in the chosen dispersion model (AERMOD), the populated areas of the county were divided into seven modeling subdomains. Each modeling subdomain was assigned a representative meteorological station and air quality monitoring station.

The monitoring data is summarized as Design Values (DV). A DV is a statistic that describes the air quality status of a given location relative to the level of the NAAQS or the CAAQS. The DV for each pollutant is calculated from monitoring data in a form consistent with the regulations that apply to the CAAQS or NAAQS, in terms of the pollutant averaging period and number of exceedances allowed over a period of typically three years. The DVs used in this analysis were provided by SDAPCD for the 2022-2024 period (Canter pers. comm.).

Background monitoring data were evaluated to determine the appropriate DVs for modeling within each subdomain. While San Diego is currently in nonattainment for both the $PM_{2.5}$ CAAQS and the PM_{10} CAAQS, not all monitoring stations in the region, or subdomains, exceed these CAAQS. Additionally, CARB has recommended that San Diego be designated as nonattainment for the revised annual $PM_{2.5}$ NAAQS. As of July 2025, EPA has not issued designations with respect to the new annual $PM_{2.5}$ standard; this re-designation to nonattainment is likely. For monitoring stations that exceed the respective NAAQS or CAAQS, the PM threshold was equal to the difference between the applicable NAAQS or CAAQS level for PM concentrations (refer to Table 4.3-1) and the DV for that region. For monitoring stations that do not exceed the respective NAAQS or CAAQS, incremental federal Significant Impact Levels (SIL) are used to ensure that a project's emissions do not contribute to an air quality violation.

Based on data provided by SDAPCD (Canter pers. comm.), the Donovan station is in violation of the 24-hour PM_{10} and the revised annual $PM_{2.5}$ NAAQS, and the Sherman Elementary station is in violation of the annual $PM_{2.5}$ NAAQS. There are no violations of the PM_{10} and $PM_{2.5}$ NAAQS at the other monitoring stations. Currently, all stations except for Rancho Carmel exceed the annual PM_{10} CAAQS, all stations except for Lexington Elementary exceed the 24-hour PM_{10} CAAQS, and only Donovan exceeds the annual $PM_{2.5}$ CAAQS.

Where stations already exceed the NAAQS or CAAQS, this analysis compares the incremental changes in concentrations to the SIL; where stationary do not exceed the NAAQS or CAAQS, the incremental change in concentrations are based on the difference between the DV and the NAAQS. For monitoring stations that do not exceed the appropriate CAAQS, comparisons to the appropriate CAAQS are based on the difference between the DV and the CAAQS. For monitoring stations that do exceed some or all NAAQS or CAAQS, comparisons to appropriate NAAQS or CAAQS are based on the applicable SIL.

The SIL values are as follows:

- For PM_{10}, the 24-hour SIL is 3.0 µg/m^3 and the Annual SIL is 5.0 µg/m^3, based on SDAPCD Rule 20.2 (SDAPCD 1998).
- For $PM_{2.5}$, the 24-hour SIL is 1.2 µg/m^3 and the Annual SIL is 0.13 µg/m^3, based on EPA's most recent guidance (EPA 2024).

The AERMOD air dispersion model computes the concentration of substances at specified spatial points. In AERMOD, these points are referred to as receptors (EPA 2024). Receptor and grid spacing used is sufficient to show where public health impacts above District significant risk thresholds may be expected to have occurred (SDAPCD 2024). Ambient receptor locations were determined based on proximity to sources of emissions. Near roadway links that see over 100,000 ADT and any freeway/arterial, receptors were placed within a fine receptor grid of 50 meter spacing, out to 500 ft (150 meters) from the roadway, based on guidance from SDAPCD, BAAQMD, as well as CARB's land use handbook (SDAPCD 2007, BAAQMD 2023, CARB 2005). Additionally, near roadways over 100,000 ADT and any freeway/arterial, receptors were placed within a coarser grid of 250 meter spacing between 150 meters and 1,000 meters. Near smaller non-freeway links greater than 10,000 ADT but less than 100,000 ADT, receptors were placed within a fine grid of 50 meter spacing, out to 500 ft (150 meters) from the roadway.

Health Impacts

As discussed in Section 4.3.1, short-term and long-term exposure to PM_{10} and $PM_{2.5}$ may result in adverse health effects, including:

- Aggravated asthma
- Increases in respiratory symptoms like coughing and difficult or painful breathing
- Chronic bronchitis
- Decreased lung function
- Heart attack
- Premature death

The ambient air quality standards are health-based standards. Therefore, in this impact analysis, when the proposed Plan would result in a new violation of a particulate standard or substantially contribute to an existing air quality standard violation, it also has the potential to contribute to these adverse health effects. Health impacts of diesel particulates, a TAC and subset of PM_{10} and $PM_{2.5}$ emissions, are analyzed separately in Impact AQ-5. This analysis identifies and maps receptors in 2022 and future years within the areas exposed to specified concentrations of PM_{10} and $PM_{2.5}$ emitted from Plan sources. These receptors would be at greatest risk of experiencing the health effects listed above.

Given the limitations of modeling tools and assumptions, receptor exposure numbers are an indication of relative exposure, and not a precise prediction. Also, because of the conservative modeling assumptions (see Appendix C to the EIR), the analysis presents maximum ambient air quality impacts. For these reasons, the actual exposure to particulate matter would likely be lower than presented in this analysis.

To correlate $PM_{2.5}$ emissions changes to anticipated health outcomes, a health impact analysis (HIA) was prepared to evaluate impacts from regional $PM_{2.5}$ emissions. The HIA was completed using EPA's Co-Benefits Risk Assessment (COBRA) screening tool (EPA 2025g). The COBRA health impacts screening and mapping tool can explore how changes in air pollution, specifically $PM_{2.5}$, from an action can affect human health at the county, state, regional, or national levels. PM_{10} impacts were not assessed in the COBRA HIA because health impact functions built into COBRA only consider health outcomes associated with $PM_{2.5}$ and ozone emissions. $PM_{2.5}$ and ozone are well established pollutants in terms of peer-reviewed epidemiological evidence and the concentration-response function, making them the most suitable for modeling (EPA 2024k). COBRA can map and visually represent the air quality and human health impacts from emissions of $PM_{2.5}$ that result from an action. Built into COBRA are emissions inventories, a simplified air quality model to estimate ambient concentrations, and health impact equations ready for use, based on assumptions that the EPA currently uses as reasonable best estimates.

COBRA uses a series of health impact functions, taken from the peer-reviewed epidemiological literature, to estimate how changes in outdoor air quality result in changes in the incidence of a variety of health outcomes (e.g., premature mortality, heart attacks, asthma exacerbation, lost workdays). Incidence refers to the number of new cases of a health outcome over a specified time period. The change in incidence is not necessarily a whole number because COBRA calculates small statistical risk reductions or increases that are then aggregated over the entire population.

COBRA outputs provide county-level changes in air quality (e.g., total annual average $PM_{2.5}$ concentration in $\mu g/m^3$) and incidence of each health endpoint. COBRA provides estimates on changes in mortality, infant mortality, nonfatal heart attacks, respiratory hospital admissions, cardiovascular hospital admissions, acute bronchitis, emergency room visits, work loss days, cardiac arrests, strokes, Parkinson's disease, Alzheimer's disease, lung cancer, hay fever/rhinitis, and asthma exacerbation.

The potential change in $PM_{2.5}$ emissions within San Diego County was reviewed from the 2022 baseline year to horizon years 2035 and 2050. Only $PM_{2.5}$ was reviewed because, although overall emissions will decrease across categories, paved road $PM_{2.5}$ emissions are expected to increase. In addition, localized significant $PM_{2.5}$ impacts may occur at locations near high-ADT roadways in urban center areas and new development areas. The analysis used 2022 on-road and railroad $PM_{2.5}$ emissions as the baseline input and net change in $PM_{2.5}$ emissions for Plan years 2035 and 2050 for the scenario analyses. Population data by age was provided by SANDAG for 2035 and 2050 and input into the model as non-default population data sets. Health incidence and valuation data for 2035 and 2050 was downloaded from EPA's database of COBRA Future Input Files and imported into COBRA. The analysis was performed for two emissions scenarios, one for 2035 and one for 2050. In each scenario, the net increase or decrease in $PM_{2.5}$ emissions from the baseline year was input into the model, by category. These scenarios account for traffic and railroad emissions increases/decreases from the proposed Plan throughout San Diego County.

Since the proposed Plan is a county-wide program which will implement regional scale emissions changes, and COBRA outputs county-level modeling, COBRA is an applicable modeling tool to assess health impacts associated with emissions changes from the Plan. However, it should be noted that there is uncertainty surrounding the values of key components of COBRA. For example, baseline incidence values are best estimates of county-wide health outcome incidences and prevalences for the baseline year input into the model, but in some cases county-level data is not available and national-level estimates are used instead. Sources of baseline incidence data built into COBRA include the Centers for Disease Control (CDC), the U.S Census Bureau, the Agency for Healthcare Research and Quality (AHRQ), the National Health Interview Survey (NHIS), and peer-reviewed epidemiological literature. Health impact functions are based on data from epidemiological literature on the impacts of $PM_{2.5}$ and ozone on public health; however, this relationship between air quality and public health may differ in different locations or contexts. Modeled results should not be interpreted as an exact calculation of something as complex as future $PM_{2.5}$ concentrations, or as correlating a given level of emissions with specific health effects.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs As documented in Appendix C, the vast majority of modeled receptors show a decrease in $PM_{2.5}$ and PM_{10} concentrations by 2035, while a smaller portion show an increase, and a subset of those that increase see an increase above thresholds. Maximum changes in concentrations of 24-hour and annual levels of $PM_{2.5}$ and PM_{10} from 2022 to 2035 near pollution sources, under the implementation of the proposed Plan, are shown in Table 4.3-7 and Table 4.3-8, respectively.

For $PM_{2.5}$, modeling indicates a decrease in concentrations in some areas, no change in others, and an increase in some areas. However, concentrations would increase above thresholds within each subdomain that was modeled for $PM_{2.5}$ Annual NAAQS, within the Donovan and Chula Vista modeling subdomains for the $PM_{2.5}$ Annual CAAQS, and within the Donovan and Escondido subdomains for $PM_{2.5}$ 24-hr NAAQS. These $PM_{2.5}$ exceedances are primarily due to road dust from roadway travel, with the maximum incremental concentrations occurring at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These $PM_{2.5}$ increases could contribute to a new violation or substantial contribution to an existing air quality standard

violation, as these exceedances would occur in modeling subdomains that contain monitoring stations that already exceed NAAQS and/or CAAQS. The impact for $PM_{2.5}$ is significant. The locations of $PM_{2.5}$ exceedances for 2035 are shown in Figure 4.3-2 and Figure 4.3-3.

For PM_{10}, modeling indicates no change in some areas and an increase in other areas. However, concentrations would increase above thresholds for PM_{10} Annual CAAQS and PM_{10} 24-hr CAAQS within each subdomain that was modeled, and within the Donovan and Escondido subdomains for PM_{10} 24-hr NAAQS. These PM_{10} exceedances are due primarily to road dust from roadway travel, and the maximum incremental concentrations are at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These PM_{10} increases could contribute to a new violation or substantial contribution to an existing violation. The impact for PM_{10} is significant. The locations of PM_{10} exceedances for 2035 are shown in Figure 4.3-4.

Table 4.3-7 Summary of Incremental $PM_{2.5}$ Concentrations, 2035

Standard	Maximum Incremental Concentration (µg/m^3)	Area of Threshold Exceedance (acres)	Significant Impact?
$PM_{2.5}$ Annual NAAQS	10.65	1,343	Yes[1]
$PM_{2.5}$ Annual CAAQS	4.99	1,003	Yes[2]
$PM_{2.5}$ 24-hr NAAQS	22.86	1	Yes[3]

Source: Appendix C

[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Donovan and Chula Vista modeling subdomains.

[23] These exceedances occur in the Donovan and Escondido modeling subdomains.

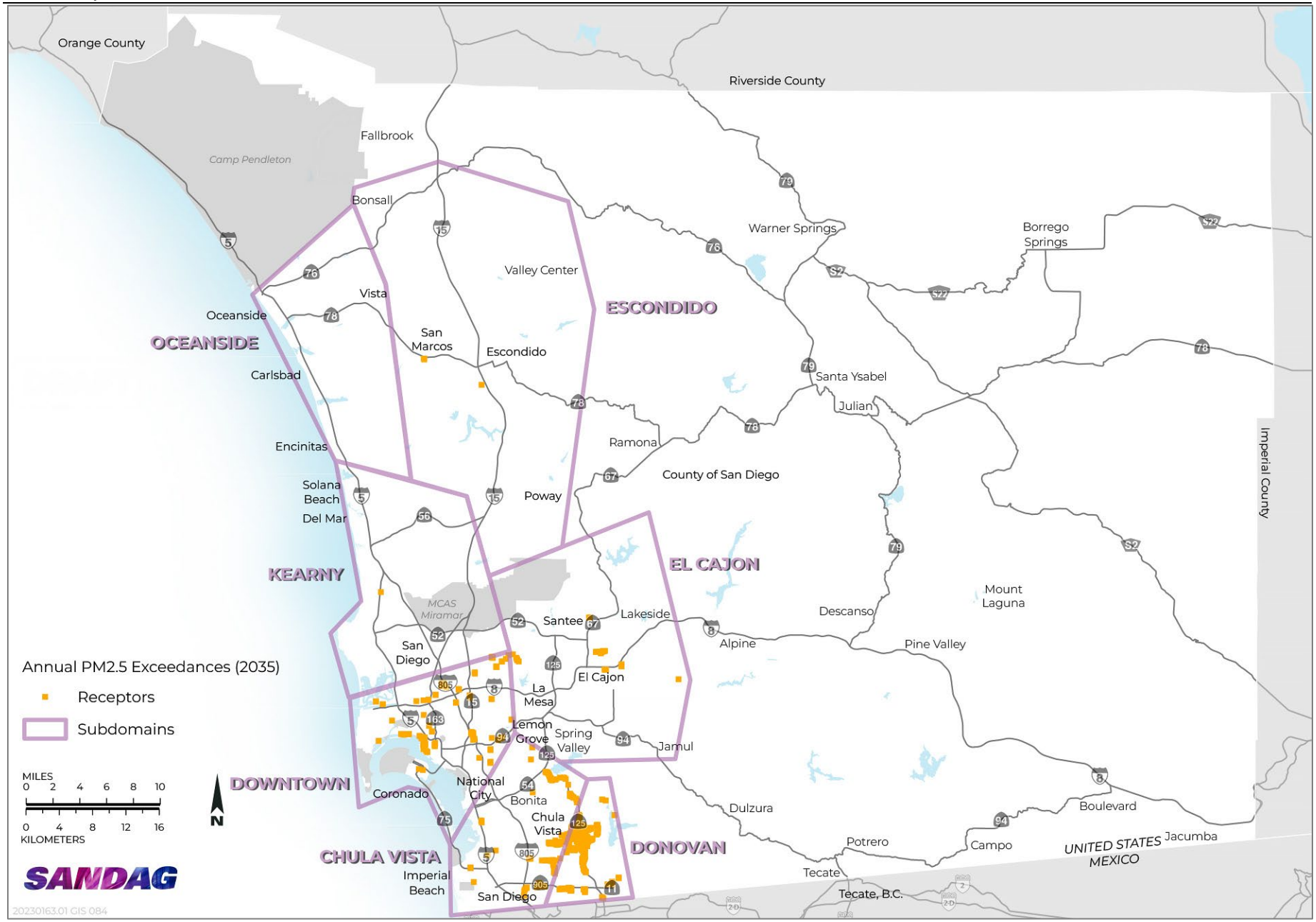
Table 4.3-8 Summary of Incremental PM_{10} Concentrations, 2035

Standard	Maximum Incremental Concentration (µg/m^3)	Area of Threshold Exceedance (acres)	Significant Impact?
PM_{10} Annual CAAQS	68.66	4,617	Yes[1]
PM_{10} 24-hr CAAQS	178.51	1,319	Yes[1]
PM_{10} 24-hr NAAQS	158.31	395	Yes[2]

Source: Appendix C

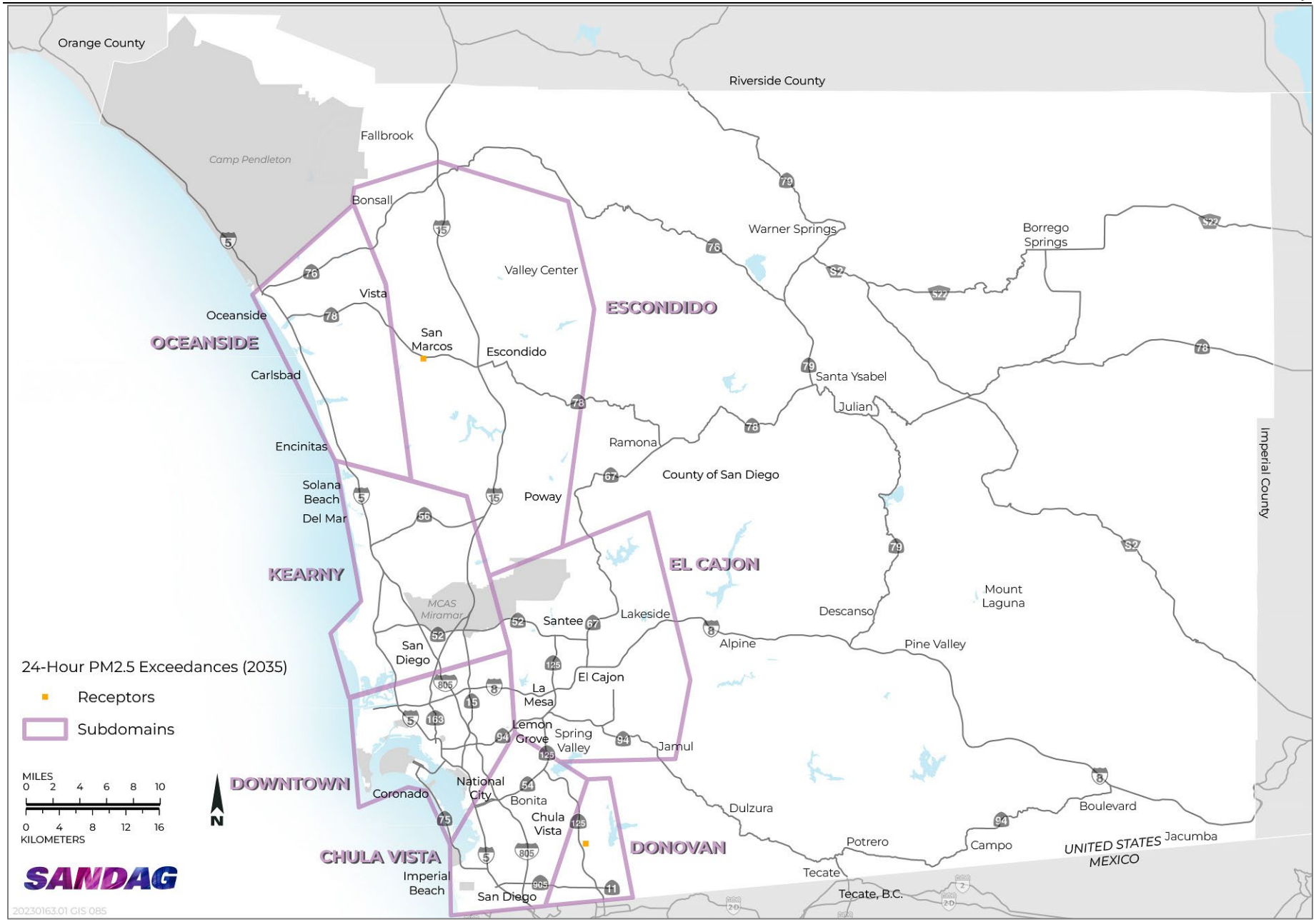
[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Escondido and Donovan subdomains.



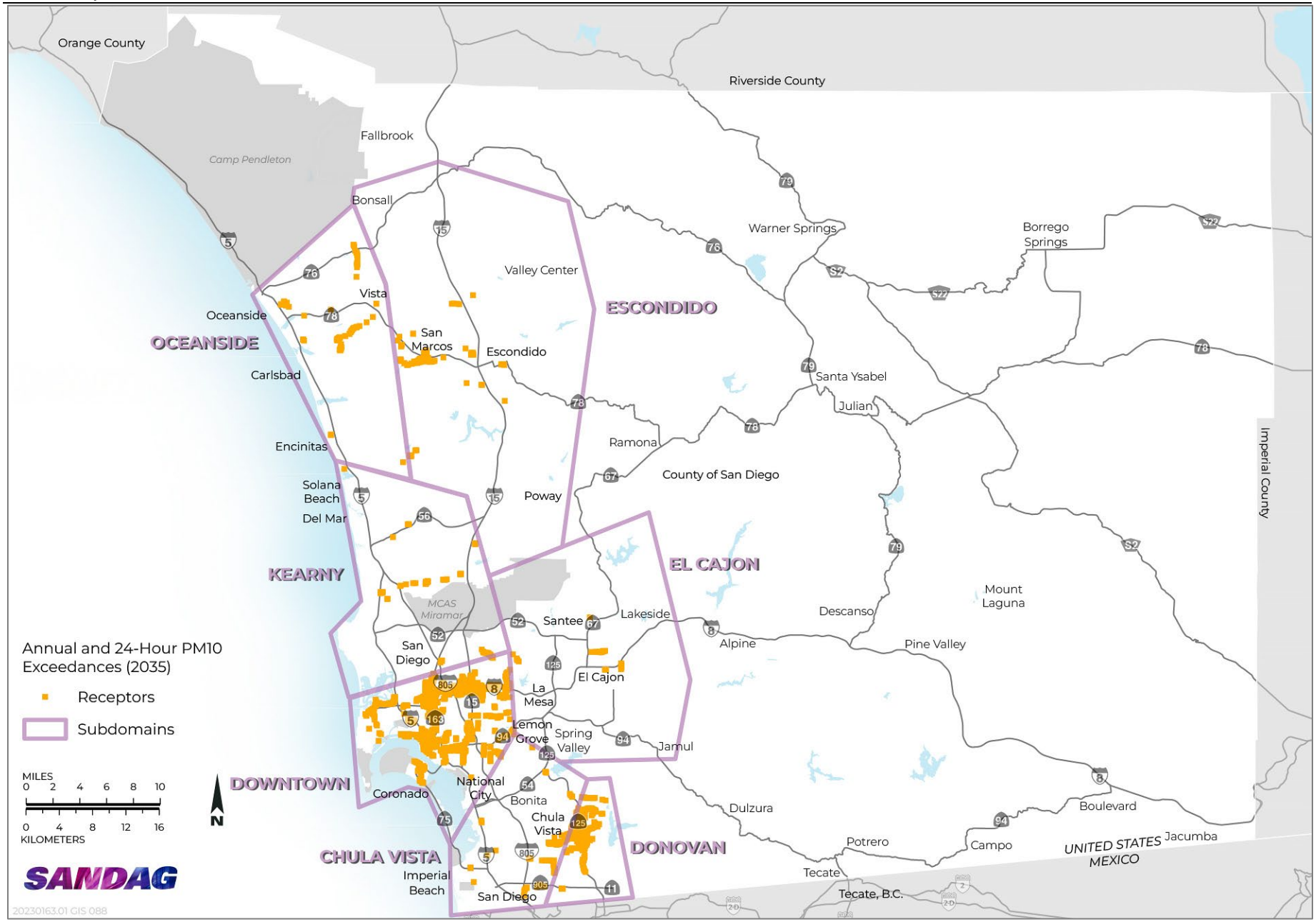
Source:: Adapted by Ascent in 2025.

Figure 4.3-2 Annual $PM_{2.5}$ Exceedances, 2035



Source: Adapted by Ascent in 2025.

Figure 4.3-3 24-Hour $PM_{2.5}$ Exceedances, 2035



Source: Adapted by Ascent in 2025.

Figure 4.3-4 Annual and 24 Hour PM_{10} Exceedances, 2035

COBRA-generated health outcomes from 2035 are shown in Table 4.3-9 below. For San Diego County, changes in $PM_{2.5}$-related health outcomes attributed to proposed Plan-related changes in ambient air concentrations in 2035 included mortality, incidence of outcomes such as asthma, lung cancer, and strokes, work loss days, and number of hospital/emergency room visits. As shown in Table 4.3-9, estimated mortalities avoided due to emission reductions in 2035 is 0.88 (the negative in the value -0.88 means an impact reduction). In other words, approximately one death per year in San Diego County would be avoided with the implementation of the proposed Plan and associated $PM_{2.5}$ emissions reductions. For context, between 2021-2023, the California Department of Public Health (CDPH) reported that San Diego County had an average death rate of 25,033 deaths per year and an age-adjusted death rate of 607.7 mortalities per 100,000 population (CDPH 2025). Based upon these CDPH statistics, the percent increase in health benefit (mortalities avoided) is less than 0.01% for 2035. The health benefits shown in Table 4.3-9 are achieved through reductions in regional $PM_{2.5}$ emissions and concentrations, notwithstanding that some receptors would experience localized increases in localized $PM_{2.5}$ concentrations.

Table 4.3-9 COBRA Health Outcome Results, 2035

Health Outcome	Change in Health Outcomes Due to $PM_{2.5}$ Emissions Reductions[1]
	2035
Mortality, High estimate	-0.88
Infant Mortality	-0.00046
Incidence of Asthma	-0.96
Incidence of Hay Fever	-6.39
ER Visits, Respiratory	-0.20
Hospital Admits, Respiratory	-0.03
Nonfatal Heart Attacks	-0.31
Minor Restricted Activity Days	-339
Work Loss Days	-57.5
Incidence of Lung Cancer	-0.04
Hospital Admits, Various Diseases[2]	-0.37
Incidence of Stroke	-0.03
Incidence of Out of Hospital Cardiac Arrest	-0.01
ER Visits, Cardiac Outcomes	-0.13

Source: Appendix C

[1] Negative numbers indicate a decrease in incidence or reduction in impact

[2] Cardio-, cerebro- and peripheral vascular disease, Alzheimer's disease, and Parkinson's disease

2035 Conclusion

Implementation of forecasted regional growth and land use change and planned transportation network improvements and programs by 2035 under the proposed Plan could substantially contribute to violations or create new violations of the $PM_{2.5}$ Annual NAAQS, $PM_{2.5}$ Annual CAAQS, $PM_{2.5}$ 24hr NAAQS, PM_{10} Annual CAAQS, PM_{10} 24hr CAAQS, and PM_{10} 24hr NAAQS. Implementation of the proposed Plan would lead to avoided $PM_{2.5}$-related health outcomes at the regional level in 2035. Nonetheless, because some receptors would experience localized increases in PM_{10} and $PM_{2.5}$ concentrations in exceedance of ambient air quality standards, this impact is significant in 2035.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs As documented in Appendix C, the vast majority of modeled receptors show a decrease in $PM_{2.5}$ and PM_{10} concentrations by 2035, while a smaller portion show an increase, and a subset of those that increase see an increase above thresholds. Maximum changes in concentrations of 24-hour and annual levels of $PM_{2.5}$ and PM_{10} from 2022 to 2050 near pollution sources under the implementation of the proposed Plan are shown in Table 4.3-10 and Table 4.3-11, respectively.

For $PM_{2.5}$, modeling indicates no change in concentrations in some areas, a decrease in some areas, and a increase in some areas. However, concentrations would increase above thresholds for within each subdomain that was modeled for $PM_{2.5}$ Annual NAAQS, within the Donovan and Chula Vista modeling subdomains for the $PM_{2.5}$ Annual CAAQS., and within the Donovan and Escondido subdomains for $PM_{2.5}$ 24-hr NAAQS. These $PM_{2.5}$ exceedances are primarily due to road dust from roadway travel, with the maximum incremental concentrations occurring at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These $PM_{2.5}$ increases could contribute to a new violation or substantial contribution to an existing violation, as these exceedances would occur in modeling subdomains that contain monitoring stations that already exceed NAAQS and/or CAAQS. The impact for $PM_{2.5}$ is significant. The locations of $PM_{2.5}$ exceedances for 2050 are shown in Figure 4.3-5 and Figure 4.3-6.

For PM_{10}, modeling indicates no change in some areas and an increase in some areas. However, concentrations would increase above thresholds for PM_{10} Annual CAAQS and PM_{10} 24-hr CAAQS within each subdomain that was modeled, and within the Donovan and Escondido subdomains for PM_{10} 24-hr NAAQS. These PM_{10} exceedances are primarily due to road dust from roadway travel, with maximum incremental concentrations occurring at receptor locations immediately adjacent to freeways and roads that show a large increase in ADT. These PM_{10} increases could contribute to a new violation or substantial contribution to an existing violation as these exceedances would occur in modeling subdomains that contain monitoring stations that already exceed NAAQS and/or CAAQS. The impact for PM_{10} is significant. The locations of PM_{10} exceedances for 2050 are shown in Figure 4.3-7.

Table 4.3-10 Summary of Incremental $PM_{2.5}$ Concentrations, 2050

Standard	Maximum Incremental Concentration (µg/m³)	Area of Threshold Exceedance (acres)	Significant Impact?
$PM_{2.5}$ Annual NAAQS	10.33	1,845	Yes[1]
$PM_{2.5}$ Annual CAAQS	9.33	1,428	Yes[2]
$PM_{2.5}$ 24-hr NAAQS	22.26	2	Yes[3]

Source: Appendix C

[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Donovan and Chula Vista modeling subdomains.

[3] These exceedances occur in the Donovan and Escondido modeling subdomains.

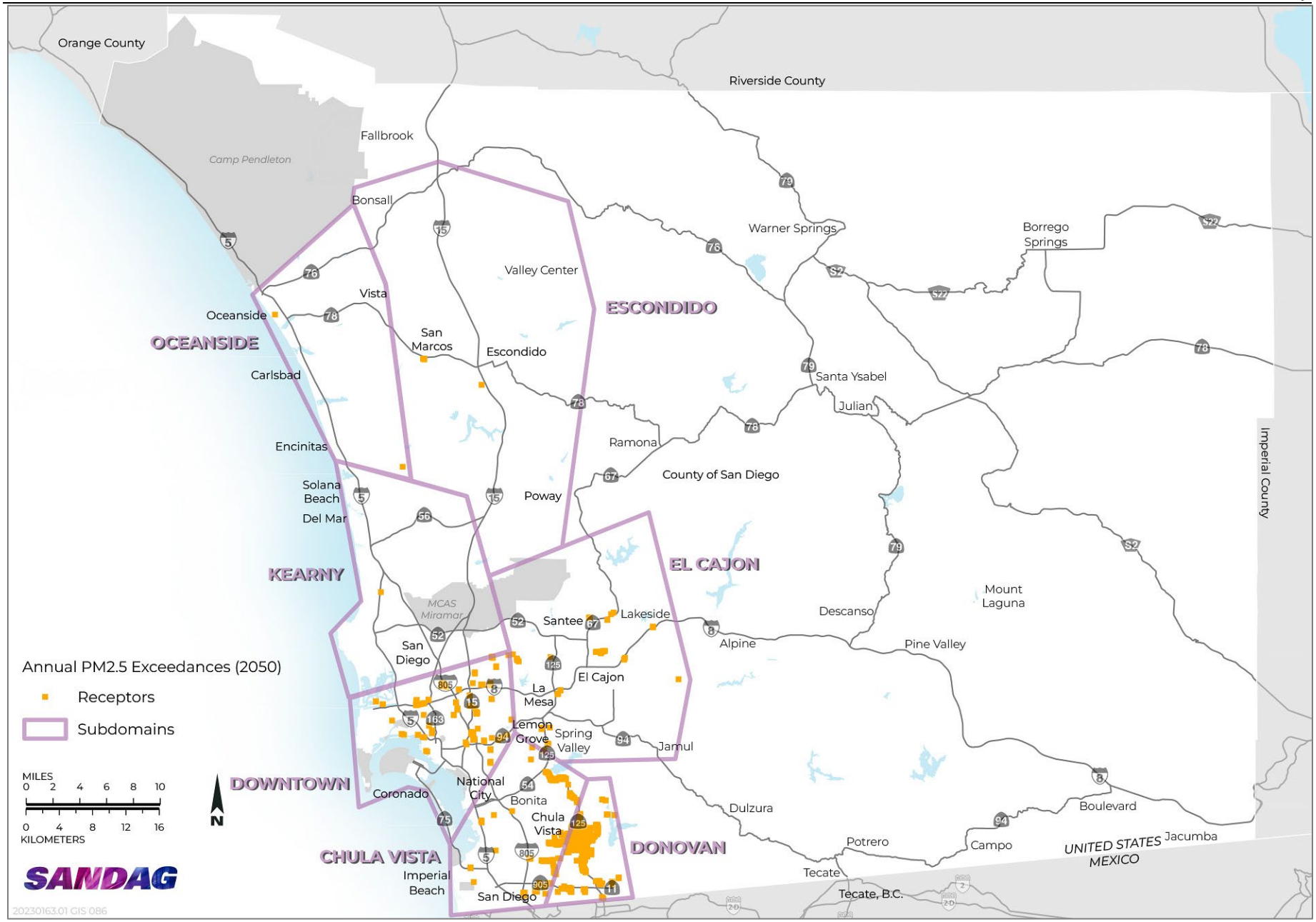
Table 4.3-11 Summary of Incremental PM_{10} Concentrations, 2050

Standard	Maximum Incremental Concentration (µg/m³)	Area of Threshold Exceedance (acres)	Significant Impact?
PM_{10} Annual CAAQS	67.08	5,067	Yes[1]
PM_{10} 24-hr CAAQS	174.61	1,638	Yes[1]
PM_{10} 24-hr NAAQS	154.96	636	Yes[2]

Source: Appendix C

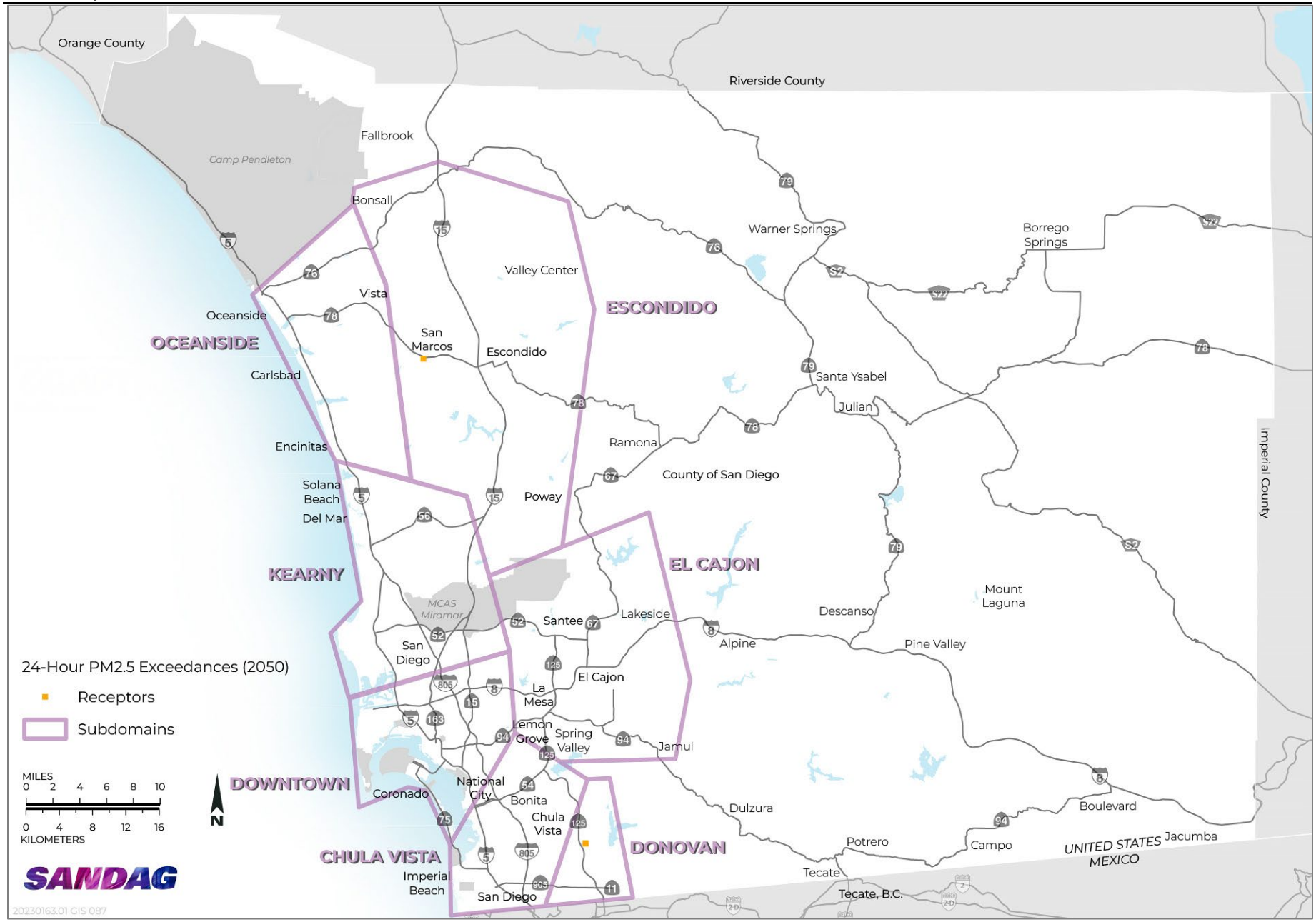
[1] These exceedances occur in each modeling subdomain.

[2] These exceedances occur in the Escondido and Donovan subdomains.



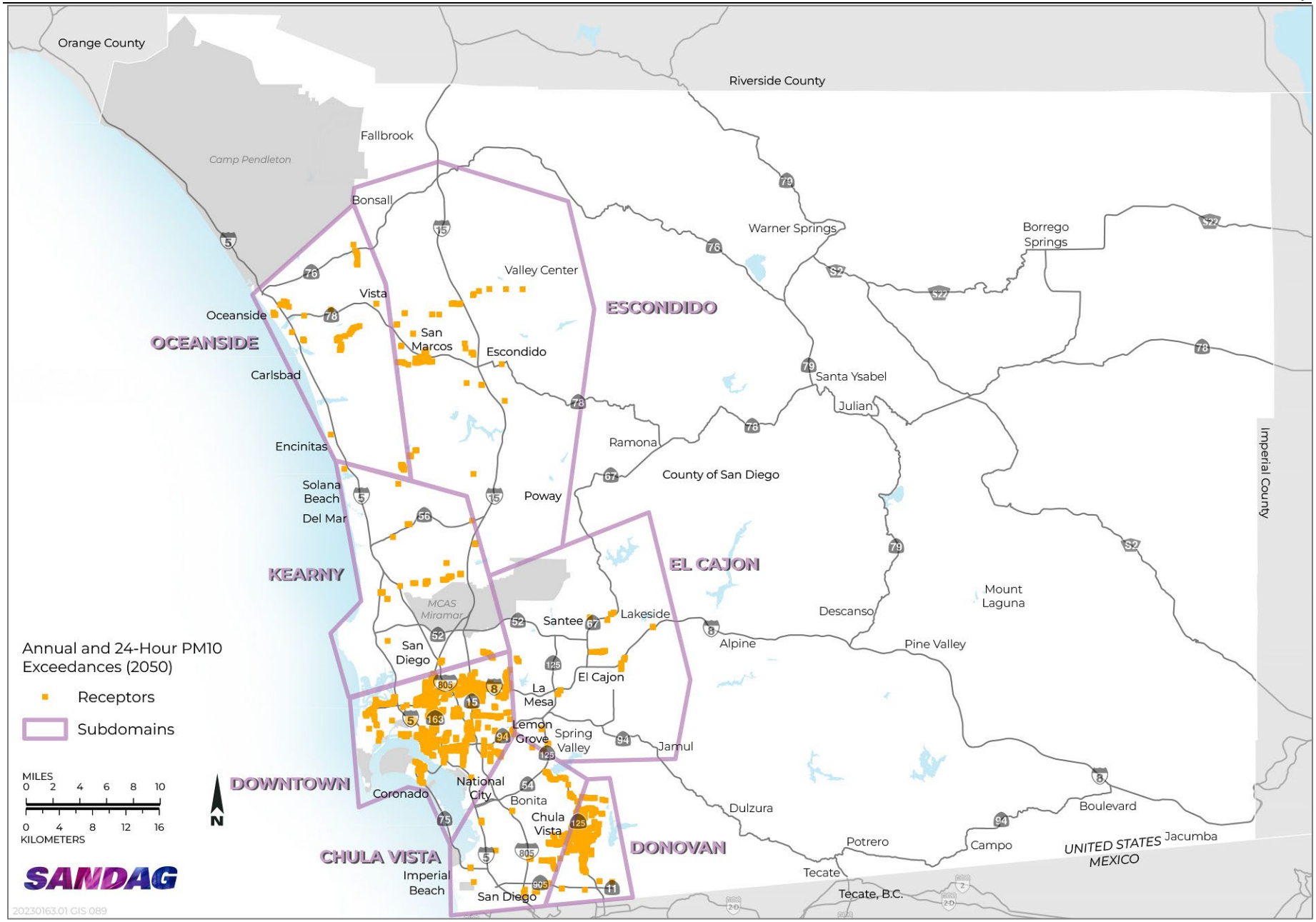
Source: Adapted by Ascent in 2025.

Figure 4.3-5 Annual $PM_{2.5}$ Exceedances, 2050



Source: Adapted by Ascent in 2025.

Figure 4.3-6 24-Hour $PM_{2.5}$ Exceedances, 2050



Source: Adapted by Ascent in 2025.

Figure 4.3-7 Annual and 24 Hour PM_{10} Exceedances, 2050

COBRA-generated health outcomes from 2050 are shown in Table 4.3-12 below. For San Diego County, changes in $PM_{2.5}$-related health outcomes attributed to Project-related changes in ambient air concentrations in 2050 included mortality, incidence of outcomes such as asthma, lung cancer, and strokes, work loss days, and number of hospital/emergency room visits. As shown in Table 4.3-12, estimated mortalities avoided due to emission reductions in 2050 is 1.27 (the negative in the value -1.27 means an impact reduction). In other words, approximately one death per year in San Diego County would be avoided with the implementation of the proposed Plan and associated $PM_{2.5}$ emissions reductions. For context, between 2021-2023, the California Department of Public Health (CDPH) reported that San Diego County had an average death rate of 25,033 deaths per year and an age-adjusted death rate of 607.7 mortalities per 100,000 population (CDPH 2025). Based upon these CDPH statistics, the percent increase in health benefit (mortalities avoided) is less than 0.01% for 2050. The health benefits shown in Table 4.3-12 are achieved through reductions in regional $PM_{2.5}$ emissions and concentrations, notwithstanding that some receptors would experience localized increases in localized $PM_{2.5}$ concentrations.

Table 4.3-12 COBRA Health Outcome Results, 2050

Health Outcome	Change in Health Outcomes Due to $PM_{2.5}$ Emissions Reductions[1]
	2050
Mortality, High estimate	-1.27
Infant Mortality	-0.0005
Incidence of Asthma	-1.21
Incidence of Hay Fever	-8.20
ER Visits, Respiratory	-0.27
Hospital Admits, Respiratory	-0.05
Nonfatal Heart Attacks	-0.46
Minor Restricted Activity Days	-441
Work Loss Days	-74.6
Incidence of Lung Cancer	-0.05
Hospital Admits, Various Diseases[2]	-0.57
Incidence of Stroke	-0.04
Incidence of Out of Hospital Cardiac Arrest	-0.01
ER Visits, Cardiac Outcomes	-0.18

Source: Appendix C.

[1] Negative numbers indicate a decrease in incidence or reduction in impact

[2] Cardio-, cerebro- and peripheral vascular disease, Alzheimer's disease, and Parkinson's disease

2050 Conclusion

Implementation of forecasted regional growth and land use change and planned transportation network improvements and programs by 2050 under the proposed Plan would could substantially contribute to violations or create new violations of the $PM_{2.5}$ Annual NAAQS, $PM_{2.5}$ Annual CAAQS, $PM_{2.5}$ 24hr NAAQS, PM_{10} Annual CAAQS, PM_{10} 24hr CAAQS, and PM_{10} 24hr NAAQS. Implementation of the proposed Plan would lead to avoided $PM_{2.5}$-related health outcomes at the regional level in 2050. Nonetheless, because some receptors would experience localized increases in PM_{10} and $PM_{2.5}$ concentrations in exceedance of ambient air quality standards, this impact is significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations. Climate change may result in increased wildfire frequency and intensity, which can increase emissions of particulate

matter. Precipitation during dry seasons may also decrease under climate change, reducing regional ability to fight wildfires and reduce this source of particulate matter (Reidmiller et al. 2018). Increased droughts would also increase dust emissions (Pu et al. 2022). As the proposed Plan would result in increased exposure of sensitive receptors to PM_{10} and $PM_{2.5}$, the air quality impacts expected from climate change may also worsen the proposed Plan's PM impacts.

MITIGATION MEASURES

AQ-4 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL PM_{10} AND $PM_{2.5}$ CONCENTRATIONS

2035, 2050

Implement mitigation measure **AQ-2a** and **AQ-2b**, as discussed under Impact AQ-2. Mitigation measures **AQ-2a** and **AQ-2b** would reduce VMT and associated emissions, including road dust, which is the primary cause of the PM_{10} and $PM_{2.5}$ exceedances discussed herein.

The following mitigation measures presented in Section 4.8 will further reduce PM_{10} and $PM_{2.5}$ emissions:

- GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions
- GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans
- GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure.
- GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects
- GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects

The following mitigation measure presented in Section 4.16 will further reduce PM_{10} and $PM_{2.5}$ emissions by reducing VMT:

- TRA-2: Achieve Further VMT Reductions for Transportation and Development Projects

In addition, the following measure is proposed:

AQ-4 Reduce Exposure to Localized Particulate Emissions. During planning, design, and project-level CEQA review of transportation network improvements and programs, and during planning, design, and project-level CEQA review of development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, evaluate the potential particulate matter concentration impacts of the project using applicable procedures and guidelines for such analyses. If exceedances of PM_{10} or $PM_{2.5}$ standards are predicted, SANDAG shall, and other transportation project sponsors can and should, apply measures to reduce PM emissions, including but not limited to the following:

- Design sites to locate sensitive receptors more than 500 feet of a freeway, 500 feet of urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
- Design sites to locate sensitive receptors more than 1,000 feet of a major diesel rail service or railyards.

Where adequate buffer cannot be implemented, implement the following:

- Install air filtration (as part of mechanical ventilation systems or stand-alone air cleaners) to indoor reduce pollution exposure for residents and other sensitive populations in buildings that are close to transportation network improvement projects. Use air filtration devices rated MERV-13 or higher. As part of implementing this measure, require an ongoing maintenance plan for the building's Heating, Ventilation and Air Conditioning (HVAC) air filtration system. Air filtration devices rated MERV-13 are estimated to reduce indoor levels of particulates by 75 to 90 percent (CARB 2017).

- Plant trees and/or vegetation suited to trapping roadway air pollution and/or sound walls between sensitive receptors and the pollution source. This measure would trap pollution emitted from pollution sources such as freeways, reducing the amount of pollution to which residents and other sensitive populations would be exposed. The vegetation buffer should be thick, with full coverage from the ground to the top of the canopy (CARB 2017, Baldauf 2016). Vegetation can be combined with sound walls to further reduce pollution exposure, particularly for locations immediately behind the barrier.
- Design streets that have more open space and varied building heights.
- Move bus stops and other gathering location farther from intersections.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure AQ-2a will help secure incentive funding to reduce PM emissions from mobile sources. Mitigation measures AQ-2b will help reduce VMT which will reduce PM emissions from mobile sources on freeways and other roadways. Mitigation measure AQ-4 will reduce the exposure of sensitive receptors to localized PM emissions with the implementation of design measures.

Mitigation measures GHG-4a, GHG-4b, GHG 4-c, GHG-4d, and GHG-4e would reduce PM_{10} and $PM_{2.5}$ emissions from tire wear, brake wear, and vehicle exhaust, as discussed in Section 4.8. In addition, mitigation measure TRA-2 would reduce PM_{10} and $PM_{2.5}$ emissions through project-level VMT reduction measures, as discussed in Section 4.16.Measures to reduce VMT or vehicle exhaust (e.g., EVs) in these mitigation measures would reduce PM_{10} and $PM_{2.5}$ emissions and associated concentrations.

Although mitigation would reduce impacts, there is no guarantee that impacts would be reduced to below a level of significance. Impacts would remain significant for both 2035 and 2050. Thus, impacts would be significant and unavoidable.

AQ-5 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL TAC CONCENTRATIONS

Analysis Methodology

This analysis addresses the exposure of sensitive receptors to substantial concentrations of TACs. A health risk assessment was performed to analyze exposure of sensitive receptors to substantial concentrations of TACs; increases in cancer risk were associated with such exposure. For this analysis, sensitive receptors are defined as residential, school, and recreational land uses.

The analysis in this EIR summarizes the assumptions, methodologies, and technical analyses presented in the *Air Quality Technical Report* (Appendix C of this EIR).

The cancer risk of a given area is a measure of any one person's likelihood of contracting cancer due to exposure from a particular carcinogen; it is not a measure of how many people will contract cancer. For example, for an area with an increase in cancer risk of 10 in 1 million, any one person's likelihood of contracting cancer would increase by 10 chances in 1 million (i.e., the increased likelihood of contracting cancer would increase by 0.001 percent). Moreover, in estimating any one person's cancer risk in residential uses, the analysis assumes that the person would stay in the same place for 30 years, 7 days a week, 24 hours a day, 350 days a year. The analysis follows the OEHHA guidelines (OEHHA, 2015), as recommended by SDAPCD, and utilizes the 95th percentile breathing rates and other conservative assumptions to calculate exposure to TACs. Accordingly, this analysis is designed to provide a conservative estimate of cancer risk and likely overestimates the actual impacts that would occur.

This analysis evaluates both increases in cancer risk from the baseline risk and total (or cumulative) cancer risk from the transportation network, including diesel locomotives, stationary sources, and on-road mobile sources. The increased cancer risk analysis compares the estimated risks for 2035 and 2050 with the existing baseline risks (2022) and evaluates whether there is an increase above 10 in 1 million (i.e., the likelihood of contracting cancer would increase by 0.001 percent) from changes in the transportation network. Total (or cumulative) cancer risk is

not based on a comparison with baseline levels but rather identifies the areas in which the total (or cumulative) cancer risk from the transportation network plus stationary sources would exceed 100 in 1 million (i.e., likelihood of contracting cancer of 0.01 percent) in 2035 and 2050.

Exposure to TACs may result in noncancer health effects as well as increases in cancer risk, as described in Section 4.3.1, Existing Conditions. The noncancer health effects analysis involves calculating the total health hazard index (THI) (OEHHA 2015). A health hazard index is a comparison of the concentration of a TAC to the level at which adverse noncancer health effects would be experienced (the recommended exposure limit [REL] for TAC emissions). The calculation involves dividing the predicted TAC concentration by its REL. This analysis focused on evaluating the THI at the maximally exposed individual receptor (MEIR). If the maximum THI is greater than 1.0, the concentration to which an individual is exposed would be above the level at which noncancer health effects could occur, and a significant impact would result. If it is below 1.0, then noncancer health effects would not be expected to occur. The analysis examines the generation of TACs from planned transportation network improvements and programs under the proposed Plan, as well as the placement of existing and new sensitive receptors in locations where they would be exposed to substantial concentrations of TACs under forecasted regional growth and land use changes under the proposed Plan. Note that transportation network improvements and programs under the proposed Plan include both increased motor vehicle travel on the roadway network and increased passenger rail activity along passenger rail lines throughout the region, as shown in Figures 2-6 through 2-14 in Chapter 2, Project Description.

As described in detail above, the following criteria are used to evaluate whether implementation of the proposed Plan would expose sensitive receptors to substantial concentrations of TACs:

1. Does the proposed Plan result in increases in cancer risk to sensitive receptors over baseline (2022) conditions that exceed 10 in 1 million?
2. Does the proposed Plan expose sensitive receptors to total cancer risks above 100 in 1 million?
3. Does the proposed Plan result in increases in health risks to sensitive receptors for noncancer hazards as measured by a THI above 1.0?

The analysis also discloses TAC exposure of new land use added by the Regional Plan's regional growth and land use changes. Sensitive receptors associated with new land uses include future residential and park uses near existing pollution sources, such as roads, rail, and stationary sources.

The Supreme Court in *California Building Industry Assoc. v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (*CBIA v. BAAQMD*) considered the issue of whether such TAC exposure of new receptors added by a project represents an environmental impact under CEQA. In that case, the California Building Industry Association challenged the Bay Area Air Quality Management District's (BAAQMD) adoption of new CEQA thresholds for determining whether a project's exposure to existing levels of TACs would result in a significant impact. The Supreme Court's review of the case focused on whether CEQA requires an analysis of how existing environmental conditions will impact future residents or users (receptors) of a proposed project. After reviewing the CEQA statute and Section 15126.2(a) of the State CEQA Guidelines, the Court concluded that CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents.

The Court did not exclude all consideration of existing hazards from CEQA analysis. An agency must evaluate existing conditions in order to assess whether a project could exacerbate hazards that are already present. In light of the Court's decision, exposure of future project land uses to existing air quality conditions, including TAC risks, that would not be exacerbated by a project, is not subject to CEQA analysis. Nevertheless, recognizing the unique nature of the Proposed Regional Plan, which encompasses both regional growth, land use change, and transportation network improvements, the Impact AQ-5 analysis does voluntarily consider the exposure of future land uses to existing TAC risks as an impact. The methodology and detailed results of the health risk assessment are described in Appendix C. Due to the nature of this analysis, the combined impacts of regional growth, land use change, transportation network improvements, and programs are presented together.

Health Impacts

Exposure to diesel particulates and TACs may result in adverse health effects, both increased cancer risk as well as noncancer health effects, as described in Section 4.3.1.

This HRA identifies and maps sensitive receptors in 2022 and future years within the areas exposed to specified concentrations of TAC emissions to determine where cancer and non-cancer risk thresholds are exceeded. For the HRA, sensitive receptors are locations represented by residential, school, and recreational land uses. HRA results are presented separately for cancer and non-cancer effects. For cancer risks, the results include a summary of the risk at the maximally exposed sensitive receptor, and the area (in acres) that exceed the applicable threshold, which is 10 in 1 million for plan-level increase in risk and 100 in 1 million for cumulative effects. For non-cancer risks, the results include a summary of the risk at the maximally exposed sensitive receptor, and the area (in acres) that exceed the applicable threshold, which is 1.0 for both chronic and acute hazard effects.

Given the limitations of modeling tools and assumptions, sensitive receptor exposure numbers are an indication of relative exposure, and not a precise prediction. Actual exposure would be lower because of the conservative EMFAC2021 modeling assumptions used in the cancer risk analysis (see above). The cancer risk of a given area is a measure of any one person's likelihood of contracting cancer due to exposure from a particular carcinogen; it is not a measure of how many people will contract cancer.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

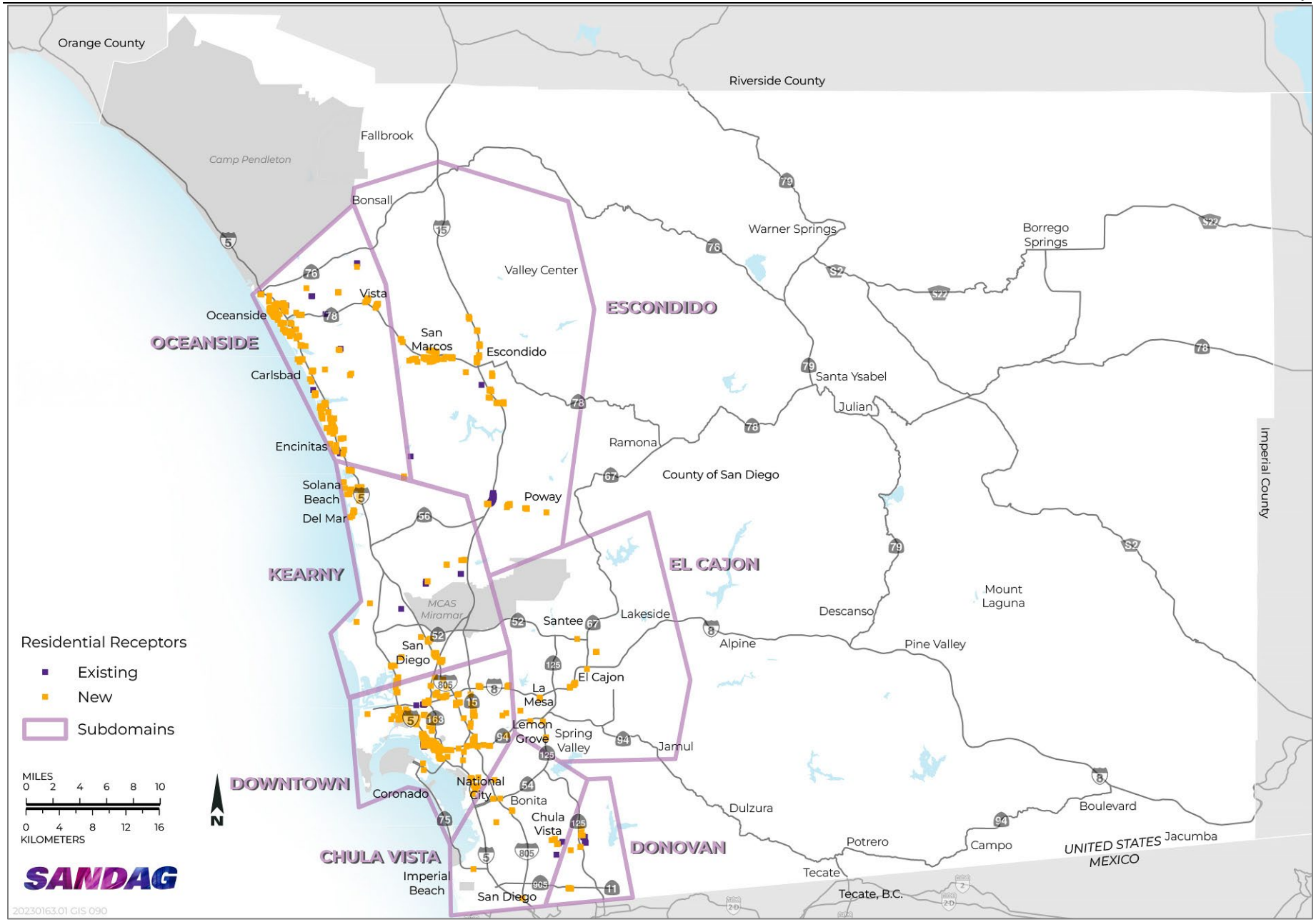
Criterion 1: Does the proposed Plan result in increases in cancer risk to sensitive receptors over baseline (2022) conditions that exceed 10 in 1 million?

Table 4.3-13 summarizes health effects in 2035 for the three receptor types.

For land uses near existing roadways and rail sources, the incremental risk at the maximally exposed sensitive receptors is higher than 2022 conditions. The incremental risk at the maximally exposed sensitive receptors decreases for most receptors, but there are several residential areas that would see an increase that exceeds the 10 in 1 million threshold. The increase at recreational and school uses would be below the 10 in 1 million threshold at each location. Therefore, the impact on sensitive receptors (residential uses) near existing emission sources would be significant.

For new sensitive receptors in new land uses, the incremental risk at the maximally exposed sensitive receptors exceeds the threshold at residential receptors. The threshold is exceeded at various residential receptors within each modeling subdomain due to siting of new residential uses near existing rail and roadway sources. The maximally exposed areas are within each modeling subdomain. Risk exceeds the 10 in 1 million threshold in a number of locations due to the siting of new land uses. Therefore, the impact on new sensitive receptors in new land uses is significant.

Sensitive receptors exposed to incremental increase in cancer risk above thresholds in 2035 are shown in Figure 4.3-8.



Source: Adapted by Ascent in 2025.

Figure 4.3-8 Cancer Risk Exceedances, 2035

Table 4.3-13 Summary of Cancer Risk, 2035

Receptor Type	2022 Maximum Cancer Risk (per million)	2035 Maximum Cancer Risk (per million)	2035 – 2022 Maximum Incremental Change (per million)	2035 – 2022 Incremental Area of Threshold Exceedance (acres)
Existing Receptors				
Residential	255	275	49	80
Recreational	41	44	3	0
School	50	53	3	0
New Receptors				
Residential	-	241	241	694
Recreational	-	8.3	8.3	0
School	-	3	3	0

Source: Appendix C.

Notes: Cancer risk threshold is 10 in 1 million. Modeled cancer risks were rounded to the nearest whole number

Criterion 2: Does the proposed Plan expose sensitive receptors to total cumulative cancer risks above 100 in one million?

Table 4.3-14 summarizes cumulative health risk at residential sensitive receptors in 2035 compared to 2022 conditions. As shown, the maximum cumulative cancer risk and the number of sensitive receptors in the modeling exposed to 100 per million health risk would increase. This increase in exposure is due to an increase in VMT and rail activity by 2035. While regulatory policies that reduce emissions from diesel trains, diesel vehicles, and gasoline vehicles, through state and federal programs designed to reduce emissions of TACs and improve fuel efficiency, would reduce emissions from vehicle traffic and rail locomotives, the increase in activity would outweigh the emission reductions associated with these regulations. Thus, an increase in the number of exposed individuals would occur due to the proposed Plan's forecasted increase in the population and housing units within the region and associated growth in motor vehicle and rail activity.

The SCS portion of the proposed Plan includes proposed land use changes that reflect smart growth, transit-oriented development, preserving natural resources and agricultural lands. The Series 15 Forecast and proposed SCS land use pattern reflect a move toward more sustainable urban growth models. Land use growth is proposed for communities with a high concentration of people, destinations, and travel choices, where densification is envisioned in the SCS.

Many of these proposed land uses are located in areas near existing pollution sources. Although the proposed Plan would contribute to TAC emissions at both the regional and local scale, these increases would not increase existing hazards when taking into account the reduction of emissions over time due to regulatory policies.

Table 4.3-14 Summary of Cumulative Health Risk, 2035

Receptor Type	2022 Maximum Cumulative Cancer Risk (per million)	2022 Area of Threshold Exceedance (acres)	2035 Maximum Cumulative Cancer Risk (per million)	2035 Area of Threshold Exceedance (acres)	2035 – 2022 Maximum Incremental Change (per million)	2035 – 2022 Incremental Area of Threshold Exceedance (acres)
Residential	256	34	276	64	20	30

Source: Appendix C.

A summary of region-wide TAC emissions is shown in Table 4.3-15. Overall, TAC emissions reduce 38 to 57 percent relative to 2022 at the scale of the entire Plan area. Despite this reduction in TACs at the regional scale, numerous individual roadways and rail lines would see an increase in TAC emissions. The proposed Plan would increase existing hazards, taking into account the effect of regulatory policies over time. Based on the above analysis, this impact is therefore significant.

Table 4.3-15 Summary of TAC Emissions, Tons Per Day, 2035

Pollutant	2022	2035	Change Vs 2022
Butadiene1,3	0.052	0.022	-57%
Acetaldehyde	0.032	0.013	-57%
Acrolein	0.010	0.004	-57%
Benzene	0.204	0.087	-57%
Ethyl Benzene	0.100	0.043	-57%
Formaldehyde	0.137	0.059	-57%
Naphthalene	0.047	0.025	-47%
PAH	0.047	0.025	-47%
DPM	0.034	0.021	-38%

Source: Appendix C

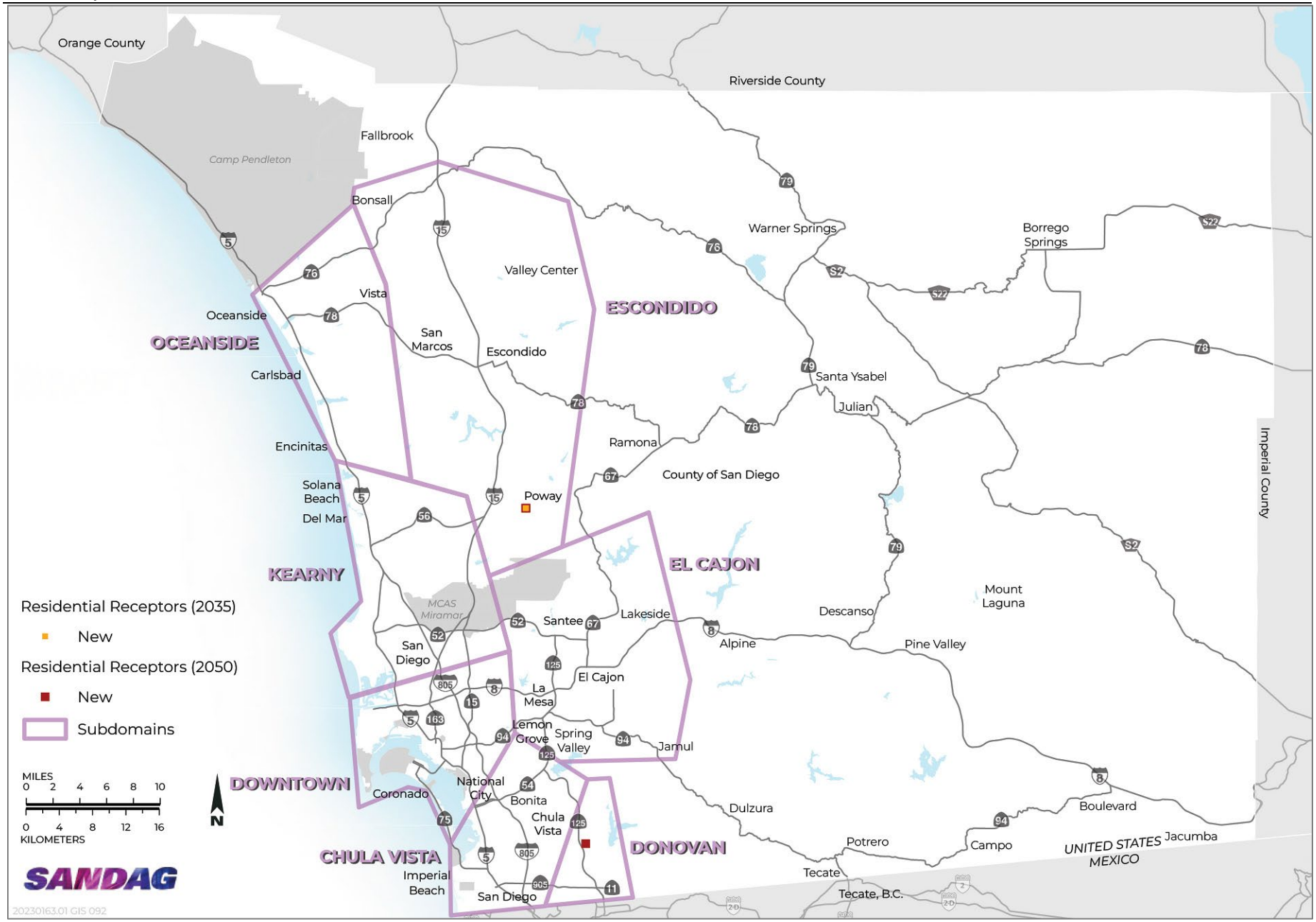
Criterion 3: Does the proposed Plan result in increases in health risks to sensitive receptors for noncancer hazards as measured by a THI above 1.0?

Table 4.3-16 summarizes non-cancer health effects in 2035 for the three receptor types.

For land uses near existing roadway and rail sources, the incremental noncancer risk at the maximally exposed sensitive receptors is below 2022 conditions. For all residential, park, or school sensitive receptors near existing roadway and rail sources, there are no sensitive receptors that show an increase in chronic hazard index or acute hazard index in 2035 relative to 2022 conditions. Therefore, the impact on sensitive receptors near existing emission sources is less than significant.

For new sensitive receptors in new land uses, the incremental noncancer chronic hazard index at the maximally exposed sensitive receptors exceed the threshold at residential receptors. The chronic hazard index threshold is exceeded at several residential receptors within the Donovan subdomain due to siting of new residential uses near existing rail and roadway sources. Therefore, the impact on new sensitive receptors in new land uses is significant for chronic hazard index. There are no exceedances of the acute hazard index threshold (Appendix C).

Sensitive receptors exposed to incremental increase in chronic hazard index above thresholds in 2035 are shown in Figure 4.3-9. Because there are no exceedances of the acute hazard index in 2035, no figure is provided.



Source: Adapted by Ascent in 2025.

Figure 4.3-9 Chronic Hazard Index Exceedances, 2035 and 2050

Table 4.3-16 Summary of Non Cancer Hazard Index, 2035

Receptor Type	2022 Maximum Hazard Acute Hazard Index	2022 Maximum Hazard Chronic Hazard Index	2035 – 2022 Incremental Maximum Change Acute Hazard Index	2035 – 2022 Incremental Maximum Change Chronic Hazard Index	Incremental Area Exceeding Threshold (acres) Acute Hazard Index	Incremental Area Exceeding Threshold (acres) Chronic Hazard Index
Existing Receptors						
Residential	0.62	1.39	0.10	0.62	0	0
Recreational	0.52	0.07	0.13	0.02	0	0
School	0.59	0.19	0.06	0.06	0	0
New Receptors						
Residential	-	-	0.34	1.29	0	1
Recreational	-	-	0.28	0.02	0	0
School	-	-	0.14	0.04	0	0

Source: Appendix C.

Notes: Noncancer hazard risk threshold is 1.0 for both Acute and Chronic Hazards. Modeled noncancer hazard risks were rounded to the nearest two decimal places.

2035 Conclusion

Implementation of the proposed Plan would expose existing sensitive receptors and new receptors to substantial concentrations of TAC emissions. Therefore, this impact is significant in 2035.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

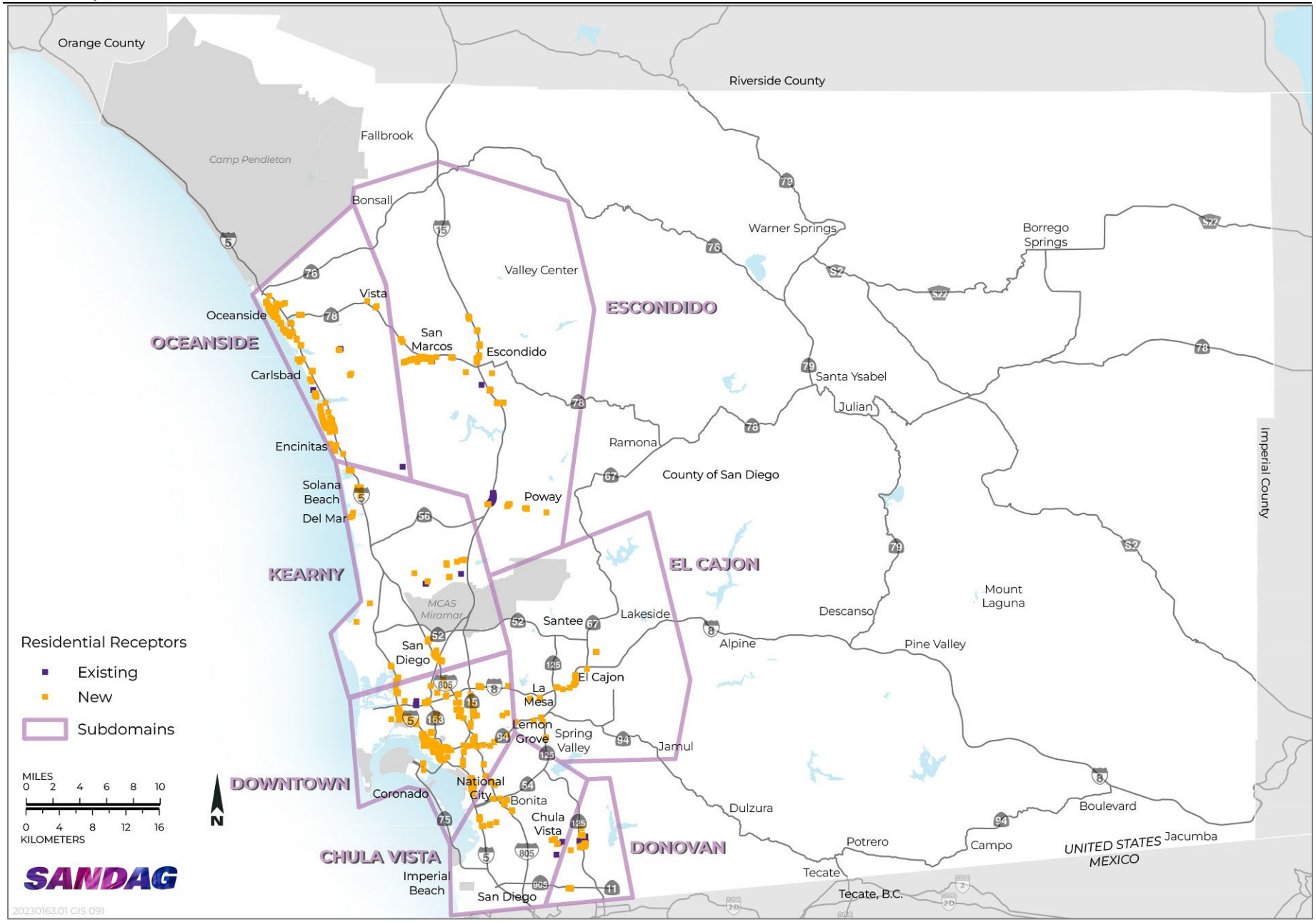
Criterion 1: Does the proposed Plan result in increases in cancer risk to sensitive receptors over baseline (2022) conditions that exceed 10 in 1 million?

Table 4.3-17 summarizes health effects in 2050 for the three receptor types.

For land uses near existing roadways and rail sources, the incremental risk at the maximally exposed sensitive receptors is above 2022 conditions. The incremental risk at the maximally exposed sensitive receptors decreases for most receptors, but there are several residential areas that would see an incremental risk increase that exceeds the 10 in 1 million threshold. The increase at recreational and school uses would be below the 10 in 1 million threshold at each location. Therefore, the impact on sensitive receptors (residential uses) near existing emission sources would be significant.

For new sensitive receptors in new land uses, the incremental risk at the maximally exposed sensitive receptors exceeds the threshold at residential receptors. The threshold is exceeded at various residential receptors within each modeling subdomain due to siting of new residential uses near rail and roadway sources. Risk exceeds the 10 in 1 million threshold in a number of locations due to the siting of new land uses. Therefore, the impact on new sensitive receptors in new land uses is significant.

Sensitive receptors exposed to incremental increase in cancer risk above thresholds in 2050 are shown in Figure 4.3-10.



Source: Adapted by Ascent in 2025.

Figure 4.3-10 Cancer Risk Exceedances, 2050

Table 4.3-17 Summary of Cancer Risk, 2050

Receptor Type	2022 Maximum Cancer Risk (per million)	2050 Maximum Cancer Risk (per million)	2050 – 2022 Maximum Incremental Change (per million)	2050 – 2022 Incremental Area of Threshold Exceedance (acres)
Existing Receptors				
Residential	255	89	33	56
Recreational	41	16	2	0
School	50	20	3	0
New Receptors				
Residential	-	114	114	707
Recreational	-	6	6	0
School	-	7	7	0

Source: Appendix C.

Notes: Cancer risk threshold is 10 in 1 million. Modeled cancer risks were rounded to the nearest whole number.

Criterion 2: Does the proposed Plan expose sensitive receptors to total cumulative cancer risks above 100 in one 1 million?

Table 4.3-18 summarizes cumulative health risk at residential sensitive receptors in 2050 relative to 2022 conditions. As shown, the maximum cumulative cancer risk and the number of sensitive receptors in the modeling exposed to 100 per million health risk would decrease. This reduction in exposure is due in part to regulatory policies that reduce emissions from diesel trains and vehicles and gasoline vehicles due to state and federal programs designed to reduce emissions of TACs and improve fuel efficiency. Thus, reductions in the number of exposed individuals would occur despite the proposed Plan's forecasted increase in the population and housing units within the region.

The SCS portion of the proposed Plan includes proposed land use changes that reflect smart growth, transit-oriented development, preserving natural resources and agricultural lands. The Series 15 Forecast and proposed SCS land use pattern reflect a move toward more sustainable urban growth models. Land use growth is proposed for communities with a high concentration of people, destinations, and travel choices where densification is envisioned in the SCS.

Many of these proposed land uses are within areas that are near existing pollution sources. Although the proposed Plan would contribute TAC emissions at both the regional and local scale, these increases would not increase existing hazards, when taking into account the reduction of emissions over time due to regulatory policies.

Table 4.3-18 Summary of Cumulative Health Risk, 2050

Receptor Type	2022 Maximum Cumulative Cancer Risk (per million)	2022 Area of Threshold Exceedance (acres)	2050 Maximum Cumulative Cancer Risk (per million)	2050 Area of Threshold Exceedance (acres)	2050 – 2022 Maximum Incremental Change (per million)	2050 - 2022 Incremental Area of Threshold Exceedance (acres)
Residential	256	34	115	1	-140	-33

Note: Modeled cumulative cancer risks were rounded to the nearest whole number.

A summary of TAC emissions is shown in Table 4.3-19. Overall, TAC emissions reduce 40 to 74 percent relative to 2022 at the scale of the entire Plan area. Despite this reduction in TACs at the regional scale, numerous individual roadways would see an increase in TAC emissions, but the proposed Plan would not increase existing hazards, taking into account the effect of regulatory policies over time. Based on the above analysis, this impact is therefore less than significant.

Table 4.3-19 Summary of TAC Emissions, Tons Per Day, 2050

Pollutant	2022	2050	Change Vs 2022
Butadiene1,3	0.052	0.014	-74%
Acetaldehyde	0.032	0.008	-74%
Acrolein	0.010	0.003	-74%
Benzene	0.204	0.054	-74%
Ethyl Benzene	0.100	0.026	-74%
Formaldehyde	0.137	0.036	-74%
Naphthalene	0.047	0.020	-58%
PAH	0.047	0.020	-58%
DPM	0.034	0.020	-40%

Source: Appendix C.

Criterion 3: Does the proposed Plan result in increases in health risks to sensitive receptors for noncancer hazards as measured by a THI above 1.0?

Table 4.3-20 summarizes non-cancer health effects in 2050 for the three receptor types.

For land uses near existing roadway and rail sources, the incremental noncancer risk at the maximally exposed sensitive receptors is below 2022 conditions. For all residential, park, or school sensitive receptors near existing roadway and rail sources, there are no sensitive receptors that show an increase in chronic hazard index or acute hazard index in 2050 relative to 2022 conditions. Therefore, the impact on sensitive receptors near existing emission sources is less than significant.

For new sensitive receptors in new land uses, the incremental noncancer chronic hazard index at the maximally exposed sensitive receptors exceeds the threshold at residential receptors. The chronic hazard index threshold is exceeded at several residential receptors within the Donovan and Escondido modeling subdomains due to siting of new residential uses near existing rail and roadway sources Therefore, the impact on new sensitive receptors in new land uses is significant for chronic hazard index. There are no exceedances of the acute hazard index threshold.

Sensitive receptors exposed to incremental increase in chronic and acute hazard index above thresholds in 2050 are shown in Figure 4.3-9.

Table 4.3-20 Summary of Non Cancer Hazard Index, 2050

Receptor Type	2022 Maximum Hazard Acute Hazard Index	2022 Maximum Hazard Chronic Hazard Index	2050 – 2022 Maximum Incremental Change Acute Hazard Index	Chronic Hazard Index	Incremental Area Change Threshold Exceeding (acres) Acute Hazard Index	Incremental Area Change Threshold Exceeding (acres) Chronic Hazard Index
Existing Receptors						
Residential	0.62	1.39	0.15	0.63	0	0
Recreational	0.52	0.07	0.13	0.02	0	0
School	0.59	0.19	0.07	0.06	0	0
New Receptors						
Residential	X	X	0.47	2.14	0	1
Recreational	X	X	0.25	0.03	0	0
School	X	X	0.18	0.11	0	0

Source: Appendix C.

Notes: Noncancer hazard risk threshold is 1.0 for both Acute and Chronic Hazards. Modeled noncancer hazard risks were rounded to the nearest two decimal places.

2050 Conclusion

Implementation of the proposed Plan would not expose existing sensitive receptors, but would expose new receptors, to substantial concentrations of TAC emissions. Therefore, this impact is significant in 2050.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in exposure of sensitive receptors to TAC concentrations. Climate change would increase exposure to some carcinogens, such as through particulate matter from wildfire and flooding inundation of chemical or waste sites that may release carcinogens (Nogueira et al. 2020). The proposed Plan's projected growth and transportation network improvements would increase exposure of new receptors to TAC emissions, which could be worsened by climate change-caused increases of these emissions.

MITIGATION MEASURES

AQ-5 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL TAC CONCENTRATIONS

2035, 2050

Implement mitigation measure **AQ-2a** and **AQ-2b**, as discussed under Impact AQ-2. Mitigation measure **AQ-2a** would reduce TAC emissions from freeway travel.

The following mitigation measures presented in Section 4.8 will further reduce TAC emissions:

- GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions
- GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans
- GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure
- GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects
- GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects

The following mitigation measure presented in Section 4.16 will further reduce TAC emissions by reducing VMT:

- TRA-2: Achieve Further VMT Reductions for Transportation and Development Projects

In addition, the following measure is proposed:

AQ-5a Reduce Exposure to Localized Toxic Air Contaminant Emissions. During planning, design, and project-level CEQA review of transportation network improvements and programs, SANDAG shall, and other transportation project sponsors can and should, evaluate the potential toxic air contaminant (TAC) impacts of the project using applicable procedures and guidelines for such analyses (for example, California Air Pollution Control Officers' Association, OEHHA, and EPA air toxics health risk assessment guidance).

In addition, during planning, design, and project-level CEQA review of development projects, the County of San Diego, cities, and other local jurisdictions can and should apply the above measures, and additional measures to reduce TAC emissions or exposure to TAC emissions, including but not limited to:

- Reduce the potential for TACs to be introduced into buildings by all of the following:
  - Maintaining a positive air pressure within buildings that include sensitive receptors.
  - Achieving a performance standard of at least one air exchange per hour of fresh outside filtered air.
  - Achieving a performance standard of at least 4 air exchanges per hour of recirculation.
  - Achieving a performance standard of at least 0.25 air exchanges per hour of unfiltered air if the building is not positively pressurized.

- Within developments, separate sensitive receptors from truck activity areas, such as loading docks and delivery areas. This measure would reduce exposure of residents and other sensitive receptors by locating sources of TACs associated with loading docks and delivery areas away from sensitive receptors.
- Replace or retrofit existing diesel generators that are not equipped to meet CARB's Tier emission standards.
- Reduce emissions from diesel trucks using the project site through the following measures:
  - Install electrical hook-ups for electric or hybrid trucks at loading docks.
  - Require trucks to use Transportation Refrigeration Units (TRUs) that meet Tier 4 emission standards.
  - Require truck-intensive projects to use advanced exhaust technology (e.g., hybrid) or alternative fuels.
  - Prohibit trucks from idling for more than 2 minutes as feasible.

    This measure would reduce emissions of TACs from trucks and TRUs by reducing operations and requiring them to use electrical hookups.
- Do not locate sensitive receptors in the same buildings as a perchloroethylene dry cleaning facility. This measure would reduce potential exposure of sensitive receptors to perchloroethylene from dry cleaning facilities.
- Maintain a 50-foot buffer from a typical gas dispensing facility (under 3.6 million gallons of gas per year). This measure would reduce potential exposure of sensitive receptors to emissions from gas stations.
- Ensure that private (individual and common) exterior open space, including playgrounds, patios, and decks, is shielded from stationary sources of air pollution by buildings or otherwise buffered to further reduce air pollution exposure for project occupants. This measure would reduce the potential for exposure of residents and other sensitive populations to stationary sources of TAC emissions.

AQ-5b Reduce Exposure to Localized Toxic Air Contaminant Emissions during Railway Design. In order to help reduce localized toxic air contaminant (TAC) concentrations at sensitive receptors near the future proposed railway(s), SANDAG shall require the design of railway tunnels or other approaches to move emissions underground, where feasible, during individual project-level design. Furthermore, individual project-level design of railway tunnels or other underground features shall require that portals, adits, windows, and other venting features are located as far away as feasible from nearby sensitive receptor(s).

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure AQ-2a will help secure incentive funding that will reduce TAC emissions from mobile sources. Mitigation measure AQ-2b will help reduce VMT that will reduce TAC emissions from mobile sources by reducing vehicle travel Mitigation measure AQ-4 will reduce the exposure of sensitive receptors to TAC emissions with the implementation of design measures.

Mitigation measures GHG-4a, GHG-4b, GHG-4c, GHG-4d, and GHG-4e would reduce TAC emissions from tire wear, brake wear, and vehicle exhaust, as discussed in Section 4.8. In addition, mitigation measure TRA-2 would reduce TAC emissions through project-level VMT reduction measures, as discussed in Section 4.16.Measures to reduce VMT or vehicle exhaust (e.g., EVs) in these mitigation measures would reduce TAC emissions and associated concentrations.

Although mitigation would reduce impacts, there is no guarantee that all impacts would be reduced to below a level of significance. Impacts would remain significant for cancer for existing and new sensitive receptors in 2035 and 2050 and chronic health hazard index for new sensitive receptors in 2035 and 2050. Thus, impacts would be significant and unavoidable.

AQ-6 EXPOSE SENSITIVE RECEPTORS TO CARBON MONOXIDE HOT SPOTS

Analysis Methodology

This analysis addresses the exposure of sensitive receptors to substantial concentrations of CO. A CO hot spot is a localized concentration of CO, typically found at congested intersections, that is above the state or national 1-hour or 8-hour ambient air standards for the pollutant. Projects that do not generate CO concentrations in excess of the health-based NAAQS or CAAQS would not contribute a significant level of CO such that localized air quality and human health would be substantially affected.

This analysis qualitatively evaluates proposed Plan CO concentration impacts, including CO hot spots, by comparing them to CO emissions and concentrations disclosed in the 2015 Regional Plan EIR, where no significant CO impacts were found.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Vehicle travel under the proposed Plan is projected to be 81 million VMT per weekday in 2035 (see Tables G.4 and G.5 of Appendix G). Vehicle travel evaluated in the 2015 Regional Plan was projected to be over 90 million VMT per weekday in 2035. Thus, the daily VMT estimate under the proposed Plan is projected to decrease by approximately 9 million VMT daily compared to 2035 projections under the 2015 Regional Plan. Proposed transportation infrastructure and programs within the proposed Plan would help to reduce VMT by providing alternative forms of transportation, including biking, walking, and transit, which would reduce passenger car travel and thereby reduce any exposure to emissions at congested roadways. VMT and overall vehicle use would be lower than assumed in the 2015 Regional Plan.

The 2015 Regional Plan EIR and proposed Plan both modeled CO emissions for the year 2035. According to the 2015 Regional Plan EIR, on-road vehicle sources would be responsible for 71.26 tons per day of CO emissions (2015 Regional Plan EIR Table 4.3-12). As shown in Table 4.3-6, the proposed Plan would emit 149,506 pounds per day (74.75 tons per day) of CO from on-road vehicle sources. Compared to the 2015 Regional Plan EIR, the proposed Plan would emit approximately 3.5 tons per day more of CO emissions, or 5 percent more than the 2015 Regional Plan EIR.

The 2015 Regional Plan EIR analyzed CO concentrations at four congested intersections and found impacts to be well below significance thresholds, even for the existing year 2012. However, as shown in Table 4.3-6, the proposed Plan in 2035 would result in a 112,163 pounds per day (56 tons per day) reduction in CO emissions relative to 2022 conditions. As shown in Table 4.3-3, the highest background CO concentrations are substantially below the relevant CO NAAQS and CAAQS. For instance, the maximum 1-hour CO concentration in 2022 was 2.7 ppm relative to the 20 ppm CAAQS and the 35 ppm NAAQS. Additionally, the maximum 8-hour CO concentration in 2022 was 2.1 ppm relative to the 9.0 ppm CAAQS and the 9 ppm NAAQS. Thus, CO concentrations are currently well below relevant standards, and CO emissions are expected to be substantially lower by 2035.

2035 Conclusion

Implementation of the proposed Plan would not expose sensitive receptors to substantial concentrations of CO in 2035. This impact is less than significant.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Vehicle travel under the proposed Plan is projected to be 82 million VMT per weekday in 2050 (see Tables G.4 and G.5 of Appendix G). Vehicle travel evaluated in the 2015 Regional Plan was projected to be over 94 million VMT per weekday in 2050. Thus, the daily VMT estimate under the proposed Plan is projected to decrease by approximately 12 million VMT daily compared to 2050 projections under the 2015 Regional Plan. Proposed

transportation infrastructure and programs within the proposed Plan would help to reduce VMT by providing alternative forms of transportation, including biking, walking, and transit, which would reduce passenger car travel and thereby reduce any exposure to emissions at congested roadways. VMT and overall vehicle use would be lower than assumed in the 2015 Regional Plan.

The 2015 Regional Plan EIR modeled that on-road vehicle sources CO emissions would be approximately 65.08 tons per day (2015 Regional Plan EIR Table 4.3-16). Furthermore, the 2015 Regional Plan EIR analyzed CO concentrations at four congested intersections and found impacts to be well below significance thresholds for the year 2050. According to Table 4.3- 6, on-road sources within the proposed Plan would emit approximately 121,281 pounds per day (60.91 tons per day) of CO. This would be 4.2 tons per day, or 6 percent less than what was analyzed within the 2015 Regional Plan EIR.

The 2015 Regional Plan EIR analyzed CO concentrations at four congested intersections and found impacts to be well below significance thresholds, even for the existing year 2012. However, as shown in Table 4.3-6, the proposed Plan in 2050 would result in a 140,296 pounds per day (70 tons per day) reduction in CO emissions relative to 2022 conditions. As shown in Table 4.3-3, the highest background CO concentrations are substantially below the relevant CO NAAQS and CAAQS. For instance, the maximum 1-hour CO concentration in 2022 was 2.7 ppm relative to the 20 ppm CAAQS and the 35 ppm NAAQS. Additionally, the maximum 8-hour CO concentration in 2022 was 2.1 ppm relative to the 9.0 ppm CAAQS and the 9 ppm NAAQS. Thus, CO concentrations are currently well below relevant standards, and CO emissions are expected to be substantially lower by 2050.

2050 Conclusion

Implementation of the proposed Plan would not expose sensitive receptors to substantial concentrations of CO in 2050. This impact is less than significant.

Impacts of the Proposed Plan with Future Climate Change

Climate change could increase exposure of sensitive receptors to CO through emissions from wildfires (EPA 2025). However, the proposed Plan's projected growth and transportation network improvements result in reduced, not increased, exposure of sensitive receptors to CO. Climate change-caused increases of CO concentrations would therefore not add to a proposed Plan adverse impact on CO exposure.

MITIGATION MEASURES

No mitigation measures are required for this impact.

AQ-7 RESULT IN OTHER EMISSIONS (SUCH AS THOSE LEADING TO ODORS) ADVERSELY AFFECTING A SUBSTANTIAL NUMBER OF PEOPLE

Analysis Methodology

The proposed Plan would result in significant impacts if it would result in the emission of odors that causes nuisance to a considerable number of persons or to the public. A project that proposes a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of offsite receptors. Odor sources within the SANDAG region, such as agricultural operations, wastewater treatment facilities, and landfills, are controlled by city and county odor policies enforced by SDAPCD, including SDAPCD Rule 51, which prohibit nuisance odors and identify enforcement measures to reduce odor impacts on nearby receptors.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population

increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. Construction of land use development projects could release odors from offroad equipment. Sources of odors from operational activities would include agricultural activities, wastewater treatment plants, food processing plants, chemical plants, composting facilities, landfills, dairies, and fiberglass molding. The regional growth and land use change for 2035 in the proposed Plan does not result in major increases in industrial areas that are likely to include these types of land uses. Activities that would have the potential to result in nuisance odors would be required to comply with applicable odor regulations, including SDAPCD Rule 51, that prevent impacts from being significant. Therefore, regional growth and land use change projects in 2035 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line.

Transportation network improvements proposed by 2035 include commuter rail, several rapid bus lines, zero emission bus upgrades, managed lanes along various freeways, and several bikeway and bike facility improvements. Transportation network improvements would be required to comply with applicable odor regulations, including Rule 51, that prevent impacts from being significant. Therefore, transportation network improvements and programs in 2035 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

2035 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to odor impacts because both development projects and transportation network improvements would be required to comply with applicable odor regulations that prevent impacts from being significant. Odors from these projects would not cause nuisance to a considerable number of persons or to the public, when compared to existing conditions; therefore, this impact (AQ-7) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Construction of land use development projects could release odors from offroad equipment. Sources of odors from operational activities would include agricultural activities, wastewater treatment plants, food processing plants, chemical plants, composting facilities, landfills, dairies, and fiberglass molding. The regional growth and land use change for 2050 in the proposed Plan does not result in major increases in industrial areas that are likely to include these types of

land uses. Activities that would have the potential to result in nuisance odors would be required to comply with applicable odor regulations, including SDAPCD Rule 51, that prevent impacts from being significant. Therefore, regional growth and land use change projects in 2050 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

Transportation Network Improvements and Programs

Transportation network improvements proposed by 2050 include commuter rail, several rapid bus lines, zero emission bus upgrades, managed lanes along various freeways, and several bikeway and bike facility improvements. Transportation network improvements would be required to comply with applicable odor regulations, including Rule 51, that prevent impacts from being significant. Therefore, transportation network improvements and programs in 2035 would not result in substantial odor emissions or affect a substantial number of people when compared to existing conditions.

2050 Conclusion

Implementation of the proposed Plan would result in a less-than-significant impact related to odor impacts because both development projects and transportation network improvements would be required to comply with applicable odor regulations that prevent impacts from being significant. Odors from these projects would not cause nuisance to a considerable number of persons or to the public, when compared to existing conditions; therefore, this impact (AQ-7) in the year 2050 is less than significant.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would likely not result in increased odors. Climate change would not increase odors associated with the proposed Plan assuming land use and transportation projects implementing the proposed Plan that comply with odor regulations.

MITIGATION MEASURES

No mitigation measures are required for this impact.

4.3.5 Cumulative Impacts Analysis

C-AQ-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO AIR QUALITY

Emissions of criteria air pollutants can travel substantial distances and are not confined by jurisdictional boundaries; rather they are influenced by large-scale climatic and topographical features. Thus, the geographic scope considered for cumulative impacts on air quality is the Southern California and northern Baja region.

A projection approach to air quality is appropriate given the air pollutant emissions resulting from the future overall transportation network improvements, increases in population, and necessary planned regional development.

The plans considered and relied on for this cumulative analysis include the Southern California Association of Governments (SCAG) 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and its Final EIR (SCAG 2024); the San Diego Air Pollution Control District (SDAPCD) 2022 Regional Air Quality Strategy Revision (2022 RAQS) (SDAPCD 2022); SDAPCD 2020 San Diego Ozone State Implementation Plan (2020 SIP) (SDAPCD 2020); South Coast Air Quality Management District (SCAQMD) 2022 Air Quality Management Plan (AQMP) (SCAQMD 2022); Imperial County Air Pollution Control District (ICAPCD) Final 2009 8 Hour Ozone Modified Air Quality Management Plan (ICAPCD 2010); U.S. Environmental Protection Agency (EPA) Border 2025 Program, Master Action Plan for California-Baja California (EPA 2021); 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan (IMPLAN 2013); and California-Baja California Border Master Plan (Caltrans 2021).

Significant cumulative impacts related to air quality would occur if emissions would conflict with or obstruct implementation of the Regional Air Quality Strategy and/or State Implementation Plan; result in a cumulatively considerable net increase in nonattainment or attainment criteria pollutants, including VOC, NOx, PM_{10}, $PM_{2.5}$, and SOx; result in construction-related emissions above regional mass emission thresholds; expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations; expose sensitive receptors to substantial TAC concentrations; expose sensitive receptors to carbon monoxide hot spots; and result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Impacts of the Proposed Plan

The proposed Plan would result in less-than-significant impacts related to conflicting with or obstructing the implementation of the 2022 RAQS and 2020 SIP (Impact AQ-1). The proposed Plan would result in a cumulatively considerable net increase in respirable particulate matter (PM_{10}) emissions in 2035 and 2050 (Impact AQ-2). In addition, the proposed Plan would result in significant impacts related to construction-related emissions exceeding thresholds (Impact AQ-3) and exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations in 2035 and 2050 (Impact AQ-4). The proposed Plan would expose new sensitive receptors to substantial toxic air contaminant (TAC) concentrations in 2035 and 2050 (Impact AQ-5). The proposed Plan would result in less-than-significant impacts related to exposure of sensitive receptors to carbon monoxide hot-spots (Impact AQ-6), and result in less-than-significant impacts related to other emissions (such as those leading to odors) adversely affecting a substantial number of people (Impact AQ-7).

Impacts of Projections in Adopted Plans

The 2022 RAQS outlines plans and control measures designed to attain and maintain the state standards. The 2022 RAQS states that air quality progress is occurring within San Diego County, but that current state and federal ozone standards are not yet attained, and continued emission reduction efforts are needed. The report states that both volatile organic compounds (VOC) and nitrogen oxides (NOx) emissions were reduced by larger percentages between 2007 and 2014 than were projected in the 2016 RAQS Revision, and that based on regulatory actions already taken, total VOC and NOx emissions are expected to continue decreasing through 2035 due to ongoing implementation of existing local stationary source rules, as well as state and federal mobile source regulations (SDAPCD 2022).

The 2020 SIP outlines plans and control measures designed to attain and maintain the federal standards. Despite substantial air quality progress, the region did not attain the 2008 O_3 NAAQS (75 parts per billion [ppb]) by the attainment deadline; as a result, EPA reclassified San Diego County as a serious nonattainment area for that standard with a new attainment date of July 20, 2027 (2026 attainment year). Furthermore, the 2020 SIP complies with the severe nonattainment area classification planning requirements and includes demonstrations for attainment of the 2008 and 2015 O_3 NAAQS by 2026 and 2032, respectively. The 2020 SIP includes updated inventories of ozone precursor emissions (VOC and NOX) for the 2017 base year (the year from which future-year inventories are projected) and the 2026 and 2032 attainment years (SDAPCD 2020).

The SCAQMD 2022 AQMP (SCAQMD 2022) states that the air in Southern California is far from meeting all federal and state air quality standards. However, the long-term trend of the quality shows continuous improvement and is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its AQMP. To reach federal Clean Air Act (CAA) deadlines over the next two decades, the AQMP concludes that Southern California must significantly accelerate its pollution reduction efforts. Many of the control measures proposed in the AQMP are not regulatory in form, but instead focus on incentives, outreach, and education to bring about emissions reductions through voluntary participation and behavioral changes needed to complement regulations.

The ICAPCD 8-Hour Ozone Modified AQMP includes emission inventories and also outlines control measures to address who in Imperial County controls emissions. These include the ICAPCD's stationary source control measures, regional transportation control measures, and state strategy, all of which provide the framework for ICAPCD rules that reduce ROG and NOX emissions (ICAPCD 2010).

The U.S.-Mexico Border Environmental Program: Border 2025 includes Goal #1 to reduce air pollution. The plan encourages stakeholders to develop and implement projects that maximize health and environmental benefits from multi-pollutant emissions reductions where available, including at the San Diego/Tijuana binational airshed. Some examples include an improved compliance with vehicle emission standards, and establishment of vehicle inspection and maintenance programs in order to reduce emissions in the border region (EPA 2021).

The 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan states that a critical issue for the Baja region is the progressive deterioration of the quality of air that is associated with the number of vehicles and no provision of sustainable transportation (IMPLAN 2013).

The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land POEs and transportation infrastructure serving those POEs in the California-Baja California region. The Master Plan does not have an associated environmental analysis document; however, projects included in the Master Plan could have adverse air quality impacts due to temporary construction. Nevertheless, beneficial air quality impacts would result from improved traffic conditions and reduced vehicle idle times at POEs. The plan does identify the need for a comprehensive strategy for border crossings that allows for effective integration of POEs into the municipal environment and states that, in addition to the POE facility itself, complementary actions related to transportation, such as air quality, should be considered (Caltrans 2021).

Cumulative Impacts and Impact Conclusions

2035

A cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan with the impact projections from adopted plans within Southern California and northern Baja California region were significant when considered together, even if not independently significant.

Many of the air quality plans note that air quality across the region has been improving due to implementation of various measures and stricter emission requirements. Nevertheless, given some uncertainty that air quality plans throughout Southern California and northern Baja would all be implemented successfully, and given that the proposed Plan's direct impacts are significant, cumulative air quality impacts would also be significant in 2035 due to the following proposed Plan significant impacts: PM_{10} emissions exceeding thresholds (Impact AQ-2), impacts associated with construction equipment emissions (Impact AQ-3), the exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (Impact AQ-4), and exposure of sensitive receptors to TACs (Impact AQ-5). Because the other proposed Plan air quality impacts are less-than-significant—conflicting with the 2022 RAQS and 2020 SIP (Impact AQ-1). exposure of sensitive receptors to carbon monoxide hot-spots (Impact AQ-6), creating other emissions (e.g., odors) adversely affecting a substantial number of people (Impact AQ-7)—and because adopted Plans would not substantially worsen these impacts, these cumulative impacts would not be significant in 2035.

Because cumulative air quality impacts throughout Southern California and northern Baja by 2035 would be significant, and because the proposed Plan's incremental air quality impacts are significant, the proposed Plan's incremental air quality impacts are also cumulatively considerable and thus significant in 2035 (Impact C-AQ-1).

2050

As described above, cumulative air quality impacts would also be significant in 2050 due to the following proposed Plan significant impacts: PM_{10} emissions exceeding thresholds (Impact AQ-2),), impacts associated with exhaust emissions from construction equipment emissions (Impact AQ-3),exposure of sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (Impact AQ-4, and exposure of sensitive receptors to TACs (Impact AQ-5). Because the other proposed Plan air quality impacts are less-than-significant—conflicting with the 2022 RAQS and 2020 SIP (Impact AQ-1). exposure of sensitive receptors to carbon monoxide hot-spots (Impact AQ-6), creating other emissions (e.g., odors) adversely affecting a substantial number of people (Impact AQ-7)—and because adopted Plans would not substantially worsen these impacts, these cumulative impacts would not be significant in 2050.

Because cumulative air quality impacts throughout Southern California and northern Baja by 2050 would be significant, and because the proposed Plan's incremental air quality impacts are significant, the proposed Plan's incremental air quality impacts are also cumulatively considerable and thus significant in 2050 (Impact C-AQ-1).

MITIGATION MEASURES

C-AQ-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO AIR QUALITY

2035, 2050

As described above, the proposed Plan's significant air quality impacts would be reduced by mitigation measures **AQ-2a** and **AQ-2b** and would be further reduced by mitigation measures **GHG-4a**, **GHG-4b**, **GHG-4c**, **GHG-4d**, **GHG-4e**, and **TRA-2**.

Similar mitigation measures are specified in some of the other regional plans, such as the SCAG 2024-2050 RTP/SCS EIR. However, that EIR concluded that even with implementation of mitigation measures, some direct air quality impacts would remain significant. Regional air quality planning documents provide short- and long-term strategies for reducing air pollution and control measures to be implemented by applicable jurisdictions and agencies to further reduce air pollutant emissions.

As described in Section 4.3, mitigation measures **AQ-2a**, **AQ-2b, GHG-4a**, **GHG-4b**, **GHG-4c**, **GHG-4d**, **GHG-4e,** and **TRA-2** would not reduce the proposed Plan's incremental impacts to less than significant. Therefore, the proposed Plan's incremental contributions to cumulative air quality impacts in years 2035 and 2050 would remain cumulatively considerable post-mitigation.

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4.4 BIOLOGICAL RESOURCES

This section evaluates the biological resources impacts of the proposed Plan. Appendix E of this EIR provides more detail on the data sources and analysis background.

4.4.1 Existing Conditions

This section describes the existing biological resources within the San Diego region, including sensitive vegetation communities, federally and state-regulated waters and wetlands, special-status species, wildlife movement corridors, and conserved lands.

SENSITIVE VEGETATION COMMUNITIES

Sensitive vegetation communities considered in this EIR are those regulated, protected, or designated as sensitive by any federal, state, or local agency, plan, policy, regulation, or ordinance (see Section 4.4.2, "Regulatory Setting"). Furthermore, sensitive vegetation communities are considered rare within the San Diego region and support habitat for listed or special-status species. Sensitive vegetation communities also include riparian and wetland vegetation communities that are associated with federally and state-regulated aquatic resources (in this document, "aquatic resources" generally refers to regulated waters and wetlands, including Section 404 of the Clean Water Act [CWA], the California Coastal Act [CCA], the Porter-Cologne Act, the Water Quality Control Act, and California Fish and Game Code [CFGC] Section 1600 et seq.).

The following agencies and entities identify sensitive vegetation communities in their policies, plans, and programs: California Coastal Commission (CCC), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) (through the California Natural Diversity Database [CNDDB] and NatureServe Standard Heritage Program methodology [NatureServe 2025]), California Native Plant Society (CNPS), the County of San Diego, and cities in the San Diego region that participate in various Natural Community Conservation Planning (NCCP) programs, specifically the Multiple Species Conservation Program (MSCP) and the Multiple Habitat Conservation Program (MHCP). The U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) regulate aquatic resources, and while this does not include specific vegetation communities, regulated aquatic resources are often associated with wetland and riparian vegetation communities.

Sensitive vegetation communities that occur anywhere in San Diego County are included in the inventory and analysis in this EIR. The County of San Diego and cities of San Diego, Chula Vista, Encinitas, Carlsbad, Oceanside, Poway, and Escondido identify sensitive vegetation communities in their ordinances and guidelines, including within species conservation planning documents. Specifically, the County of San Diego regulates sensitive vegetation communities through the Biological Mitigation Ordinance (BMO) for areas covered by the County's MSCP Subarea Plans and the Resource Protection Ordinance (RPO) for areas not covered by the County's MSCP, County of San Diego Guidelines for Determining Significance for Biological Resources (County of San Diego 2010), and Habitat Loss Permit (HLP) ordinance (see Section 4.4.2). The cities of San Diego, Chula Vista, and Carlsbad also developed specific guidelines under the implementation of their respective MSCP/MHCP Subarea Plans, including the City of San Diego's Environmentally Sensitive Lands (ESL) Regulations and Land Development Manual–Biology Guidelines and the City of Carlsbad's Biological Studies, Habitat Restoration, Preserve Management, and Riparian and Wetlands Buffer Guidelines. In addition, the City of San Diego regulates vernal pools through the Vernal Pool Habitat Conservation Plan (VPHCP) (City of San Diego 2017).

For the purpose of this EIR and as identified in the guidelines, plans, and policies listed above, riparian, wetland, and certain upland vegetation communities, which are identified in Table 4.4-1, are considered sensitive, specifically those that are regulated as classified by a "tier" system within a species conservation plan. Upland vegetation communities identified as sensitive in the San Diego County HCPs/NCCPs (including the MHCP and South County MSCPs) are divided into tiers of biological sensitivity based on rarity and ecological importance. Tier

I represents the most sensitive (rarest or subject to threats) communities, while Tier IV represents the least sensitive communities. Other land cover types—such as agriculture, disturbed habitat (i.e., areas that have been physically disturbed[1] and no longer contain substantial stands of native or naturalized vegetation communities), eucalyptus woodland and other ornamental or nonnative vegetation, and urban/developed—are not considered sensitive (Table 4.4-1) with the following exceptions.

The monarch butterfly (*Danaus plexippus*), which is a candidate for protection under the federal Endangered Species Act, can use coastal eucalyptus groves as overwintering sites; these groves are considered crucial habitat for the species, but would otherwise not be considered sensitive because eucalyptus trees are not native to California or San Diego County. Furthermore, the flowering forb milkweek (*Asclepias* sp.) that may occur in nonnative grasslands and disturbed lands functions as the butterfly's exclusive host plant. Fallow agricultural lands and other habitats with short, sparse vegetation at some time of the year (as defined by CDFW 2012), together with sensitive native and nonnative grassland, is also considered suitable habitat for the western burrowing owl (*Athene cunicularia*), specifically if occupied by fossorial mammals. The western burrowing owl is a candidate species for listing under the California Endangered Species Act (CESA) and covered under several HCPs/NCCPs. Burrowing owl habitat may require mitigation if the habitat would be impacted. The CESA candidate species Crotch's bumble bee (*Bombus crotchii*) also uses grasslands and other nonsensitive habitats that contain certain nectaring and flowering plants that may require habitat assessments for this species following CDFW protocols where impacts are proposed.

Table 4.4-1 Existing Vegetation Communities and Land Cover Types within the San Diego Region

Vegetation Community	Acres[1]	Percent of Total in San Diego County
Riparian and Wetlands Land Cover Category		
Beach/coastal dunes/saltpan/mudflats	447	0.1
Marsh	8,256	0.3
Meadows and seeps	12,649	0.5
Open water and streams	31,388	0.6
Riparian forest/woodland	53,733	2.0
Riparian scrub	17,449	0.6
Vernal pools[2]	460	0.02
Riparian and wetlands total	**124,382**	**4.1**
Uplands Land Cover Category		
Chaparral	852,657	31.4
Coastal scrub	288,039	10.6
Desert dunes	46,601	1.7
Desert scrub	465,755	17.2
Oak woodlands[3]	119,554	4.4
Forest/woodland	134,354	5.0
Grasslands	146,518	5.4
Uplands total	**2,053,478**	**75.7**

[1] Groups are based on physiognomic, ecologic, and geographic criteria, such that groups contain vegetation types of similar structure and ecological function and include restored native habitats. These groups are not defined in the Holland and/or 2015 vegetation classification systems. Appendix E-1 lists the detailed vegetation communities within each aggregated group.

[2] 2003–2011 vernal pool mapping available from the City of San Diego VPHCP (City of San Diego 2017).

[3] The forest/woodlands category includes eucalyptus woodlands that provide important roosting habitat for the monarch butterfly.

Vegetation Community	Acres[1]	Percent of Total in San Diego County
Other Land Cover Category		
Agriculture	136,739	5.0
Disturbed habitat[4]	28,905	1.1
Urban/developed	383,321	14.1
Other cover types total	**548,965**	**20.2**
Grand total	**2,712,073**	**100.0**

Source: SDMMP 2021; adapted by Ascent in 2025.

Vegetation Mapping Data Sources and Methods

The description of existing conditions for vegetation communities in the San Diego region is based on a compilation of regionally collected vegetation data, which are aggregated in a geographic information system (GIS) data layer of existing vegetation and administered by the County of San Diego (SDMMP 2021) and by the San Diego Management and Monitoring Program (SDMMP) (2021). This dataset covers the entire San Diego region and uses the modified Holland classification system (Holland 1986; Oberbauer et al. 2008). The data were collected mostly for the development of the MSCP and MHCP and have been modified and updated over the years from a variety of sources and cataloged by SANDAG and the County of San Diego; the most recent update reflected in this EIR is from 2021 (SDMMP 2021).

The vegetation community and land cover types in the 2021 dataset have been combined and organized into 17 vegetation groups that were created specifically for this EIR in an effort to streamline the programmatic analysis of the vegetation communities. The groups contain vegetation communities of similar regulatory importance, sensitivity, structure, and ecologic function, and are based on physiognomic (appearance or outward features), ecologic, and geographic criteria. These 17 vegetation groups have been further categorized into three overarching land cover types: riparian and wetlands (seven groups); uplands (seven groups); and other cover types (three groups) (Table 4.4-1). The data sources and analytic techniques described below provide a reasonably accurate description of existing conditions for vegetation and land cover, including sensitive vegetation communities, for the purpose of a programmatic large-scale analysis, such as required for the proposed Plan EIR (rather than based on site-specific or project-specific data). Appendix E-1 includes the breakdown of the 2021 vegetation classification into the 17 vegetation groups identified in Table 4.4-1.

Postfire Vegetation

Most common vegetation communities in the San Diego region generally persist unless development and land use pressures, invasion by exotic species, or wildfire cause changes (Barbour et al. 2007; Diffendorfer et al. 2002). Fire recovery in certain vegetation types may require decades (Witter et al. 2007), and some vegetation types recover more readily (e.g., chaparral) than others (e.g., coastal sage scrub) (Witter et al. 2007; Meng et al. 2014). It is generally assumed, and supported by the literature (Meng et al. 2014), that the postfire response of San Diego region vegetation communities, such as chaparral, is to eventually (after 10 to 15 years) return to their prefire communities (Witter et al. 2007; Keeley and Mantgem 2022); however, most sensitive native vegetation communities (e.g., coastal sage scrub, maritime succulent scrub, vernal pools, and chaparral dominated by self-seeding plants [versus resprouting plants]) could convert to a degraded condition or nonnative habitat ("type-convert") (Keeley and Mantgem 2022; Lippitt et al. 2013; Brennan-Kane and Keeley 2020). Burned habitats within the western one-third of the San Diego region may be prone to increased edge effects and human encroachment and therefore have an increased chance to type-convert to a degraded condition. Vegetation recovery post-wildfires is not often mapped, or it is mapped on a small scale related to project-specific mapping efforts.

The existing conditions in this EIR assume that all vegetation communities available in the land cover dataset are in their prefire condition (i.e., no type conversion has occurred). As noted above, some of the native vegetation

[4] Although disturbed habitat is not considered sensitive, it might provide habitat for such sensitive species as the western burrowing owl, monarch butterfly, and Crotch's bumble bee.

communities affected by fires may have recovered since the fires, there is evidence that many sensitive vegetation communities subject to wildfire do not return to their mapped prefire condition (i.e., they converted to a degraded or nonnative condition) (Lippitt et al. 2013; Keeley and Mantgem 2022; Brennan-Kane and Keeley 2020). Therefore, this assumption and approach may overestimate the impacts of the proposed Plan on sensitive vegetation communities where they have type-converted following wildfire and the baseline condition is now nonnative vegetation.

Physiographic Subregions

The 17 vegetation communities and land cover types identified for this EIR occur within three physiographic subregions in San Diego County: Southern California Coast, Southern California Mountains and Valleys, and Colorado Desert (McNab et al. 2005). The subregions are characterized as follows:

Southern California Coast Subregion

The Southern California Coast subregion can be found at elevations ranging from sea level to 2,900 feet above mean sea level (AMSL). It encompasses the area along the immediate coastline of the Pacific Ocean and the more easterly mesa and interior foothills (approximately the western third of the San Diego region). Brush and scrub communities, such as chaparral and coastal scrub, are the most common upland habitats found in this subregion, with chaparral the most widespread (Figure 4.4-1). Nonnative grasslands are widely distributed (often as a result of disturbance or type conversion), whereas native grasslands are a relatively rare occurrence. Riparian woodlands are found throughout the subregion and are predominantly distributed in a linear pattern along rivers and streams. Marshes and wetlands are associated with estuaries but also can be found in valleys or along riparian corridors. In addition, this region also includes the unique vegetation community of vernal pools. (Figure 4.4-1).

Vegetation communities characterized by a high level of constituent sensitive species found in the coastal subregion include southern foredunes, southern coastal bluff scrub, maritime succulent scrub, Diegan coastal sage scrub, southern maritime chaparral, native grassland, San Diego mesa hardpan/claypan vernal pools, southern coastal salt marsh, coastal brackish marsh, coastal freshwater marsh, riparian woodlands and scrubs, coast live oak woodland, Engelmann oak woodland, and Torrey pine forest. These communities provide habitat for a diversity of sensitive plant and animal species.

Southern California Mountains and Valleys

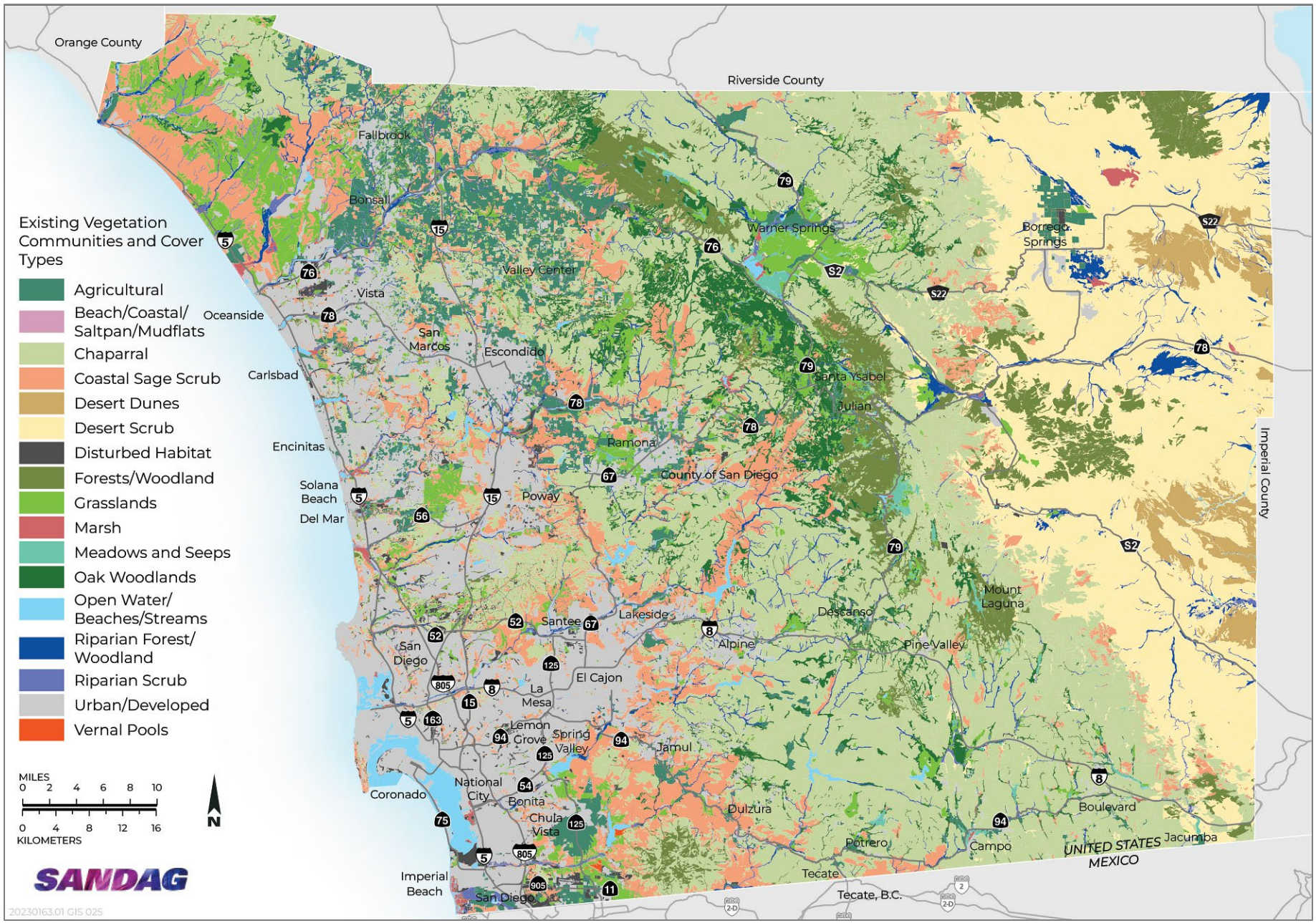
The Southern California Mountains and Valleys subregion can be found at elevations ranging from 100 to 6,500 feet AMSL and includes the major mountain systems of the peninsular range in the San Diego region: San Ysidro, Cuyamaca, Volcan, Laguna, and Vallecitos (approximately the central third of the San Diego region). Vegetation communities in this montane subregion overlap with the chaparral, scrub, riparian, and woodland communities of the coastal subregion; however, others are unique to the mountains (Figure 4.4-1). These include coniferous woodlands, black oak woodlands, and montane meadows. All of these vegetation communities provide habitat for various plant and animal species, and, although fewer than those found in the coastal subregion, sensitive species are well represented.

Colorado Desert Subregion

The Colorado Desert subregion is found to the east of the montane subregion at elevations ranging from sea level to 3,400 feet AMSL (approximately the eastern third of the San Diego region). The vegetation communities present in the Colorado Desert subregion are quite distinct from those found within the coastal and mountains and valleys subregions. The majority are desert scrub communities, of which creosote bush scrub is dominant (Figure 4.4-1). This vegetation community is also the second most common vegetation type in the San Diego region. A number of sensitive plant and animal species are also found within these vegetation communities.

Existing Vegetation Communities

This section describes the 17 existing vegetation community groups in the San Diego region derived from the datasets indicated above.



Source: SDMMP 2021; adapted by Ascent in 2025.

Figure 4.4-1 Existing Vegetation Communities and Cover Types

Riparian and Wetland Vegetation Communities

Riparian and wetland habitats support vegetation communities adapted to the periodic presence of or saturation by surface or ground water; therefore, they are relatively rare in the semiarid climate of Southern California. Riparian and wetland habitats are considered sensitive due to extensive historic losses of wetlands nationwide, their ability to improve and maintain the quality of potable water sources, and their value as habitat for sensitive species and wildlife movement. It is estimated that over half of wetland habitats have been lost in the conterminous United States (SWRCB 2019).

In California, at least 90% of wetland habitat has been lost (SWRCB 2019). In Southern California, an estimated 91–95% of riparian wetlands and over 70% of coastal wetlands have been lost (Natural Resources Agency 2010; Sutula et al. 2008; CCC 1994; Faber et al. 1989), and over 97% of vernal pool habitat has been lost in the San Diego region (Bauder and McMillan 1986; Oberbauer and Vanderwier 1991; Keeler-Wolf et al. 1995).

Of the vegetation groups, riparian/forest woodland contains the largest expanse of riparian/wetland vegetation communities, followed by riparian scrub, open water and streams, meadows and seeps, and marsh (including coastal salt marsh). Vernal pools are isolated ephemeral depressions surrounded by upland habitat and form a unique vegetation community containing many special-status and endemic species but cover less than 500 acres of land cover in San Diego County. Open water includes lakes, reservoirs, estuaries, and the fringes of these types of open water habitats. Open water, riparian woodland, and riparian scrub comprise 81% (i.e., 99,570 acres out of a total of 124,382 acres of wetland habitats) of all vegetation groups within the riparian and wetland land cover category (Table 4.4-1).

Riparian ecosystems provide critical ecosystem functions, such as the buffering of the effects of organic nutrients and toxins and providing habitat to support a high diversity of species (Peck 1993). Plant density, composition, age structure, and cover within and adjacent to riparian woodlands and forests affect habitat diversity (which may be measured by the degree of vertical and horizontal habitat structure, density, and species richness). Riparian woodlands and forests are composed of several vertical layers, including canopy, shrub, herb, and ground. This complex habitat structure is often positively correlated with wildlife abundance and diversity (i.e., habitat productivity). In addition, riparian areas usually harbor greater wildlife diversity and abundance than upland areas and frequently serve as wildlife corridors due to their linear nature and connection they provide to distinct geographical areas as well as the cover they provide.

Riparian woodland overstory provides valuable roosting, foraging, and breeding areas, while foraging birds and mammals utilize the understory. The trees themselves provide extensive foliage and bark surface for foraging by insectivorous birds. Although overall wildlife diversity is generally greater where vertical vegetation structure is well developed, species-specific occurrence can frequently be linked to the quality or presence of one component of the vertical structure. Riparian and wetlands communities also contribute to the overall soil health and stability, create shade to lower water temperatures and improve water quality for aquatic organisms, return carbon into the soil through detritus and debris deposition, and increase carbon storage and biomass (NRCS 2010). This is particularly true for estuarine habitats as a result of deep organic soil deposits that have the ability to sequester relatively large amounts of blue carbon[5] (McTigue et al. 2019; Windham-Myers et al. 2018; Sutton-Grier and Moore 2016). Riparian buffers improve water quality by enhanced infiltration of surface runoff and increase surface roughness to slow overland flows. Water is more easily absorbed in riparian buffers, which allows for groundwater recharge. Functional riparian systems have significant potential to reduce the adverse effects of climate change by enhancing ecosystem resilience (Seavy et al. 2009).

The majority of riparian and wetland communities contain native species, although disturbed wetlands are usually dominated by nonnative species; for example, giant reed (*Arundo donax*) and salt cedar (*Tamarix* sp.) are highly invasive nonnative species that are often found in and along rivers and streams and can be found along with

[5] Blue carbon refers to carbon dioxide removed from the atmosphere by the world's ocean ecosystems—mostly algae, mangroves, salt marshes, seagrasses and macroalgae—through plant growth and the accumulation and burial of organic matter in the soil.

native vegetation communities, such as southern willow scrub or riparian forests and woodlands, but may also occur along the upper terraces of valleys and canyons intermixed with upland habitat or in monocultural stands.

Upland Vegetation Communities

Southern California is an international biodiversity hotspot due to its varied topography and associated vegetation belts and biomes and its Mediterranean climate (Dobson et al. 1997; Jennings et al. 2018; Stein et al. 2000). The San Diego region is characterized by a unique mosaic of upland scrub, forest, and grassland habitats, many of which are considered sensitive because they provide valuable nesting, breeding, and foraging habitat for many special-status wildlife species, including narrow endemic species that occur nowhere else in the world. San Diego County's upland habitats are dominated by chaparral (852,657 acres), desert scrub (465,755), and coastal sage scrub (288,039), comprising 78% (i.e., 1,606,451 acres out of a total of 2,053,354 acres) of all upland vegetation communities (Table 4.4-1).

Unlike riparian corridors, which are linear and found along rivers and streams, upland habitats typically form a large matrix and provide a broad variety of species structure and composition. Dense sage scrub vegetation or dense-canopied forest/woodlands provide useful habitat and movement corridors for wildlife, whereas open grasslands provide foraging habitat for raptors and other predators and can also contain a unique diversity of plant species.

The majority of coastal and inland habitats are dominated by shrublands (such as coastal sage scrub and chaparral), most of which are considered sensitive. Upland vegetation communities with soils that have high clay content are known to support special-status endemic plant species, such as those that occur in association with mafic chaparral and gabbro soils. Clay-adapted coastal sage scrub is associated with the federally threatened coastal California gnatcatcher (*Polioptila californica californica*), the protection of which spearheaded the development of the California NCCP Act and associated subregional multispecies conservation programs, such as the San Diego MSCP and North County MHCP. Impermeable clay soils also provide conditions for many narrow endemic plant species and form vernal pools (specifically on mesa tops and in valley grasslands), which are unique seasonal wetlands that support the highest number of federally and state-listed and narrow endemic species in the San Diego region. Nonnative grasslands provide habitat for special-status plant and animal species, including foraging habitat for many raptor species.

San Diego's upland scrub communities have evolved with natural fires. Many sensitive upland vegetation communities, such as coast live oak woodland and Diegan coastal sage scrub, are rapidly declining due to urbanization and climate change effects, including frequent and short-interval wildfires that lead to type conversion and the effects of invasive pest invasions such as the polyphagous and Kuroshio shot hole borers (*Euwallacea* sp.) and the goldspotted oak borer beetles (*Agrilus auroguttatus*).

Forests and woodlands harbor a great wildlife diversity and contribute significantly to carbon sequestration and storage, specifically those considered old growth. Forest and woodlands are mostly distributed in higher elevations and, with a few exceptions, are found in the eastern portion of San Diego County, including the desert subregion. These exceptions include oak woodlands, Torrey pine forest, and coastal closed-cone coniferous forest, all of which are considered sensitive. Oak woodlands are regulated at the state level (Senate Bill 1334) and also considered sensitive by the County of San Diego (Tier I sensitivity level), the MSCP, and the MHCP. Oak woodlands are composed of a variety of oak-dominated vegetation communities that span from the coast to the mountains in the eastern part of the County. Engelmann oak (*Quercus engelmannii*) is considered sensitive in San Diego County.

Most forest and woodland communities are not considered sensitive except for Torrey pine forest, which is an NCCP-covered vegetation community regulated as a Tier I vegetation community. Likewise regulated under the Tier I classification, southern interior cypress forest contains sensitive tree species that are protected, such as Tecate cypress (*Hesperocyparis forbesii*), which is restricted to three locations in San Diego County, and Cuyamaca cypress (*Hesperocyparis stephensonii*), which only occurs in one location in the United States—Cuyamaca peak (Sproul et al. 2011). The forest and woodland community in the region consists mainly of native vegetation communities with the exception of eucalyptus woodland, which is composed of monocultures of eucalyptus (or gum) trees (Eucalyptus sp.) that were imported from Australia to provide a source for timber and that thrive in San

Diego's Mediterranean climate. Eucalyptus woodlands do not provide habitat for native species, with the exception of raptor nesting and monarch butterfly roosting (in coastal areas). Some undifferentiated woodlands that occur in the coastal region may consist of nonnative acacia species, also imported from Australia as an ornamental plant; like eucalyptus woodland, they do not provide ecological value to native species.

FEDERALLY AND STATE-REGULATED WATERS AND WETLANDS

As detailed in Section 4.4.2, "Regulatory Setting," waters and wetlands, including riparian habitat, are regulated by federal and state agencies through a variety of different laws and ordinances. USACE regulates activities in wetland and nonwetland waters of the United States. These are aquatic resources considered relatively permanent waters (e.g., intermittent or perennial) or wetlands that have a surface connection to traditional navigable waters. State agencies, such as CDFW, RWQCB, and CCC, have various responsibilities for regulating activities in waters of the United States; depending on the regulatory program, wetlands and riparian habitats may also be subject to additional state regulation. The extent of an individual state or federal agency's jurisdiction is defined by its respective regulations, guidance, and case law. Aquatic resource types (including wetlands and riparian habitats) in the San Diego region that may be considered waters of the United States or state include the following:

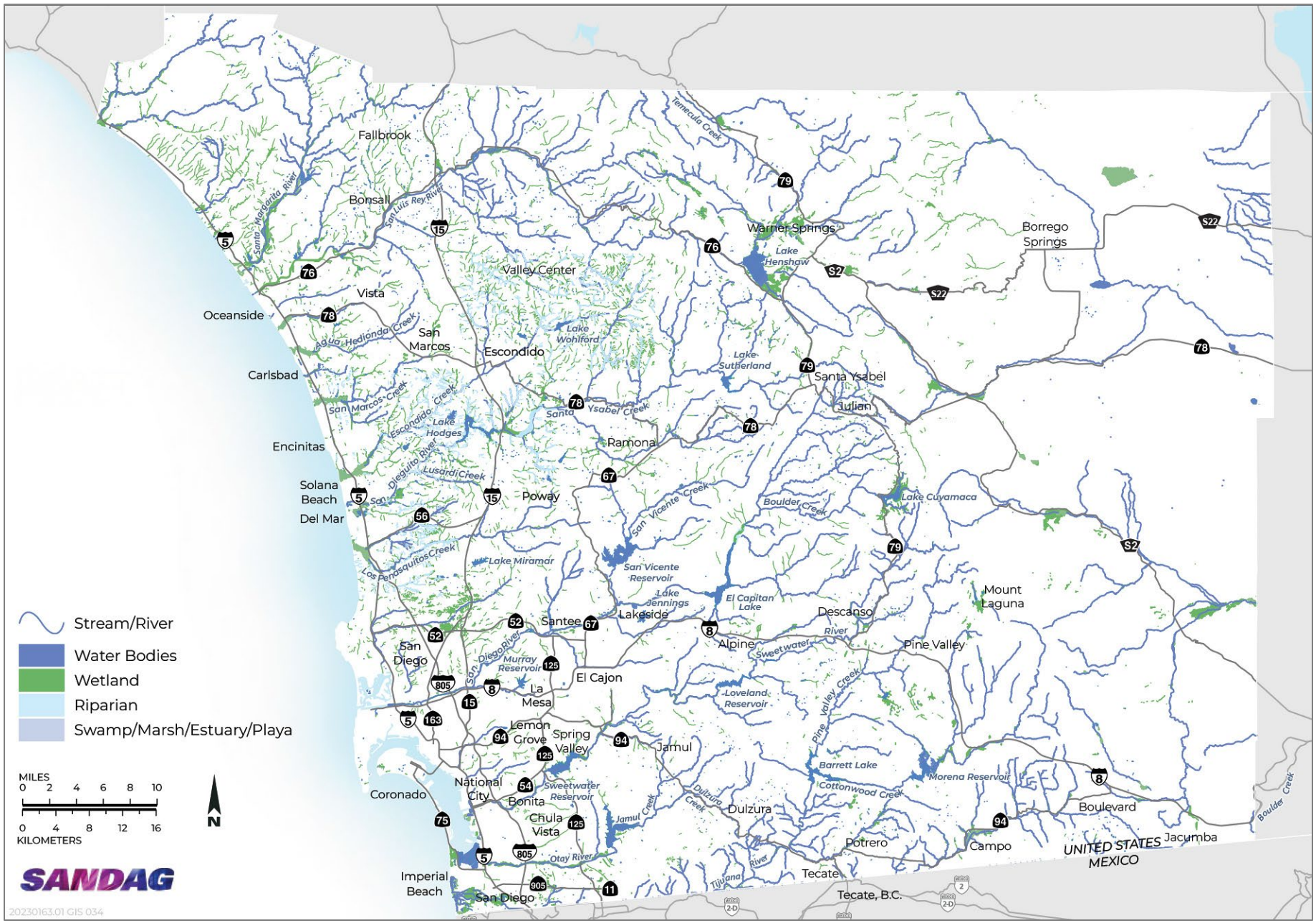
- the Pacific Ocean, bays, lagoons, lakes, and reservoirs;
- perennial and intermittent (and ephemeral) rivers, streams, drainages, floodplains and washes (federally jurisdictional nonwetland waters must meet the regulatory "relatively permanent" standard);
- tidal, nontidal, saline, and freshwater wetlands; and
- wetland and nonwetland riparian habitats.

Data Mapping Sources and Methods

The approximate location of regulated waters (including wetlands, and both nonwetland and wetland riparian habitats) in the San Diego region were mapped using the U.S. Geological Survey's (USGS) National Hydrography Dataset (NHD) (USGS 2025) and USFWS's National Wetlands Inventory (NWI) (2021) dataset (USFWS 2025a). The NHD is the surface-water component of the national map. The NHD is a relatively detailed generalized set of digital spatial data that represents the surface waters of the United States. These data are designed to be used in general mapping and in the analysis of surface water systems. The NWI is a series of topical maps that show wetlands and deepwater habitats. This geospatial information is used by federal, state, and local agencies; academic institutions; and private industry for management, research, policy development, education, and planning activities.

Existing Regulated Waters, Wetlands, and Riparian Habitat

Figure 4.4-2 depicts the approximate location of surface waters, wetlands, and riparian habitats in the San Diego region. This figure represents the best information available at the time of Draft EIR preparation (NHD 2023; USFWS 2025a). Although Figure 4.4-2 depicts current information for existing conditions for waters, wetlands, and riparian habitat based on best available datasets, the maps and figures provided in the EIR are not intended to be used as the final determination of the type, extent, and jurisdictional status of waters in the San Diego region because the depicted data are not site-specific (i.e., no formal wetland delineations have been conducted). The dataset depicted on the figures includes waters and wetlands considered ephemeral by USACE as of September 8, 2023, and may, therefore, no longer be under the USACE's jurisdiction. Waters of the United States assessed in this EIR may therefore be underestimated. Furthermore, "waters of the state" captures all aquatic resources regulated by numerous state agencies. It includes rivers, streams, lakes, wetlands, mudflats, vernal pools, and other aquatic sites which may not be depicted in Figure 4.4-2. Waters of the state assessed in this EIR may therefore be underestimated. Accurate delineation of all federally and state-regulated waters would occur during project-specific analysis of land use and transportation projects.



Sources: USFWS 2025a; NHD 2023; adapted by Ascent in 2025.

Figure 4.4-2 Regulated Waters Including Wetlands

SPECIAL STATUS SPECIES

CEQA Guidelines Section 15380 defines "endangered, rare or threatened species" as "species or subspecies of animal or plant or variety of plant" listed under the Code of Federal Regulations (CFR), Title 50, Part 17.11 or 17.12 or California Code of Regulations, Title 14, Section 670.2 or 670.5, or a species not included in the above listings but that can be shown to meet the criteria in CEQA Guidelines Section 15380(b). In this circumstance, endangered means "when its survival and reproduction in the wild are at risk from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors"; rare means that "although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens, or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the Federal Endangered Species Act." Species that fall under the above criteria are referred to in this EIR as special-status species.

State species of special concern and fully protected species are animals not necessarily listed under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA), but that nonetheless (1) are declining at a rate that could result in listing or (2) have historically occurred in low numbers and known threats to their persistence currently exist. The CNPS Inventory of Rare and Endangered Vascular Plants of California is sanctioned by CDFW and serves as a species of special concern list for plants. Therefore, for purposes of analysis in this EIR, special-status species must meet at least one of the following criteria:

- listed or proposed for listing (including candidate species[6]) under the ESA and CESA;
- CDFW species of special concern (CNDDB 2025);
- CDFW fully protected species (CNDDB 2025);
- CDFW watch list species (CNDDB 2025);
- California Rare Plant Rank Species (CRPR) are ranked as 1A (presumed extinct in California and rare/extinct elsewhere), 1B (rare, threatened, and endangered in California and elsewhere), 2A (presumed extinct in California, but more common elsewhere), 2B (rare, threatened, or endangered in California, but more common elsewhere), or 3 (plants are those for which more information is needed [a review list]) (CNPS n.d.). All plants constituting CRPR 1A, 1B, 2A, 2B, and 3 meet the definitions of Sections 2062 and 2067 (CESA) of the CFGC (CNPS n.d.). Some, but not all, CRPR 4 plant species meet the definitions of Sections 2062 and 2067 (CESA) of the CFGC (CNPS n.d.). CRPR 4 plants are those of limited distribution (watch list) (CNPS n.d.); and
- Species considered sensitive or narrow endemic by approved adopted NCCPs and habitat conservation plans (HCPs).

Data Sources and Methods

The occurrence and location of special-status species may change based on climate, seasonality, habitat suitability, and other site-specific factors. The special-status species identified in this EIR are those that are contained within the most recent versions of the data sources described above. However, there are areas in the San Diego region for which no data are available because they have not been surveyed or recorded. Therefore, site-specific surveys would be required at the project level based on presence of suitable physical and biological features to determine presence of special-status species.

[6] Candidate species are those petitioned species that are actively being considered for listing under ESA, as well as those species for which USFWS has initiated a ESA status review, as announced in the Federal Register. Proposed species are those candidate species that were found to warrant listing and have been officially proposed for listing in the Federal Register. There is no statutory protection for federal candidate species under the ESA; however, the USFWS encourages collaboration with local authorities to protect and conserved federal candidate species. Under CESA, candidate species are those species currently petitioned for state-listing status. The CDFW regulate impacts to candidate species the same as listed species.

San Diego is one of the global biodiversity hot spots and contains a high diversity of species, many of which are considered special status. For this programmatic level of analysis, collecting site-specific information is not practicable because information collected now does not guarantee presence or absence of a species in the future at the time of project-level implementation. Therefore, for the purpose of this EIR, publicly available databases were used to establish a baseline of special-status species occurrence. Suitable habitat for special-status species was ascertained from the 2025 SDMMP vegetation layer. USFWS-designated critical habitat boundaries (USFWS 2025b) were used to identify areas likely to contain suitable habitat for federally listed species; however, the presence of critical habitat does not necessarily mean the associated listed species is present. Additional project-level analysis would be conducted in these areas to determine the presences of listed species.

The analysis in this EIR also references publicly available datasets for recent (i.e., within the last 10 years) known locations of special-status plant and animal species to determine each species' potential to occur in a given area evaluated in the analysis. Recorded occurrences of special-status species in the San Diego region were compiled from the CNDDB (CNDDB 2025), County of San Diego's SanBios data (SANGIS 2025a), and USFWS occurrence information (USFWS 2024), as well as species habitat models developed by the County of San Diego Land Use and Environment Group (LUEG) GIS (accessed in 2025). Occurrence data provide an overview of the historical presence of species; however, not all known special-status species locations are included in these datasets; therefore, project-specific information must be collected at the time of or immediately prior to project construction (during the most opportune season for maximum detection) to verify presence or absence of special-status species. Suitable habitat or USFWS-designated critical habitat alone does not guarantee that the species occupies a particular project-level area.

Special-Status Species

Federally and State-Listed Plant Species

There are 34 federally or state-listed or candidate plant species with potential to occur in the San Diego region (Table 4.4-2), including 14 that are federally listed as endangered, six that are federally listed as threatened, 22 that are state listed as endangered, two that are state listed as threatened, and six that are state listed as rare (Table 4.4-2). Table 4.4-2 also lists the habitat typically used by each species and any rarity information, if available. Botanical species nomenclature in this EIR follows Rebman and Simpson's (2014) *Checklist of the Vascular Plants of San Diego County*. Avian species nomenclature follows the American Ornithologists Union (Chesser et al. 2024). Nonavian species nomenclature follows the CDFW Online Special Animals List (CNDDB 2025). Figure 4.4-3 illustrates the results of regional database information for federally and state-listed plant species in the San Diego region.

Table 4.4-2 Listed Plant Species Potentially Occurring within the San Diego Region

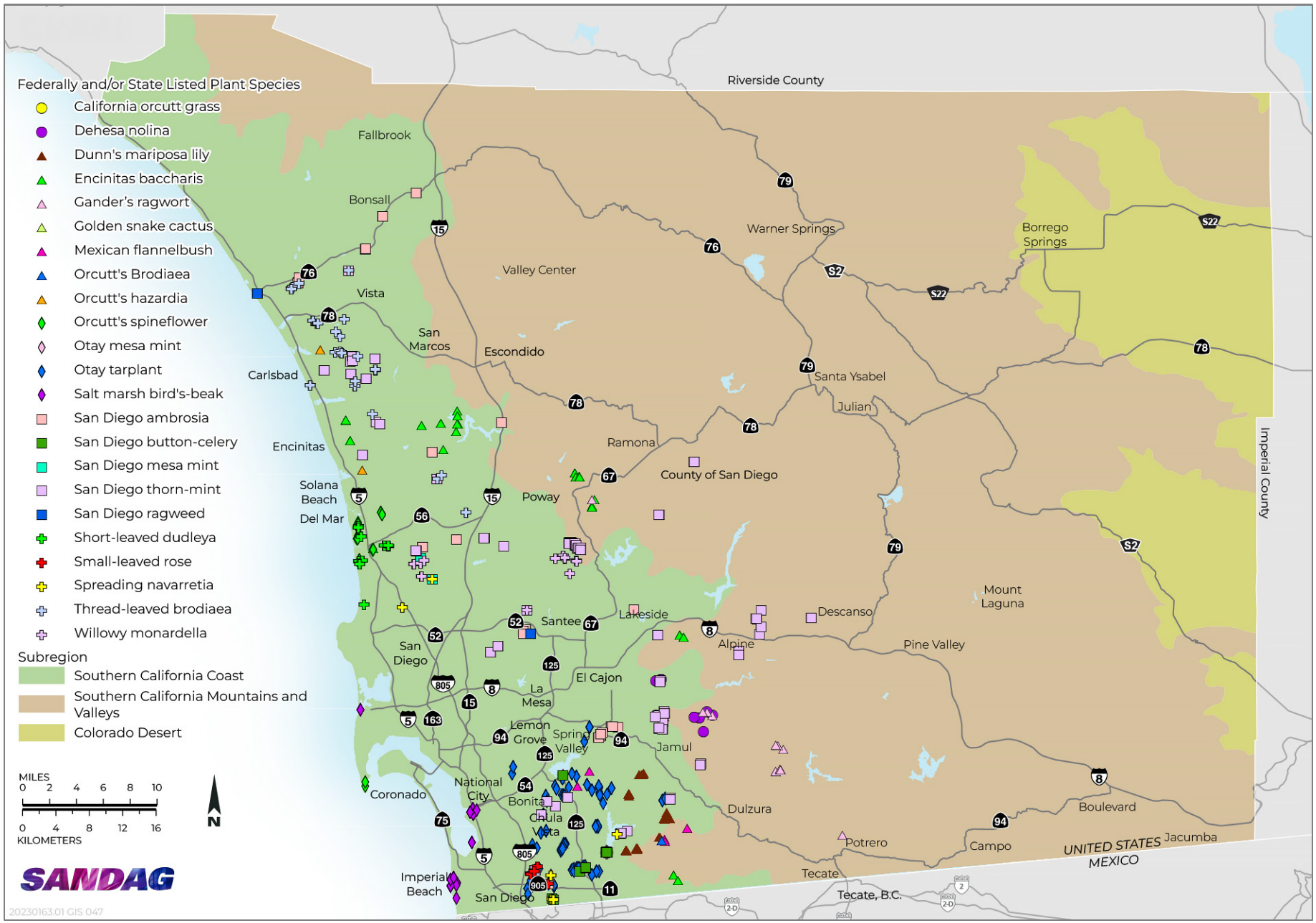
Common Name	Scientific Name	Listing Status[1] Federal	Listing Status[1] State	Habitat
San Diego thornmint	*Acanthomintha ilicifolia*	FT	SE	Chaparral, coastal sage scrub, valley and foothill grassland, vernal pools.
San Diego ambrosia	*Ambrosia pumila*	FE		Coastal sage scrub, valley and foothill grassland. Elevation range 20–415 meters. Only 12 populations remain in San Diego County.
Del Mar manzanita	*Arctostaphylos glandulosa* ssp. *crassifolia*	FE		Coastal chaparral, closed-coned coniferous forest. Found on sandy coastal mesas and ocean bluffs; in chaparral or Torrey pine forest. Elevation range 0–365 meters.
Peirson's milkvetch	*Astragalus magdalenae* var. *peirsonii*	FT	SE	Desert sand dune habitat with loose sand. Several collections from 2005 near Borrego Mountain at 224 meters.
Coastal dunes milkvetch	*Astragalus tener* var. *titi*	FE	SE	Coastal bluff scrub, coastal dunes. Found in moist, sandy depressions of bluffs or dunes along and near the Pacific Ocean; one recorded occurrence on a clay terrace. Elevation range 1–50 meters.

Common Name	Scientific Name	Listing Status[1] Federal	Listing Status[1] State	Habitat
Encinitas baccharis	*Baccharis vanessae*	FT	SE	Chaparral. Found on sandstone soils in steep, open, rocky areas with chaparral associates. Elevation range 60–720 meters.
Nevin's barberry	*Berberis nevinii*	FE	SE	Chaparral, cismontane woodland, coastal scrub, riparian scrub. Found on steep, north- facing slopes or in low grade sandy washes. Elevation range 290–1,575 meters.
Thread-leaved brodiaea	*Brodiaea filifolia*	FT	SE	Cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Usually associated with annual grassland and vernal pools; often surrounded by shrubland habitats. Found in clay soils. Elevation range 25–860 meters.
Dunn's mariposa lily	*Calochortus dunnii*		SR	Closed-cone coniferous forest, chaparral. Found in gabbro or metavolcanic soils; also known from sandstone; often associated with chaparral. Elevation range 375–1,830 meters.
Salt marsh bird's beak	*Chloropyron maritimum* ssp. *Maritimum*	FE	SE	Coastal salt marsh, coastal dunes. Limited to the higher zones of the salt marsh habitat. Elevation range 0–30 meters.
Orcutt's spineflower	*Chorizanthe orcuttiana*	FE	SE	Coastal scrub, chaparral, closed- cone coniferous forest. Found from Del Mar to Point Loma, in the San Diego region. Found in sandy sites and openings; sometimes in transition zones. Elevation range 3–125 meters.
Otay tarplant	*Deinandra conjugens*	FT	SE	Coastal scrub, valley and foothill grassland. Found on coastal plains, mesas, and river bottoms; often in open, disturbed areas; clay soils. Elevation range 25–300 meters.
Mojave tarplant	*Deinandra mohavensis*		SE	Riparian scrub, chaparral. Found in low sand bars in river beds; mostly in riparian areas or ephemeral grassy areas. Elevation range 850–1,600 meters.
Cuyamaca larkspur	*Delphinium hesperium* ssp. *Cuyamacae*		SR	Lower montane coniferous forest, meadows. Found on dried edge of grassy meadows and mesic sites. Elevation range 1,210–1,630 meters.
Mount Laguna aster	*Dieteria asteroides* var. *lagunensis*		SR	Cismontane woodland, lower montane coniferous forest. Found in openings in woodland or forest. Elevation range 800–2,400 meters.
Cuyamaca Lake downingia	*Downingia concolor* var. *brevior*		SE	Meadows (mesic), vernal pools. Found on shores of Cuyamaca Lake in San Diego region. Located in vernal seeps, lakes, and pools, and on mudflats, with *Orthocarpus*, *Limnanthes*, and *Collinsia*. Elevation range 1,400–1,500 meters.
Short-leaved dudleya	*Dudleya brevifolia*		SE	Chaparral, coastal scrub. Found on Torrey sandstone soils; in pebbly openings. Elevation range 30–250 meters.
San Diego button celery	*Eryngium aristulatum* var. *parishii*	FE	SE	Vernal pools, coastal scrub, valley and foothill grassland. Found in San Diego mesa hardpan and claypan vernal pools, and in southern interior basalt flow vernal pools; usually surrounded by scrub. Elevation range 15–620 meters.
Mexican flannelbush	*Fremontodendron mexicanum*	FE	SR	Closed-cone coniferous forest, chaparral, cismontane woodland. Usually scattered along the borders of creeks or in dry canyons; sometimes on gabbro soils. Elevation range 10–490 meters.
Borrego bedstraw	*Galium angustifolium* ssp. *borregoense*		SR	Sonoran desert scrub. Found on steep walls and (usually north-facing) slopes in rocky watersheds or canyons. Elevation range 350–1,100 meters.
Orcutt's hazardia	*Hazardia orcuttii*		ST	Chaparral, coastal scrub, often on clay; in grassy edges of chaparral and coastal scrub. Elevation range 0–85 meters. Only one population remains in San Diego County.

Common Name	Scientific Name	Listing Status[1] Federal	Listing Status[1] State	Habitat
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*		SE	Desert dunes. Elevation range 50–100 meters.
Parish's meadowfoam	*Limnanthes alba* ssp. *parishii*		SE	Meadows and seeps, vernal pools. Vernally moist areas and temporary seeps of highland meadows and plateaus; often bordering lakes and streams. Elevation range 600–1,760 meters.
Willowy monardella	*Monardella viminea*	FE	SE	Coastal scrub/alluvial ephemeral washes with adjacent coastal scrub, chaparral, or sycamore woodland. In canyons, in rocky and sandy places, sometimes in washes or floodplains. Elevation range 50–225 meters.
Gambel's water cress	*Nasturtium gambelii*	FE	ST	Marshes and swamps. Freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. Elevation range 5–1,305 meters.
Spreading navarretia	*Navarretia fossalis*	FT		Vernal pools, chenopod scrub, marshes and swamps, and playas. San Diego hardpan and San Diego claypan vernal pools; in swales and vernal pools, often surrounded by other habitat types. Elevation range 30–1,300 meters.
Dehesa nolina	*Nolina interrata*		SE	Chaparral. Typically on rocky hillsides or ravines on ultramafic soils (gabbro or metavolcanic). Elevation range 180–855 meters.
California orcutt grass	*Orcuttia californica*	FE	SE	Vernal pools. Elevation range 15–660 meters.
Baja California birdbush	*Ornithostaphylos oppositifolia*		SE	Chaparral. Associated with *Ceanothus verrucosus* and *Salvia mellifera* in California. Elevation range 55–800 meters.
Gander's ragwort	*Packera ganderi*		SR	Recently burned sites and gabbro outcrops. Elevation range 400–1,200 meters.
San Bernardino blue grass	*Poa atropurpurea*	FE		Meadows and seeps. Mesic meadows of open pine forests and grassy slopes, loamy alluvial to sandy loam soil. Elevation range 1,350–2,455 meters.
San Diego mesa mint	*Pogogyne abramsii*	FE	SE	Vernal pools. Vernal pools within grasslands, chamise chaparral or coastal sage scrub communities; with other rare plants. Elevation range 90–200 meters.
Otay Mesa mint	*Pogogyne nudiuscula*	FE	SE	Vernal pools. Dry beds of vernal pools and moist swales with *Eryngium aristulatum* var. *parishii* and *Orcuttia californica*. Elevation range 85–250 meters.
Small-leaved rose	*Rosa minutifolia*		SE	Coastal scrub, chaparral. In California on cobbly soil at the head of a small, dry canyon on Otay Mesa. Elevation range 150–160 meters.

Notes: FE = federally listed as endangered, FT = federally listed as threatened, SE = state listed as endangered, ST = state listed as threatened, SR = state listed as rare.

Sources: USFWS 2024; CNDDB 2025; Baldwin et al. 2012; Jepson 2025; Rebman and Simpson 2014.



Sources: SANGIS 2025a; SDMMP 2025; adapted by Ascent in 2025.

Figure 4.4-3 Federally and State-Listed Plant Species

Nonfederally and Nonstate-Listed Special-Status Plant Species

In addition to federally and state-listed plants, approximately 244 additional special-status plant species have known distributions in the San Diego region. These species include CRPR species, nonlisted NCCP-covered species (e.g., narrow, endemic species), or species that otherwise meet the special-status species criteria, as discussed above. These nonlisted special-status plant species have the potential to occur throughout the San Diego region in their respective riparian, wetland, and upland habitats. A list of these additional special-status plant species and their general habitat affinities is presented in Appendix E-2.

Federally or State-Listed Animal Species

There are 37 federally or state-listed or candidate animal species that have potential to be found in the San Diego region as year-round residents or as migrants that reoccur seasonally to breed (Table 4.4-3). These 37 species include seven invertebrate, four fish, six reptile and amphibian, 16 bird, and four mammal species. Of these, four are considered extirpated from the San Diego region: California red-legged frog (*Rana draytonii*), southern mountain yellow-legged frog (*Rana muscosa*), California black rail (*Laterallus jamaicensis coturiculus*), and the bank swallow (*Riparia riparia*), which is known to occur in the San Diego region as a rare migrant, but for which the last breeding colony in the San Diego region has been extirpated (USFWS 2024). Out of the 37 species, six species are categorized as candidate species (three federal and three state candidates), including the federal candidates monarch butterfly (*Danaus plexippus*), southwestern pond turtle (*Actinimeys pallida*), and western spadefoot toad (*Spea hammondii*), and the state candidates Crotch's bumblebee (*Bombus crotchii*), western burrowing owl (*Athene cunicularia* ssp. *hypugaea*), and mountain lion (*Puma concolor*); critical habitats for the federal candidate species have not yet been designated. Figures 4.4-4 through 4.4-8 illustrate the results of regional database information for federally and state-listed wildlife species in the San Diego region.

Nonfederally and Nonstate-Listed Special-Status Wildlife Species

In addition to federally and state-listed wildlife, approximately 150 additional special-status wildlife species have known distributions within the San Diego region. These species include those considered special status by CDFW or species classified by the MSCP/MHCP as covered species, or otherwise meet the criteria discussed above. This list includes an additional 17 invertebrate, one fish, two amphibian, 17 reptile, 67 bird, and 46 mammal species. These nonlisted special-status wildlife species have the potential to occur throughout the San Diego region in each of their respective riparian, wetland, and upland habitats. A list of these additional special-status wildlife species and their general habitat affinities is presented in Appendix E-3.

Table 4.4-3 Listed and Candidate Wildlife Species Potentially Occurring within the San Diego Region

Common Name	Scientific Name	Listing Status[1] Federal	Listing Status[1] State	Habitat
Invertebrates				
San Diego fairy shrimp	*Branchinecta sandiegonensis*	FE		Restricted to vernal pools, hardpan and claypan pools. Orange and San Diego Counties, Baja California.
Riverside fairy shrimp	*Streptocephalus woottonii*	FE		Restricted to deep, large vernal pools with long periods of inundation. San Diego (within 15 kilometers of the ocean) and Riverside Counties.
Laguna Mountains skipper	*Pyrgus ruralis lagunae*	FE		Only in a few open meadows in yellow pine forest between an elevation of 1,524 and 1,828 meters in the vicinity of Mount Laguna and Palomar mountains. Host plant is *Horkelia bolanderi clevelandi*.
Crotch's bumblebee	*Bombus crotchii*		SC	Native and nonnative grasslands, scrublands and lands with annual and perennial flowering plants. Male and female bumblebees have different plant preferences.

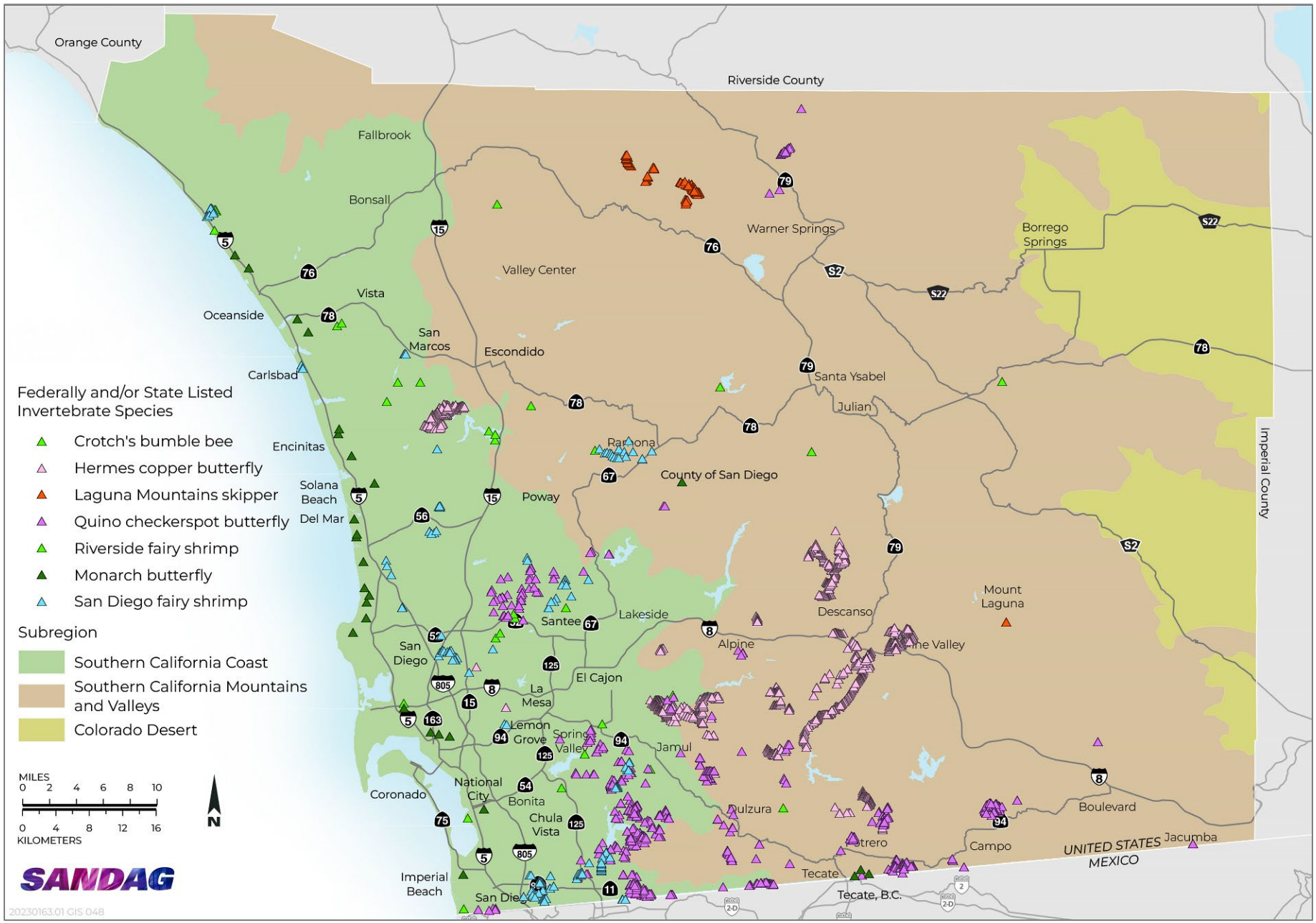
Common Name	Scientific Name	Listing Status[1] Federal	Listing Status[1] State	Habitat
Monarch butterfly (overwintering population)	*Danaus plexippus*	FC		Coastal eucalyptus groves for roosting and overwintering and native and nonnative grasslands, coastal sage scrub, chaparral, and other scrublands where host milkweed species occur.
Quino checkerspot butterfly	*Euphydryas editha quino*	FE		Native and nonnative grasslands, coastal sage scrub, open chaparral, and other open vegetation community types.
Hermes copper butterfly	*Lycaena hermes*	FT		Southern mixed chaparral and coastal sage scrub at the western edge of Laguna Mountains. Host plant is *Rhamnus crocea*.
Fish				
Desert pupfish	*Cyprinodon macularius*	FE	SE	Desert ponds, springs, marshes, and streams in Southern California.
Tidewater goby	*Eucyclogobius newberryi*	FE		Brackish shallow lagoons and lower stream reaches with still water.
Unarmored threespine stickleback	*Gasterosteus aculeatus williamsoni*	FE	SE	Found in weedy pools, backwaters, and among emergent vegetation at the stream edge in small streams.
Southern steelhead	*Oncorhynchus mykiss irideus*	FE		Coastal rivers. Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego region though species was detected in San Luis Rey in 2005 and 2007; previously occurred in Santa Margarita, San Dieguito, San Diego, Sweetwater and Otay rivers, where apparently extirpated; recently observed by USGS in Sandia Creek).
Amphibians				
Arroyo toad	*Anaxyrus californicus*	FE		Gravelly or sandy washes, stream and river banks. Upland habitat near washes and streams, such as sage scrub and mixed chaparral habitats.
California red- legged frog	*Rana draytonii*	FT		Slow parts of streams, lakes, reservoirs, ponds, and other usually permanent water sources; primarily in wooded areas in lowlands and foothills, but also can be found in grassland. Typical habitat consists of deepwater pools ringed by thick vegetation (especially arroyo willow or native cattails). Extirpated in San Diego region.
Southern mountain yellow-legged frog	*Rana muscosa*	FE	SE	Always encountered within a few feet of water. Federal listing includes populations in the San Gabriel, San Jacinto, and San Bernardino mountains. San Diego population formerly on Palomar Mountain considered extirpated.
Western spadefoot toad	*Spea hammondii*	FC		Vernal pools and ephemeral wetlands where the species completes its life form from egg mass to metamorphed tadpoles. The adults aestivate in adjacent uplands and canyons up to 40 meters from the breeding habitat.
Reptiles				
Southwestern pond turtle	*Actinemys pallida*	FC		Occurs from Monterey County south to San Diego into northern Baja California, Mexico. The turtles use rivers, lakes, ponds, streams other water sources and terrestrial habitats throughout their lives.

Common Name	Scientific Name	Listing Status[1] Federal	Listing Status[1] State	Habitat
Barefoot banded gecko	*Coleonyx switaki*		ST	Found in arid rocky areas on flatlands, canyons, and thornscrub, especially where there are large boulders and rock outcrops, and where vegetation is sparse.
Birds				
Golden eagle	*Aquila chrysaetos*	BGEPA	FP	Occurs over large expanses of landscape and forages in diverse habitat types. Nests on cliffs and in large trees.
White-tailed kite	*Elanus leucurus*		FP	Forages over low shrublands, grasslands, and estuaries and nest in tall shrubs or small trees.
Bald eagle	*Haliaeetus leucocephalus*	FDR, BGEPA	SE	Occurs primarily near large lakes with open water. Also known to nest in grasslands near small ponds.
Western burrowing owl	*Athene cunicularia* ssp. *hypugaea*		SC	Wintering occurs in sparse, low-growing uplands. In San Diego County, nests in ground squirrel burrows primarily in low-growing native and nonnative grasslands, disturbed lands, in berms and mounds, and fallow agricultural lands.
California spotted owl–coastal southern DPS	*Strix occidentalis occidentalis*	FC		
California black rail	*Laterallus jamaicensis coturiculus*		ST	Inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays. Extirpated in San Diego region.
Light-footed Ridgway's rail	*Rallus obsoletus levipes*	FE	SE	Found in Southern California in coastal salt marshes, especially those dominated by cordgrass.
Western snowy plover	*Charadrius nivosus*	FT		Nests on beaches, dunes, and salt flats in San Diego region, with the highest concentrations in two areas: Marine Corps Base (MCB) Camp Pendleton and the Silver Strand.
California least tern	*Sternula antillarum browni*	FE	SE	A ground-nesting bird that requires undisturbed stretches of beach and coastline.
Western yellow-billed cuckoo (western DPS)	*Coccyznus americanus*	FT	SE	Occurs in broadleaf riparian forests; extremely rare.
Southwestern willow flycatcher	*Empidonax trailli extimus*	FE	SE	Restricted to a few colonies in riparian woodlands scattered throughout Southern California. Riparian forests are integral to this species' persistence.
Tricolored blackbird	*Agelaius tricolor*		ST	Freshwater marshes with cattails and other emergent vegetation.
Least Bell's vireo	*Vireo belli pusillus*	FE	SE	Riparian woodland with understory of dense young willows or mulefat and willow canopy.
Bank swallow	*Riparia riparia*		ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, or ocean to dig nesting hole. Only known colony extirpated from San Diego region.
Coastal California gnatcatcher	*Polioptila californica californica*	FT		Diegan coastal sage scrub dominated by California sagebrush and flat-topped buckwheat below 762 meters elevation in Riverside County and below 305 meters elevation along the coastal slope.

Common Name	Scientific Name	Listing Status[1] Federal	Listing Status[1] State	Habitat
Belding's savannah sparrow	*Passerculus sandwichensis beldingi*		SE	Occurs primarily in grassland, saline emergent wetland, and wet meadow habitats.
Mammals				
Stephens' kangaroo rat	*Dipodomys stephensi*	FE	ST	Open grassy and weedy areas adjacent to sage scrub.
Pacific pocket mouse	*Perognathus longimembris pacificus*	FE		Coastal sage scrub, coastal strand, and river alluvium on MCB Camp Pendleton exclusively.
Mountain lion (southern California)	*Puma concolor*		SC	Coastal chaparral, valleys, canyons, foothills, and mountains. They can be found wherever native or introduced ungulates such as mule deer, bighorn sheep, or feral hogs are present.
Peninsular bighorn sheep (DPS population 2)	*Ovis canadensis nelsoni* (distinct population segment population 2)	FE	ST	Optimal habitat includes steep-walled canyons and ridges bisected by rocky or sandy washes, with available water.

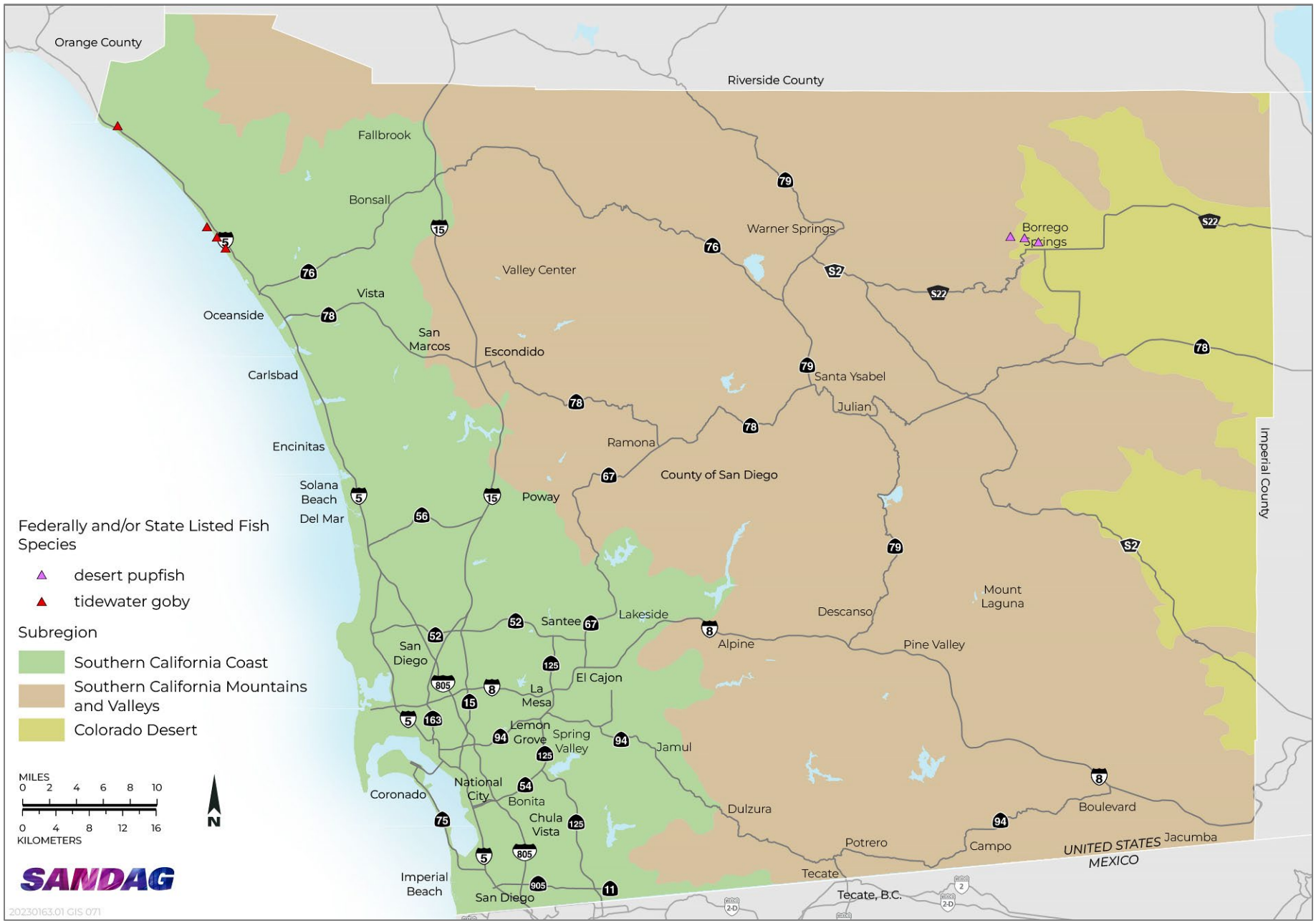
Notes: BGEPA = Bald and Gold Eagle Act; FDR=federally delisted, recovered; FP=state listed as fully protected; FE = federally listed as endangered; FT= federally listed as threatened; SE = state listed as endangered; ST = state listed as threatened; DPS = distinct population segment.

Sources: USFWS 2024; CNDDB 2025.



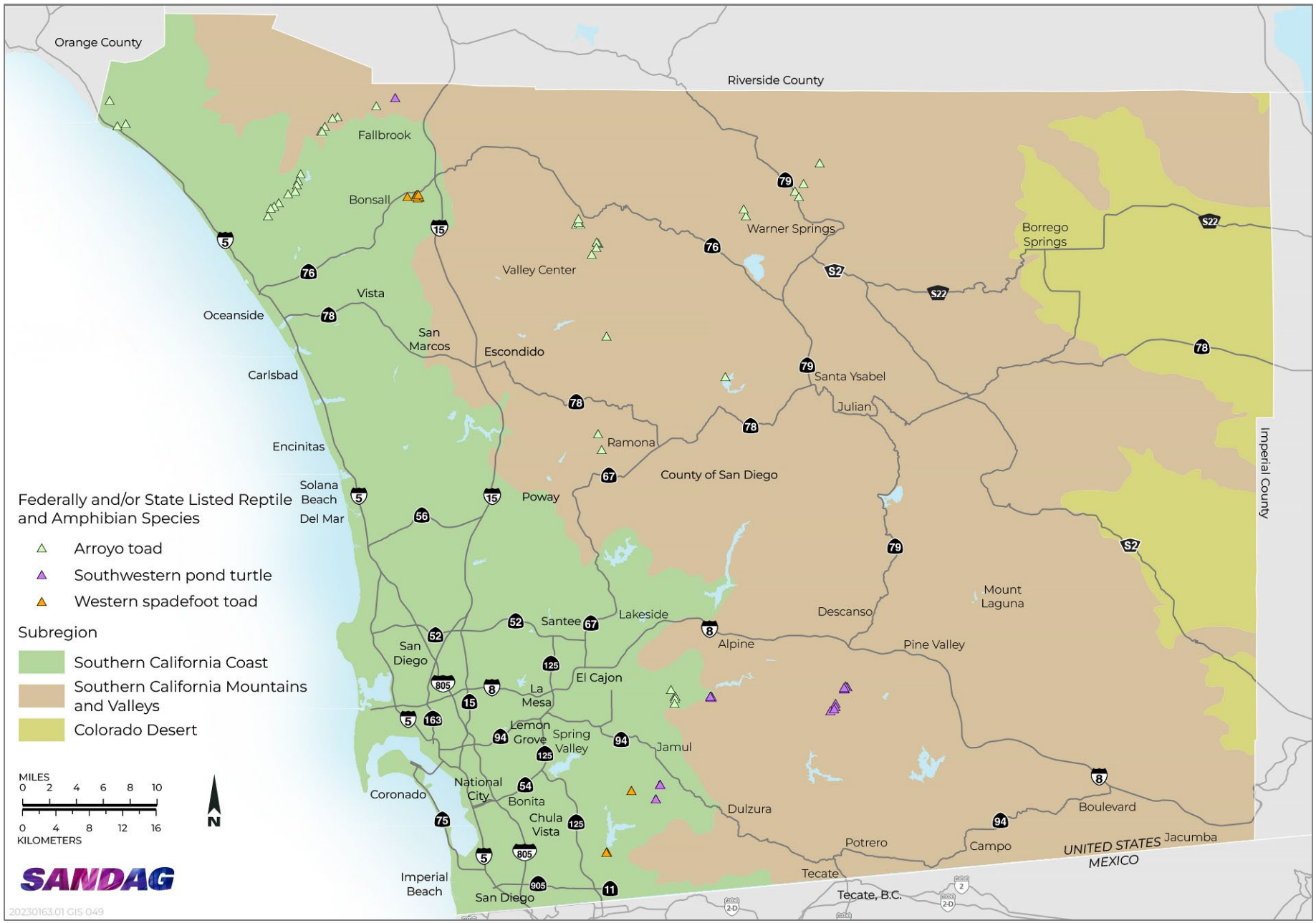
Sources: SANGIS 2025a; SDMMP 2025; adapted by Ascent in 2025.

Figure 4.4-4 Federally and State-Listed Invertebrate Species



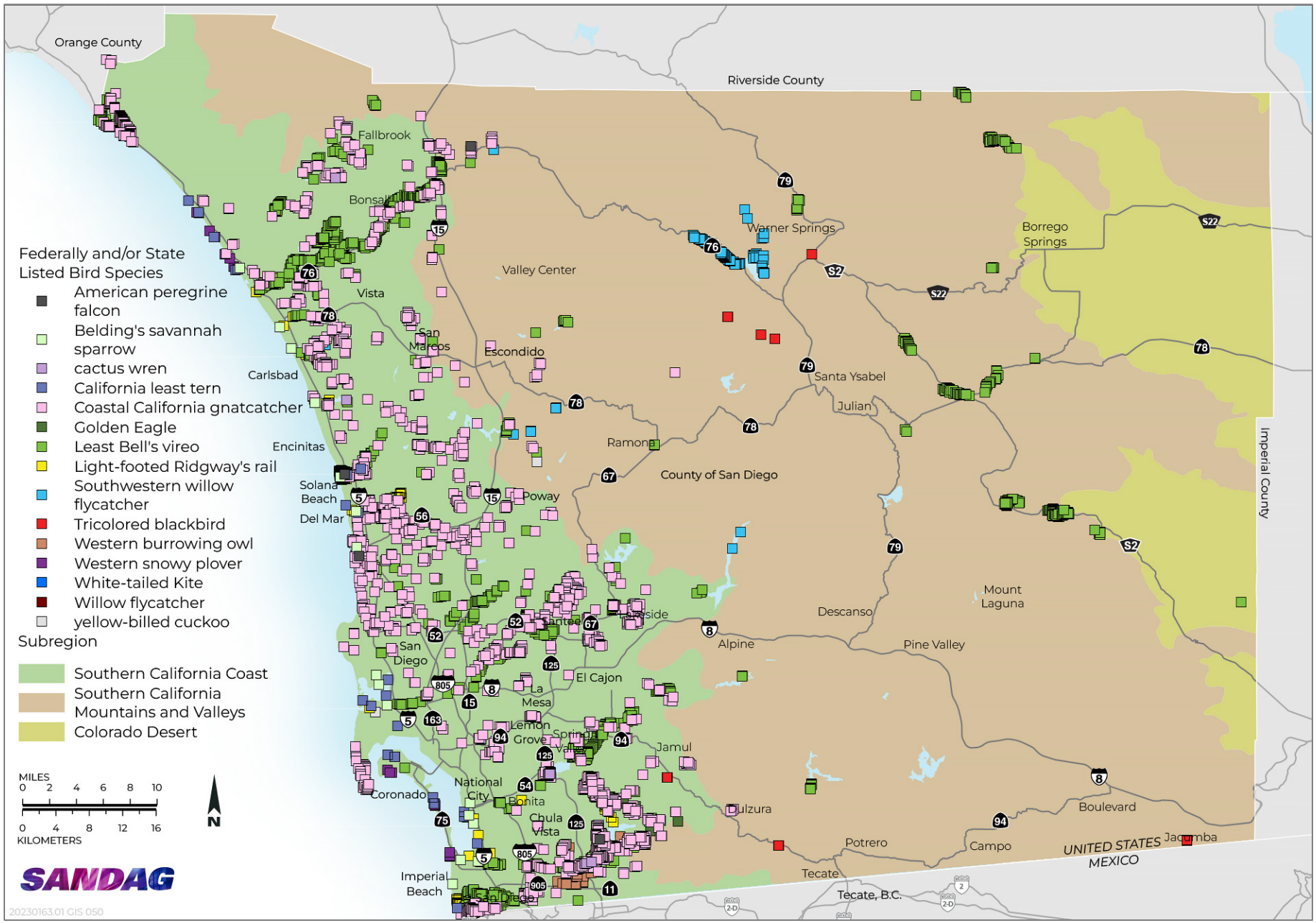
Source: CNDDB 2025; adapted by Ascent in 2025.

Figure 4.4-5 Federally and State-Listed Fish Species



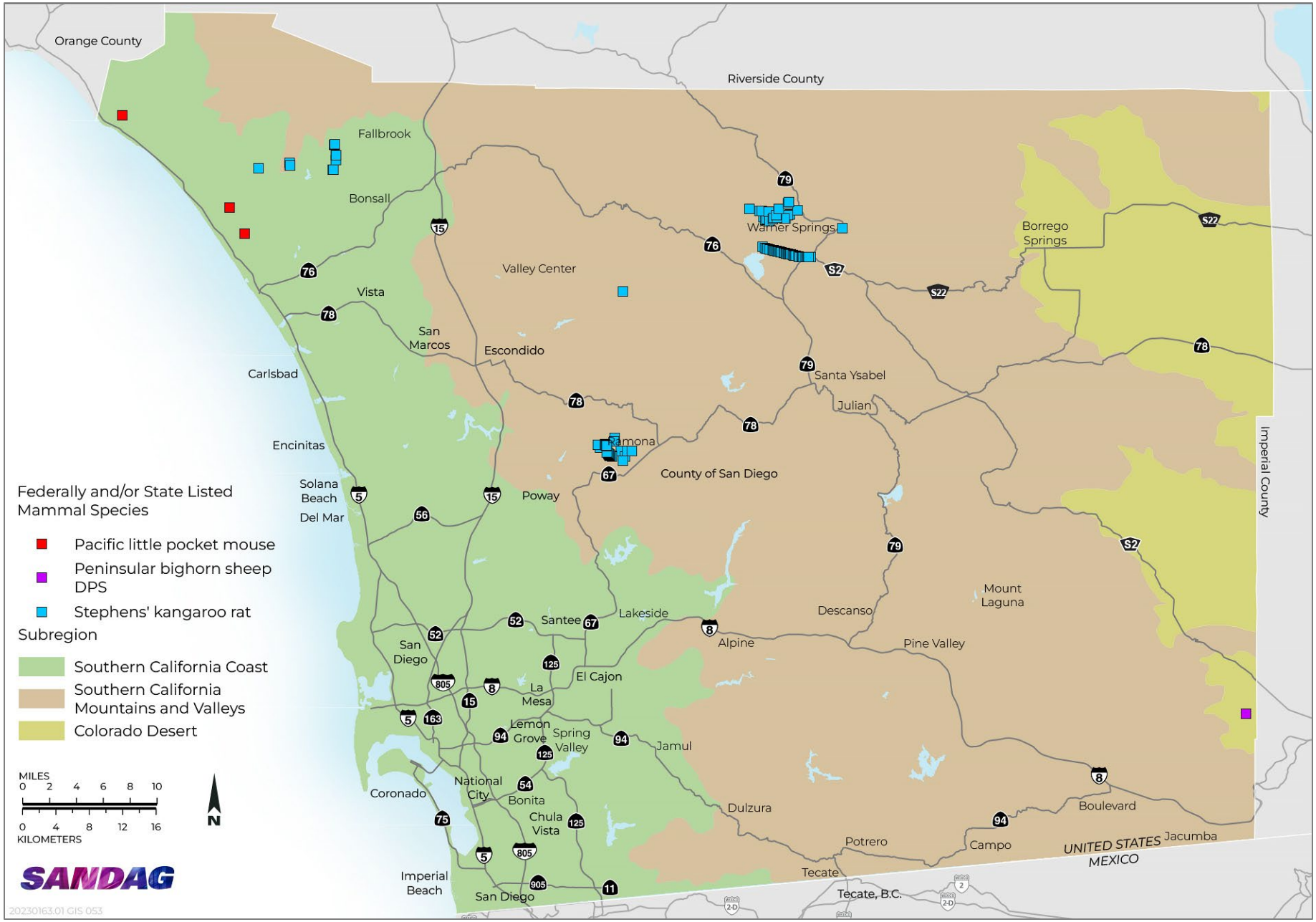
Sources: SANGIS 2025a; SDMMP 2025; adapted by Ascent in 2025.

Figure 4.4-6 Federally and State-Listed Reptile and Amphibian Species



Sources: SANGIS 2025a; SDMMP 2025; adapted by Ascent in 2025.

Figure 4.4-7 Federally and State-Listed Bird Species



Sources: SANGIS 2025a; SDMMP 2025; adapted by Ascent in 2025.

Figure 4.4-8 Federally and State-Listed Mammal Species

Critical Habitat

USFWS-designated critical habitat for endangered and threatened species is defined as the "geographic areas that contain the physical or biological features that are essential to the conservation of federally listed endangered and threatened species and that may need special management or protection" (16 U.S. Code [USC] 1532[5][A]). The San Diego region (except for military bases) includes USFWS-designated critical habitat for 20 species (Table 4.4-4). Plant, invertebrate, fish, reptile and amphibian, bird, and mammal species final critical habitat in the San Diego region is displayed in Figures 4.4-9 through 4.4-14.

Table 4.4-4 Critical Habitat[1] within the San Diego Region

Common Name	Scientific Name	Total Acres[2]	General Location
Plants			
San Diego thornmint	*Acanthomintha ilicifolia*	1,749	North of Willows Road near Viejas Indian Reservation.
San Diego ambrosia	*Ambrosia pumila*	806	Largest areas south of Rancho San Diego along State Route 94 and Sweetwater River and southwest of Lake Hodges along Del Dios Highway.
Thread-leaved brodiaea	*Brodiaea filifolia*	985	Small patches of vernal pool habitat along the northern coastal area of San Diego region.
Otay tarplant	*Deinandra conjugens*	6,333	Coastal scrub and grassland habitat in southwest San Diego region.
Mexican flannelbush	*Fremontodendron mexicanum*	228	Cedar and Little Cedar canyons just west of Dulzura.
Willowy monardella	*Monardella viminea*	122	Sycamore and Clark Canyon northeast of Santee Lakes.
Spreading navarretia	*Navarretia fossalis*	1,068	Small patches of vernal pool habitat along the coastal area of San Diego region.
San Bernardino blue grass	*Poa atropurpurea*	1,115	Laguna meadow west of Mount Laguna and Mendenhall Valley northeast of Palomar Mountain.
Invertebrates			
San Diego fairy shrimp	*Branchinecta sandiegonensis*	2,918	Vernal pools and basins located on mesa tops or in grasslands in the San Diego region.
Hermes copper butterfly	*Lycaena hermes*	35,052	South from State Route 56 in three distinct units: Lopez Canyon, between Miramar and Santee, and in Southeast San Diego south of Interstate 8, east of State Route 125. Habitat loss due to recent fires.
Riverside fairy shrimp	*Streptocephalus woottoni*	807	Vernal pools and basins in the southern coastal area of San Diego region.
Quino checkerspot butterfly	*Euphydryas editha quino*	40,136	United States–Mexico border, including the San Ysidro Mountain region; along State Route 94 near the Campo and La Posta Indian Reservations; and northwest of Jacumba.
Laguna Mountains skipper	*Pyrgus ruralis lagunae*	6,259	West of Mount Laguna in the Laguna Mountains and north of Palomar Mountain.
Fish			
Tidewater goby	Eucyclogobius newberryi	55	Mouth of the San Luis Rey River.
Reptiles and Amphibians			
Arroyo toad	*Anaxyrus californicus*	60,802	San Juan Creek; San Mateo Creek; Lower and Upper Santa Margarita River; Lower, Middle, and Upper San Luis Rey River; Santa Ysabel Creek; San Diego River; San Vicente Creek; Sweetwater River; and Cottonwood Creek.

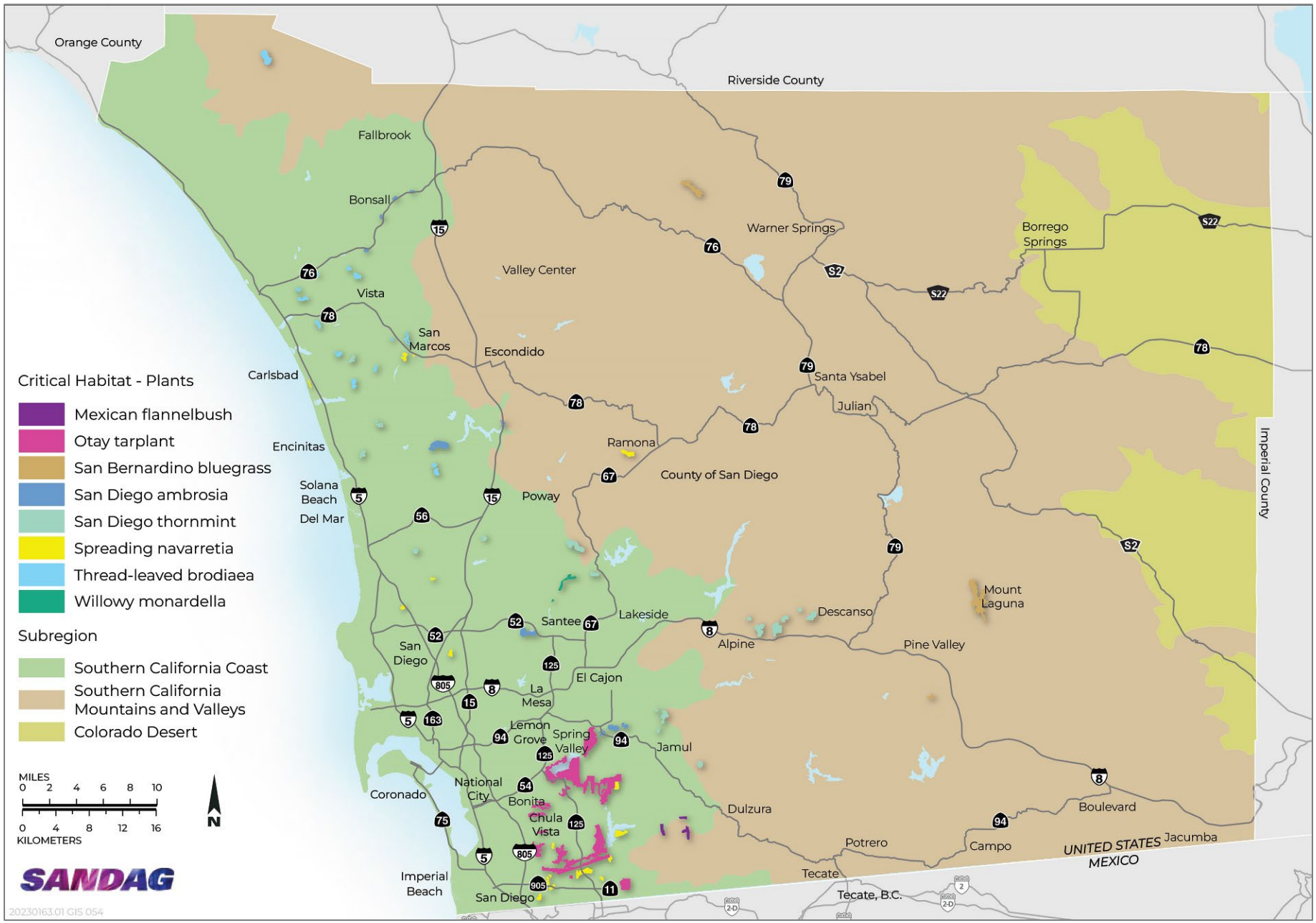
Common Name	Scientific Name	Total Acres[2]	General Location
Birds			
Least Bell's vireo	*Vireo belli pusillus*	13,415	San Luis Rey River, Santa Margarita River, San Diego River, Sweetwater River, Tijuana River, Coyote Creek, and Jamul-Dulzura creeks.
Southwestern willow flycatcher	*Empidonax trailli extimus*	5,373	Santa Margarita River, DeLuz Creek, San Luis Rey River, Pilgrim Creek, Agua Hedionda Creek, Santa Ysabel Creek, Temescal Creek, Temecula Creek, Sweetwater River, and San Diego River.
Western snowy plover	*Charadrius nivosus*	405	San Dieguito Lagoon, San Elijo Lagoon Coronado Beach, Silver Strand State Beach, San Diego National Wildlife Refuge, and Tijuana Estuary and Border Field State Park.
Coastal California gnatcatcher	*Polioptila californica*	76,420	Largest contiguous areas of critical habitat for coastal California gnatcatcher include the San Diego National Wildlife Refuge and surrounding area; the upper San Diego River drainage area as well as areas surrounding the El Capitan Reservoir; open space north of the city of Santee; open space northwest of the city of Ramona; habitat within the MHCP planning area in the northwest San Diego region; and habitat along the Interstate-15 corridor from Escondido to Riverside County.
Mammals			
Peninsular bighorn sheep (DPS population 2)	*Ovis canadensis nelson* (DPS population 2)	261,120	Santa Rosa Mountains, Coyote Canyon, San Ysidro Mountains, Pinyon Mountains, Vallecito Mountains, Carrizo Canyon, In-Ko-Pah Mountains, Jacumba Mountains, Coyote Mountains, and Tierra Blanca Mountains.

Notes: DPS = distinct population segment; MHCP = Multiple Habitat Conservation Program.

[1] Critical habitat in this table includes final designated critical habitat and proposed designated critical habitat as of July 2021.

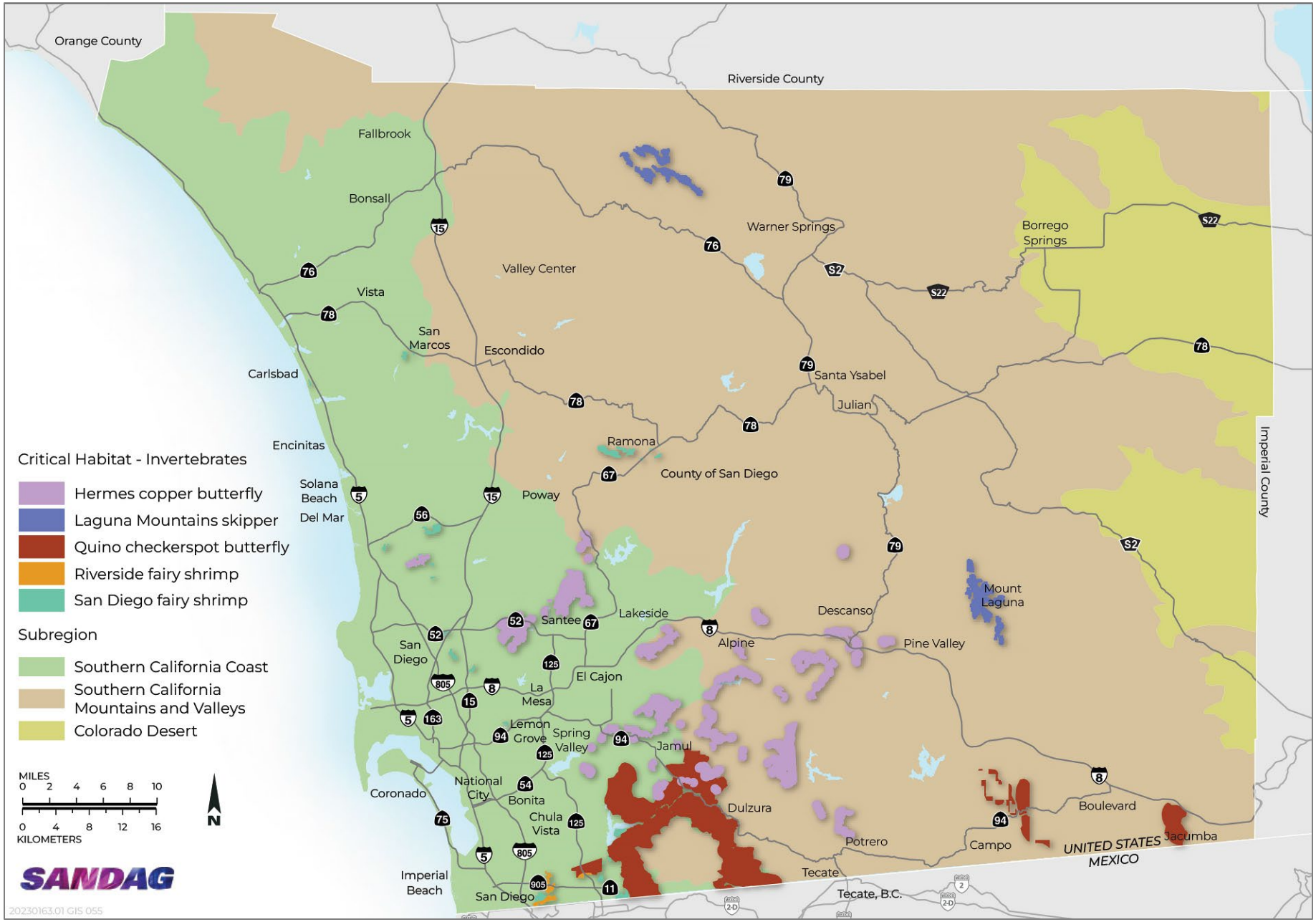
[2] Acres are rounded up or down to the next acre.

Source: Data downloaded from USFWS in 2025; adapted by Ascent in 2025.



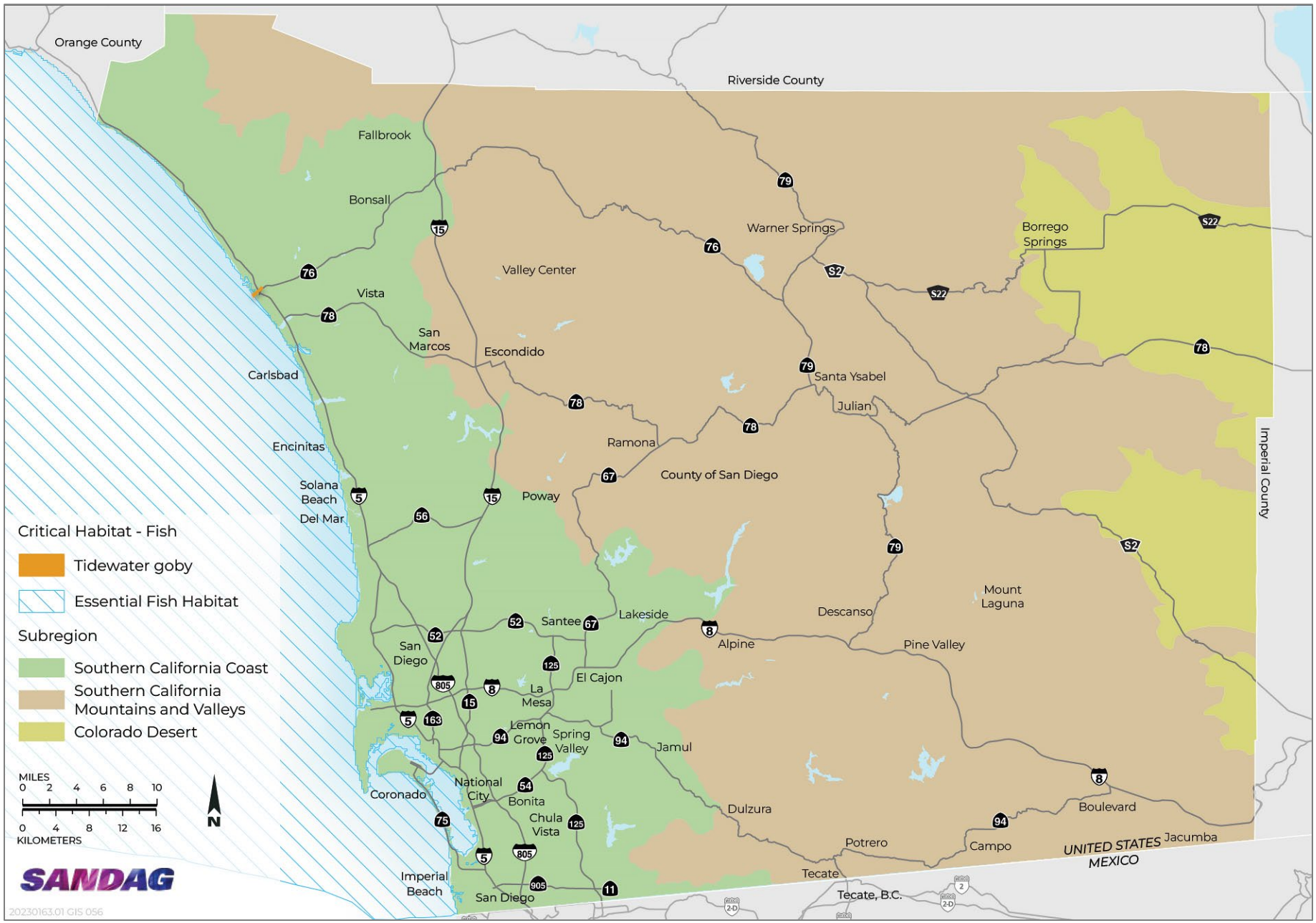
Source: USFWS 2025b; adapted by Ascent in 2025.

Figure 4.4-9 Critical Habitat: Plants



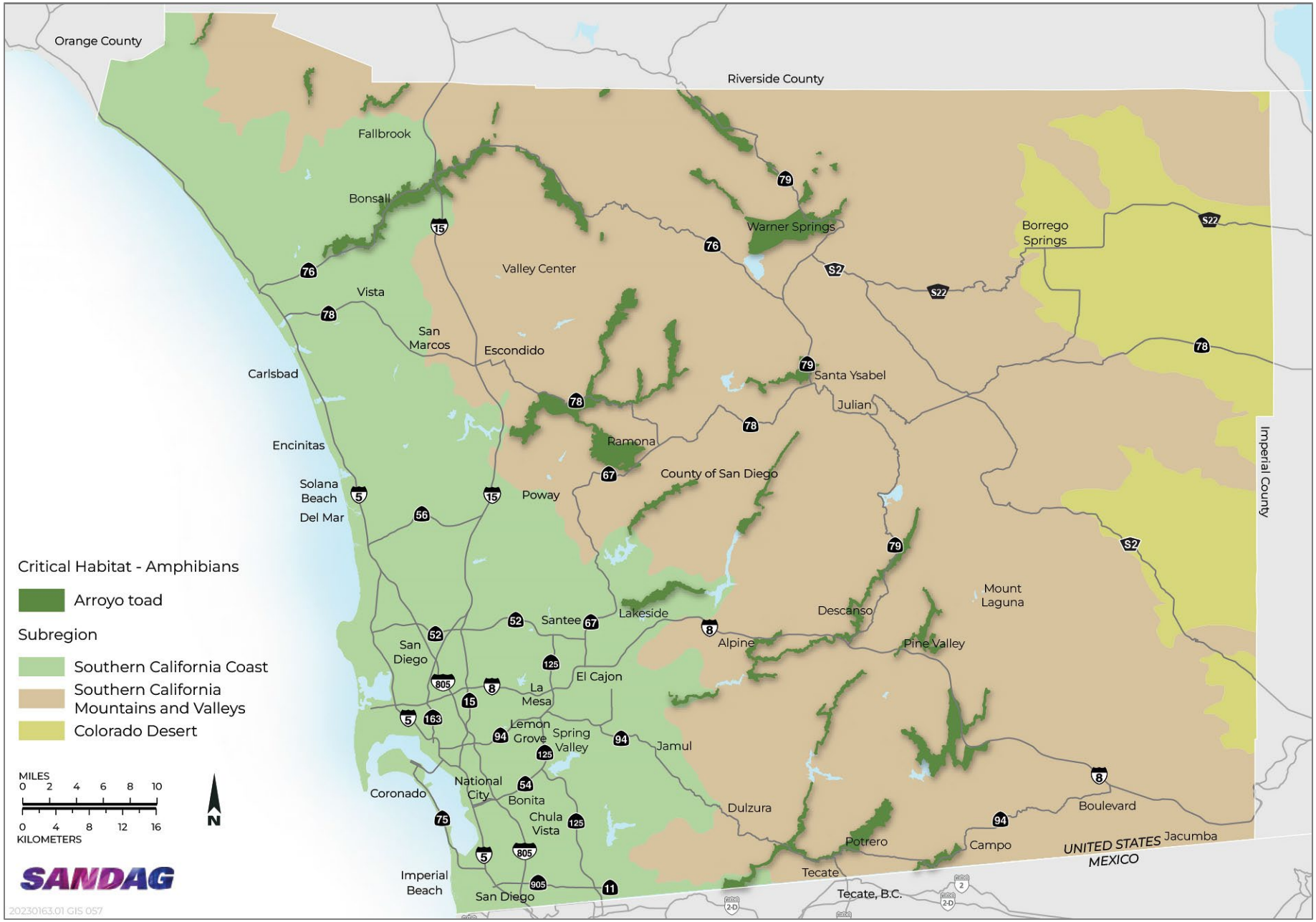
Source: USFWS 2025b; adapted by Ascent in 2025.

Figure 4.4-10 Critical Habitat: Invertebrates



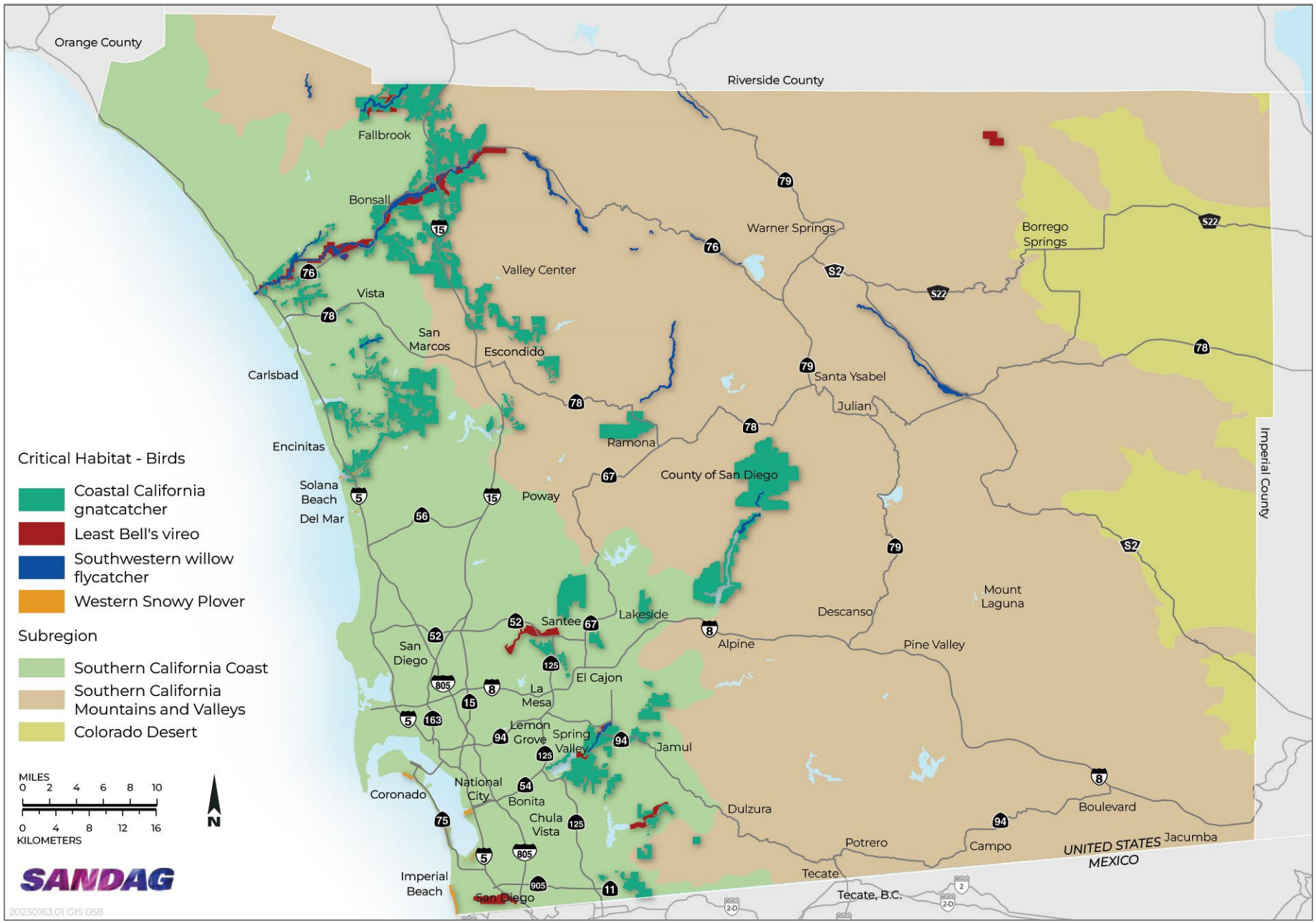
Source: USFWS 2025b; adapted by Ascent in 2025.

Figure 4.4-11 Critical Habitat: Fish and Essential Fish Habitat



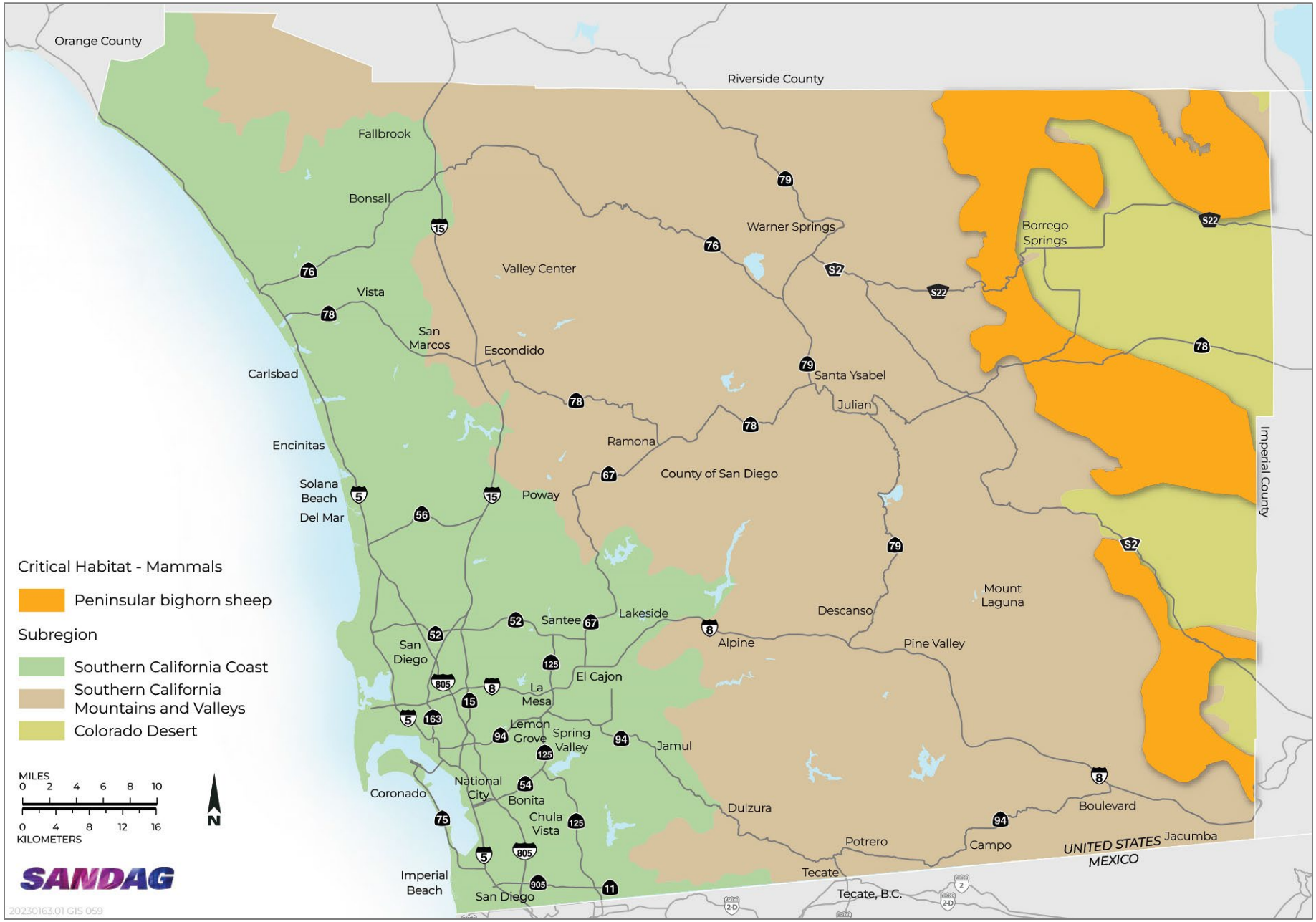
Source: USFWS 2025b; adapted by Ascent in 2025.

Figure 4.4-12 Critical Habitat: Amphibians



Sources: USFWS 2025b; adapted by Ascent in 2025.

Figure 4.4-13 Critical Habitat: Birds



Source: USFWS 2025b; adapted by Ascent in 2025.

Figure 4.4-14 Critical Habitat: Mammals

Essential Fish Habitat

Essential Fish Habitat (EFH), which is defined as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 USC 1801 et seq.), is displayed in Figure 4.4-11. EFH in the San Diego region has been identified for federally managed fisheries of Pacific coast groundfish and associated species, including rockfish, cabezon, California sheephead, ocean whitefish, and greenlings of genus Hexagrammos (NOAA Fisheries 2025; CDFW 2025). The Southern Groundfish Management Area is defined as ocean waters between from Point Conception, Santa Barbara County (34° 27' north latitude) to the United States–Mexico border and areas designated as Habitat Areas of Particular Concern (HAPCs). Under the Pacific Coast Groundfish Fisheries Management Plan (FMP), HAPCs include estuary, seagrass, kelp canopy, and rocky reef.

WILDLIFE MOVEMENT

Wildlife movement may occur along landscape features (e.g., wildlife corridors, habitat linkages) that allow for species movement over time between two habitat patches that would otherwise be disconnected (Beier and Noss 1998; Lidicker and Peterson 1999; CBI 2003; Beier et al. 2008). For some species, such as the California gnatcatcher and other bird species, dispersal may also occur within line of sight along fragmented habitat patches (stepping stones) between larger habitat blocks (Bailey and Mock 1998).

Wildlife corridors contribute to population viability by (1) assuring continual exchange of genes between populations, which helps maintain genetic diversity; (2) providing access to adjacent habitat areas representing additional territory for foraging and mating; (3) allowing for a greater carrying capacity; and (4) providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes. Corridors also allow species to adapt to climate change because many habitats could lose their original value as the climate changes and force species range shifts into more hospitable areas or climates (National Fish, Wildlife, and Plants Climate Adaptation Partnership 2012). Because many wildlife species have species-specific habitat requirements for survival and dispersal, corridors types and usage may be species specific.

Primary landscape features known to provide wildlife movement are ridgelines and drainages. Riparian corridors, often within drainages, provide sufficient structural vegetative cover to allow the passage of many different types of wildlife. For some species, such as mountain lions, riparian habitat is often preferred cover for movement, and the presence of this habitat may reduce some of the negative impacts of roads as a deterrent for movement (Dickson and Beier 2002). In many parts of Southern California, the linear habitat provided by riparian corridors is the only habitat left providing connectivity to core areas or unfragmented habitat patches.

Data Sources and Methods

The program-level description of existing conditions focuses on describing landscape-level regional wildlife movement and habitat linkages rather than specific local corridors (e.g., small canyons, ephemeral drainages); the latter would be evaluated individually during project-level CEQA review. Wildlife nursery sites are addressed qualitatively as part of the wildlife movement corridor discussion because regional data on nursery sites are not available. Regional corridors are described as a result of statewide habitat connectivity modeling (Spencer et al. 2010) and in regional planning documents and regional studies, including the San Diego NCCP documents (County of San Diego 1998; SANDAG 2003; SCW 2008; Jennings et al. 2020). These modeled wildlife movement corridors in San Diego County are depicted in Figure 4.4-15.

Additionally, cross-border linkages identified by the Las Californias Binational Conservation Initiative between the United States and Mexico, and the Pacific Flyway (a major regional north–south migration route for birds that travel between North and South America) are discussed qualitatively. Furthermore, the Audubon Society identifies, monitors, and protects Important Bird Areas (IBAs) (National Audubon Society 2025). There are several IBAs located in San Diego County, including USFWS wildlife refuges, the Tijuana River Reserve, Mission Bay, all San Diego lagoons, and San Pasqual Valley, to name a few. Most of the IBAs in San Diego County are either not developable (i.e., lakes and bays) or are already conserved and, therefore, included in the EIR's analysis.

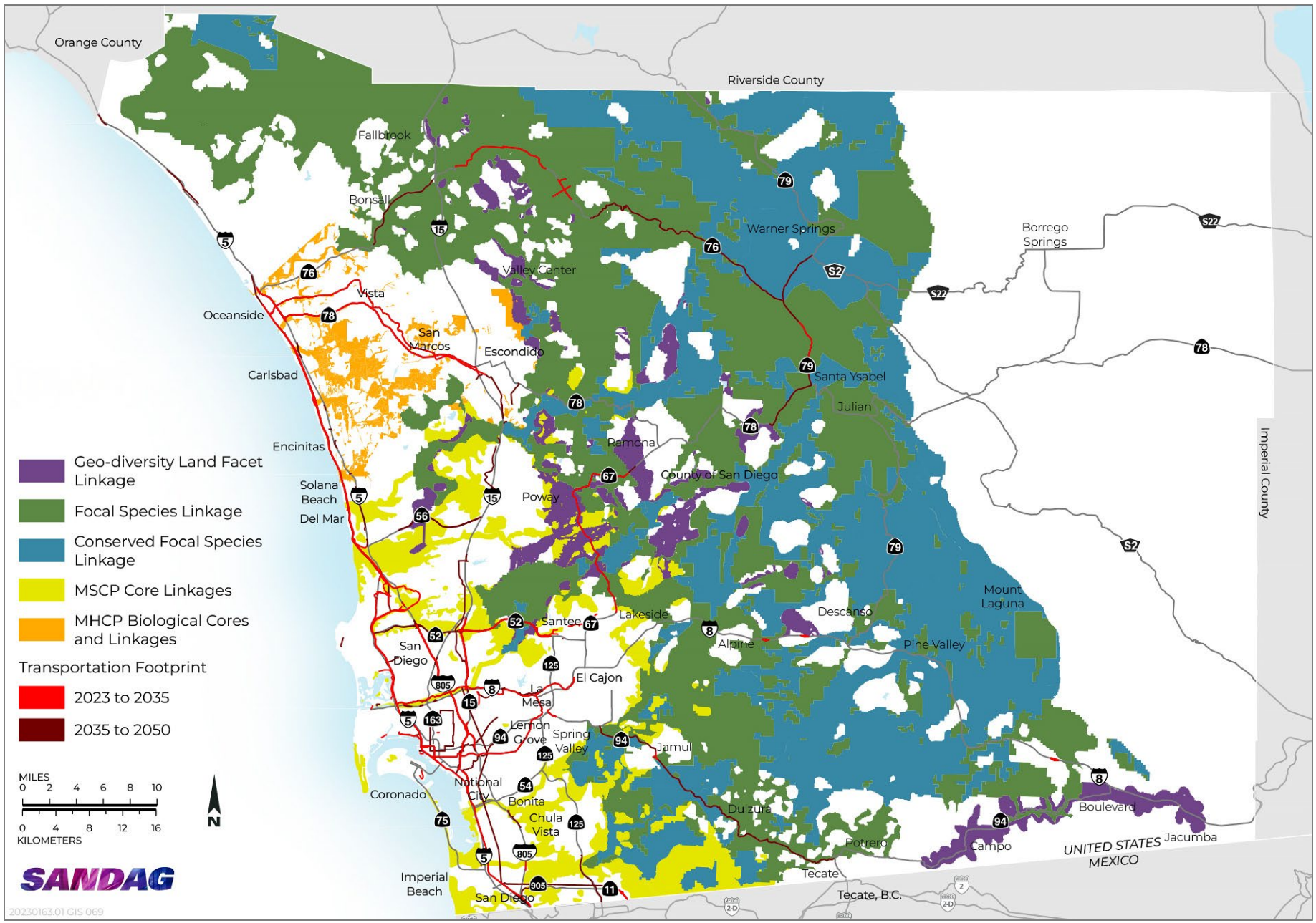
Southern California Climate Resilient Connectivity Linkage Network

As part of developing a climate resilient connectivity strategy, a team of researchers from San Diego State University (SDSU), University of Washington, and Point Blue Conservation Science have identified landscape connectivity patches and corridors in the south coast ecoregion of Southern California (from Santa Barbara County to the international border between San Diego County and Mexico) to address threats of climate change, habitat fragmentation, and intensifying development (Jennings et al. 2020). In the Southern California study area, over 55% of the multispecies linkage network is already conserved, and an additional 5% is on military and tribal lands with relative low possibility of development; therefore, just under 40% of the linkage network remains on unconserved lands (Jennings et al. 2020). The model output identifies a network of linkages and their conservation status and provides the most recent comprehensively modeled connectivity corridors and linkages in San Diego County. However, the model is based on different land use data than the proposed Plan and the County General Plan. This may lead to an overestimation of impacts because the model includes developed lands that would be impact-neutral.

SDSU's Institute for Ecological Monitoring and Management has published the GIS data for multispecies linkages and the Climate Resilient Connectivity Prioritized Linkages Network (Jennings et al. 2019), which were used as the most current available information on wildlife corridors and linkages for the analysis in this EIR. The model output is provided in Figure 4.4-15. The SDSU model identifies land facet corridors and focal species linkages, which are terms used for spatial conservation planning. Land facet corridors are ecological wildlife movement corridors characterized by relatively homogeneous topographic and soil characteristics. These corridors are designed to facilitate wildlife movement and species dispersal across landscapes, particularly in the context of climate change. Focal species linkages refer to a network of connected habitats designed to support the movement and survival of specific, strategically chosen "focal" or target species to serve as indicators of the overall health and connectivity of the landscape and to protect a broader range of species and ecological processes within the connected landscape.

Multiple Species Conservation Plan

The MSCP (County of San Diego 1998) identifies landscape-level biological linkages that serve to connect large tracts of core habitat within the MSCP South County Subarea (the southwestern portion of the San Diego region) study area and to areas outside the MSCP South County Subarea study area. These linkages generally are formed by river valleys or mesa tops in the coastal plain. At times the linkages, particularly those formed by relatively narrow river valleys coursing through urbanizing areas, are identified as being constrained due to encroaching infrastructure or land development. Farther inland, the linkages become less constrained because there is far less encroachment. A total of 24 linkages are identified, as shown in Figure 4.4-15.



Sources: Jennings et al. 2019; BIOS 2025a, 2025b; adapted by Ascent in 2025.

Figure 4.4-15 Regional Wildlife Movement Corridors

These linkages are formed by various landscape features. Some are formed by westward-flowing drainages descending from the mountains and foothills. These consist of, from north to south, the San Dieguito River, Los Peñasquitos Creek, Poway Creek, the San Diego River, the Sweetwater River, and the Otay River. These and other drainages, including Santa Ysabel Creek, Dulzura Creek, and Cottonwood Creek, also provide linkages with core habitat outside the MSCP area. Additional linkages are formed by other diverse terrain features, such as the coastal mesa and ridgeline formed by Del Mar Mesa and Black Mountain and the foothills surrounding Poway Valley, as well as hilly terrain connecting various large blocks of inland habitat, such as the ridges connecting San Miguel Mountain with Rancho del Rey and the foothills surrounding Otay Lakes to the north, east, and south (San Miguel Mountain, Sequan Peak, the Jamul Mountains, and Otay Mountain). Linkages to habitat areas outside of the MSCP area are provided by the hilly terrain north of Lake Hodges, Boden Canyon, the San Vicente River Valley, Long's Gulch, Lake Jennings, Wildcat Canyon, Dehesa Valley, Lyons Valley, and Marron Valley.

Multiple Habitat Conservation Plan

The MHCP is the subregional plan for the northwestern portion of the San Diego region (SANDAG 2003). The preserve design incorporated linkages between the coastal lagoons and inland habitat areas (generally east–west corridors associated with riparian habitats). North–south linkages consist of fragmented habitat that provides stepping-stone connectivity for avian species with limited dispersal abilities, such as the federally threatened coastal California gnatcatcher (Bailey and Mock 1998); the stepping-stone concept was considered and is included in the modeling that resulted in the MHCP core and linkages maps. Figure 4.4-15 includes the MHPC modeled cores and linkages (shown in orange) as part of the regional wildlife movement and corridor context. The matrix of urban and agriculture areas between the core habitats creates a major barrier for north–south movement of most terrestrial species. However, some large blocks of habitat inside the MHCP area (e.g., south San Marcos and north Escondido) are contiguous with larger blocks of habitat beyond the MHCP boundaries and provide habitat connectivity at a regional scale.

Las Californias Binational Conservation Initiative

The Las Californias Binational Conservation Initiative identified three important linkages along the international border with Mexico using a digital land cover Spatial Portfolio Optimization Tool (CBI 2004). These linkages connect the Sweetwater River and Otay River watersheds in the southern part of the San Diego region, the binational Tijuana River watershed, and the Rio Guadalupe watershed in Baja California (SCW 2008). The Initiative goal was to conserve the integrity and biological diversity of the Las Californias region across the coast-mountain-desert gradient and urban-wildland gradient.

Pacific Flyway

The San Diego region is part of the Pacific Flyway, a major north–south migration route for birds that travel between North and South America. In Southern California, this migratory pathway spans a broad front, and migrating birds are not uniformly distributed across the landscape. In the spring, many birds migrating from their winter range in western mainland Mexico to their breeding range in Northern California, the Pacific Northwest, or Alaska use the San Diego region as a corridor for crossing from the desert to the coastal slope (Aspen Environmental Group 2008). Large numbers of waterfowl and shorebirds winter in San Diego's protected bays and lagoons, which contain shallow aquatic habitat used by many birds migrating along the Pacific Flyway. Conversely, raptors and other soaring birds typically follow mountain ridges during migration to take advantage of updrafts created by the topography.

ANTICIPATED EFFECTS FROM CLIMATE CHANGE

The San Diego region is a biodiversity hotspot, with more plants and mammals than any other county in the country (Jennings et al. 2018). The San Diego region is likely to experience a variety of climate change impacts that affect these biological resources during the timeframe of the proposed Plan. Climate change impacts in the San Diego region include sea-level rise of up to 1.3 feet by 2050 and up to 6.7 feet by 2100, wetter winters and more intense precipitation that can lead to increased flooding, a 12 percent decrease in runoff and streamflow due to less snowpack and greater evaporation, more intense heat waves and annual average temperature increases of up

to 4.8 degrees Fahrenheit (°F) by 2050, a longer and less predictable fire season, fewer coastal low clouds and less fog, longer and more humid heat waves, and increased pests and pathogens as a result of drought (CEP and SDF 2015; Kalansky et al. 2018; OPC 2024; Jennings et al. 2018).

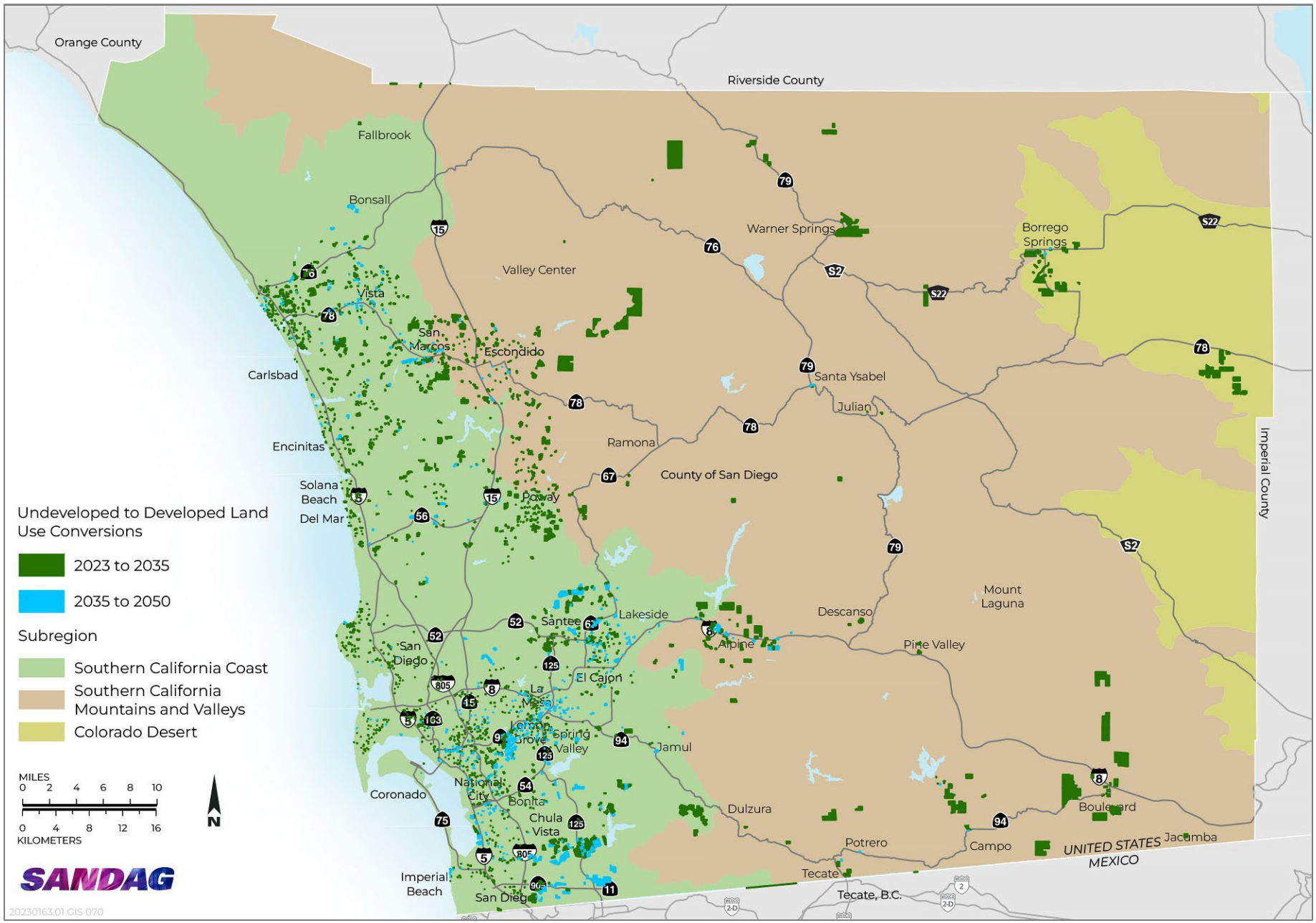
These types of changes can result in conditions that either stress biological resources, resulting in lower fitness or productivity (e.g., higher temperatures may reduce plant growth or plant reproduction rates resulting in lower plant biomass and potentially lower soil carbon levels) (Bradford et al. 2016; Hatfield and Prueger 2015; Ren et al. 2020), or complete loss of organisms that were pushed beyond their biological limits. While some biological resources may be able to adapt to changes, long-term climate trends may significantly affect the continuance of many species and their habitats in the San Diego region.

Climate change may result in adverse effects on habitats and wetlands, species health and productivity, and migratory pathways and timing. For example, sea-level rise can result in beach loss and limited inland migration space. For example, in response to sea-level rise, coastal wetlands migrate upstream and inland; however, in urbanized San Diego, space for wetlands to migrate is limited (Kalansky et al. 2018). Beach and dune wildlife such as a western snowy plover and other shorebirds that primarily nest on beaches and in foredunes have an increased risk of habitat loss due to flooding from sea-level rise and storms. (Thorne et al. 2024). A study of San Luis Obispo County found that sea-level rise along the coast could lead to increased erosion of coastal bluffs and beaches, coastal flooding, permanent inundation of coastal wetlands, and saltwater intrusion into freshwater supplies, all of which affect ecosystem health (Moser and Ekstrom 2012). Similarly, in San Diego, there is risk of flooding, inundation, erosion, saltwater intrusion, and water table rise. Chronic inundation could threaten open space and the environment, specifically salt marshes, beaches, dune communities, and riparian and bottomland habitat areas (City of San Diego 2020).

In riparian habitats, sea-level rise may increase saltwater intrusion into freshwater ecosystems, which may threaten species living in these environments (ICLEI 2012). In response to climate change, coastal wetlands, which act as nurseries for fish and birds, absorb nutrients and pollutants from rivers, trap atmospheric carbon, and provide places for people to recreate, are expected to become mud flats with less plant diversity (Kalansky et al 2018). Higher water temperatures in streams and estuaries, particularly in the San Diego region where water levels are relatively shallow, may cause thermal stress for species living there, making the habitat unsuitable (Jennings et al. 2018). Also, more frequent or intense drought conditions can change stream levels, particularly in areas with seasonal waterways like Southern California, which could damage riparian habitats (Hilberg et al. 2017; Jennings et al. 2018).

As habitats change and species face environmental stress due to changing temperature and precipitation patterns, plant and animal species may migrate to new habitats. While animals can move relatively quickly to new habitats, vegetation does not and changing conditions may surpass the pace that vegetation can move. Some climates, such as alpine climates, could disappear entirely in the future, whereas desert climates could expand significantly (Moser et al. 2012). Some habitats may expand whereas others are lost (Moser et al. 2012). If there is no suitable habitat nearby, species will be unable to migrate. The combination of human-driven land use change and changing climate conditions could negatively affect available habitat areas, including San Diego's scrublands and forests. As the habitat areas change, the species that depend on them could be negatively affected (USFWS 2010).

Climate change is projected to compound environmental stressors from human-caused disturbances, habitat fragmentation, and landscape changes (Jennings et al. 2018). Changes such as warmer temperatures, more variable precipitation resulting in high intensity flooding, more frequent droughts, destructive fires, and sea-level rise could affect species success.



Source: USFWS 2016; adapted by Ascent in 2025.

Figure 4.4-16 Undeveloped to Developed Land Use Conversions

4.4.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Federal Endangered Species Act

Administered by the USFWS and National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), the federal ESA provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction. Under ESA (7 USC Section 136, 16 USC Section 1531 et seq.), USFWS and NMFS have regulatory authority over species listed as endangered or threatened, as well as habitat of such species that has been designated as critical (i.e., critical habitat). Under ESA, authorization is required to "take" a listed species or adversely modify critical habitat. Take is defined under ESA Section 3 as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation (50 CFR 17.3, 222.102), harm is further defined, as of the date of the Draft EIR, to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. In April 2023, USFWS and NMFS proposed to eliminate this regulatory of "harm" (USFWS and NOAA 2025), but this change had not been adopted at the time of Draft EIR preparation.

USFWS-designated critical habitat for endangered and threatened species is defined as a specific geographic area that is essential for species recovery and conservation of a threatened or endangered species and that may require special management and protection. Critical habitat is generally designated when a species is listed pursuant to the ESA and may include an area that is not currently occupied by the species but that will be needed for its recovery. Critical habitat designations are not made for every species listed under the ESA. The designation process also takes into account economic, national security, and other impacts and may result in the exclusion of some habitat areas from critical habitat designation (16 USC Section 1533[b][2]). Military installations are generally excluded from critical habitat designations; however, they are required by the Sikes Act (16 USC Sections 670a–670f, as amended) to prepare Integrated Natural Resource Management Plans (INRMPs).

Specifically, Sections 7 and 10(a) of the ESA regulate actions that could jeopardize endangered or threatened species. Candidate species do not fall under any statutory protections but may be included in regional and local conservation plans and considered under USFWS-issued biological opinions. ESA Section 7 outlines procedures for federal interagency consultation to conserve federally listed species and designated critical habitat. Section 7(a)(2) and its implementing regulations (50 CFR Part 402) require federal agencies to consult with USFWS or NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of critical habitat.

For projects where federal action is not involved and take of a listed species may occur, the project proponent may seek to obtain an incidental take permit (ITP) under ESA Section 10(a), which allows issuance of permits for incidental take of endangered or threatened species. The term "incidental" applies if the taking of a listed species is incidental to and not the purpose of an otherwise lawful activity. An HCP demonstrating how the taking would be minimized and what steps would be taken to ensure the species' survival must be submitted for issuance of Section 10(a) permits.

Sikes Act

Congress established the Sikes Act in 1960 to manage military lands for wildlife conservation and human access (16 USC Section 670 et seq.). The Sikes Act was amended in 1997 to require development and implementation of mutually agreed upon INRMPs through voluntary cooperative agreements between the Department of Defense installations, USFWS, and the respective state fish and wildlife agencies (e.g., CDFW). INRMPs are planning documents used to implement planning, development, maintenance, and coordination of natural resource conservation and rehabilitation on military lands in consideration of the military's missions and obligations.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) domestically implements a series of international treaties that provide for migratory bird protection (16 USC Section 703 et seq.). The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds. The act provides that it is unlawful, except as permitted by regulations, "to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, […] any migratory bird, or any part, nest, or egg of any such bird" (16 USC Section 703[a]). Species protected under the MBTA are listed in. Most native birds in the San Diego region are protected under the MBTA. The USFWS issues permits under the MBTA to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, educational, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal; USFWS does not issue permits for "incidental take" of migratory birds that results from otherwise lawful activities, such as infrastructure, transportation projects, facility structures, or other activities.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) is the primary law protecting eagles, including individuals, and their nests and eggs (16 USC Section 668 et seq.). It defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb" (16 USC Section 668c). Disturb is defined by regulation at 50 CFR 22.6 as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause…(1) injury to an eagle, (2) a decrease in productivity…, or (3) nest abandonment…". Under the BGEPA Eagle Permit Rule (50 CFR 22200), USFWS may issue permits to authorize limited, nonpurposeful take of bald eagles and golden eagles.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972 prohibits, with certain exceptions, the take of marine mammals. The MMPA defines take to mean the harassment, hunting, capture, or killing of any marine mammal, or attempt to harass, hunt, capture, or kill any marine mammal (16 USC Section 31). The primary authority for implementing the act belongs to NMFS. Harassment is defined in 16 USC Section 1362(18) as any act of pursuit, torment, or annoyance that:

- has the potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or,
- has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (Level B Harassment).

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), establishes procedures designed to identify, conserve, and enhance EFH for species regulated under a federal FMP. EFH is defined as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 USC Section 1801 et seq.). The Magnuson-Stevens Act also requires federal agencies to consult with NMFS on all actions or proposed actions permitted, funded, or undertaken by the agency that may adversely affect EFH. NMFS encourages streamlining the consultation process by using review procedures under the National Environmental Policy Act (NEPA), Fish and Wildlife Coordination Act, CWA, and ESA provided the documents meet the requirements for EFH assessments under 50 CFR Section 600.920(e). EFH assessments must include (1) a description of the proposed action; (2) an analysis of effects, including cumulative effects; (3) the federal agency's views regarding the effects of the action on EFH; and (4) proposed mitigation, if applicable.

Marine Protection, Research, and Sanctuaries Act

In 1972, Congress enacted the Marine Protection, Research, and Sanctuaries Act (MPRSA) (also known as the Ocean Dumping Act). Permitting standards under the MPRSA prohibit the dumping of material into the ocean that

would unreasonably degrade or endanger human health or the marine environment (16 USC Section 1431 et seq.; 33 USC Section 1401 et seq.; 40 CFR 227). MPRSA regulates the ocean dumping of all material beyond the territorial limit (3 miles from shore) and prevents or strictly limits dumping material that "would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." Virtually all material ocean dumped today is dredged material (sediments) removed from the bottom of waterbodies in order to maintain navigation channels and berthing areas. Ocean dumping cannot occur unless a permit is issued according to Section 103 of the MPRSA (33 USC Section 1413), which authorizes USACE to issue permits, subject to U.S. Environmental Protection Agency (EPA) approval, for transport and disposal of dredged material (e.g., material excavated from navigable U.S. waters) at designated ocean disposal sites. For other materials, EPA is the permitting agency. EPA is also responsible for designating recommended ocean dumping sites for all types of materials.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC Section 403), administered by USACE, requires USACE authorization for structures in, over, or under navigable waters of the United States or the accomplishment of work affecting the course, location, condition, or capacity of navigable waters of the United States. Navigable waters of the United States generally describes waters that are subject to the ebb and flow of the tide shoreward to the mean high water mark, or presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. Work typically includes any dredging or disposal of dredged material, excavation, filling, or other modification of navigable waters of the United States. Structure typically refers to any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial reef, permanent mooring structure, power transmission line, or any other obstacle or obstruction. Typical activities requiring authorization under Section 10 of the RHA are construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats, intake structures, and cable or pipeline crossings, as well as dredging and excavation.

Section 9 of the Rivers and Harbors Act

Section 9 of the RHA (33 USC Section 491) prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waterways of the United States without congressional approval. The U.S. Coast Guard (USCG) administers Section 9 and issues permits under the General Bridge Act (see below) over navigable waters. Navigable waters that require a USCG bridge permit are defined as "(1) tidal and used by recreational boating, fishing, and other small vessels 21 feet or greater in length or (2) used or susceptible to use in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce." It is to the discretion of the USCG to determine the navigability of these waters.

General Bridge Act of 1946

USCG administers the Bridge Administration permit process. A USCG bridge permit is needed for the construction, reconstruction, or modification of any bridge or causeway across navigable waters of the United States. A bridge is usually defined as the entire span plus footings, typically from abutment to abutment. For the purposes of bridge permitting, a navigable waterway is defined as any waterway that is subject to tidal action or is presently used or could be used for the transport of interstate or foreign commerce. USCG issues bridge permits under the authorities of both Section 9 of the RHA (see above) and the General Bridge Act of 1946. In cases when USCG issues a bridge permit, authorization from USACE under Section 10 of the RHA is not required. However, authorization under Section 404 of the CWA may still be required. The issuance of a bridge permit is relevant to biological resources because it would constitute a federal action, subject to NEPA (42 USC Section 4321–4347, as amended) that would trigger Section 7 consultation if federally listed endangered or threatened species are present and consultation with NMFS should EFH be present.

Clean Water Act

The purpose of the CWA, also Federal Water Pollution Control Act (33 U.S.C. Section 1251 et seq.) is to restore and maintain the chemical, physical, and biological integrity of all waters of the United States for the conservation of

the nation's potable water sources. Since the enactment of the CWA the definition of waters of the United States has undergone several revisions and updates through administrative rule changes from EPA, including in 2020, 2021, and 2023. At the time of Draft EIR preparation, accepted regulations defining waters of the United States follow the plurality opinion written following the *Sackett v. Environmental Protection Agency* (598 U.S. Docket No. 21-454) Supreme Court of the United States ruling on May 25, 2024, and the subsequent September 8, 2023, publication of the EPA's conforming rule: "Revised Definition of 'Waters of the United States,' Conforming" (USACE and EPA 2023), which amended the previously issued 2023 rule. This rule provides a new interpretation of the term "adjacent" whereas wetlands must contain a surface hydrologic connection to other waters of the United States to be considered adjacent waters of the United States. Additionally, this new rule eliminates the applicability of the significant nexus standard for "non-relatively permanent waters," so ephemeral features are no longer likely to be considered waters of the United States.

The 2023 definition of waters of the United States supersedes the all previous definitions of waters of the United States. Section 404 of the CWA (33 USC Sections 401 et seq., 1344, and 1413 and 33 CFR 323), as previously implemented by USACE. The rule still requires authorization by USACE for the discharge of dredged or fill material into waters of the United States (as defined at 33 CFR 328.3[a]) under Section 404 of the CWA. Dredged material means material that is excavated or dredged from waters of the United States. Fill material means material placed in waters if the United States where the material has the effect of replacing any portion of a waters of the United States with dry land or changing the bottom elevation of waters of the United States. Examples of fill material include rock, sand, soil, clay, plastics, woodchips, concrete, and materials used to create any structure or infrastructure in waters of the United States.

Section 401 of the CWA requires a water quality certification or waiver be issued by the regulating state or tribal authority thereof before any federal permit can be issued "to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge." Therefore, projects requiring authorization by USACE under Section 404 of the CWA or Section 10 of the RHA may need to obtain water quality certification. California's State Water Resources Control Board (SWRCB) and RWQCBs, and EPA are responsible for issuing Section 401 Water Quality Certifications.

Coastal Zone Management Act

The Federal Consistency Unit of CCC implements the federal Coastal Zone Management Act (CZMA) of 1972, Section 307(c)(1) as amended, for federal activities, development projects, permits, licenses, and support to state and local governments. In the CZMA, Congress created a federal and state partnership for management of coastal resources as the primary federal law enacted to preserve and protect coastal resources (33 USC Section 1451 et seq.). The federal CZMA, as amended, requires that federal actions that affect any land or water use or natural resource of a state's coastal zone be consistent, to the maximum extent practicable, with the enforceable policies of a federally approved state coastal zone management plan. The California Coastal Management Program, which includes the CCA of 1976, is the federally approved coastal zone management plan for California.

Regulatory authority, including federal consistency review, is granted to CCC. One of the most significant provisions of the federal CZMA gives state coastal management agencies regulatory control (federal consistency review authority) over all federal activities and federally licensed, permitted, or assisted activities, wherever they may occur (i.e., landward or seaward of the respective coastal zone boundaries fixed under state law) if the activity affects coastal resources.

Executive Order 11988, Floodplain Management

Executive Order (EO) 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. This EO provides an eight-step process that agencies carry out as part of their decision-making process for projects that have potential impacts on or within a floodplain.

Executive Order 11990, Protection of Wetlands

Under EO 11990, each federal agency is responsible for preparing implementing procedures for carrying out the provisions of the EO. The purpose of this EO is to "minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands." Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for any activity located in wetlands, unless the head of the agency finds that there is no practical alternative to such activity, and the proposed action includes all practical measures to minimize harm to wetlands that may result from such actions.

Executive Order 13112, Invasive Species

EO 13112 requires federal agencies to "prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health effects that invasive species cause." An invasive species is defined by the EO as "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." Alien species are defined, with respect to a particular ecosystem, as any species (including its seeds, eggs, spores, or other biological material capable of propagating that species) that is not native to that ecosystem.

Executive Order 13186, Migratory Birds

EO 13186 requires federal agencies to develop a comprehensive strategy for the conservation of migratory birds by the federal government, thereby fulfilling the government's duty to lead in the protection of this international resource. Each federal agency is required to enter into a memorandum of understanding (MOU) with USFWS outlining how the agency will promote conservation of migratory birds. The EO also requires federal agencies to incorporate migratory bird conservation measures into their agency activities. The EO does not affect federal-aid projects because actions delegated to or assumed by nonfederal entities, or carried out by nonfederal entities with federal assistance, are not subject to the EO, although such actions continue to be subject to the MBTA itself.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California Endangered Species Act

CESA provides a process by which plants and animals can be recognized as being endangered or threatened with extinction. Pursuant to the CESA, a permit from CDFW is required for projects that could result in the taking of a plant or animal species that is state listed as threatened or endangered (CFGC Section 2050 et seq.). Under CESA, take means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (CFGC Section 86). The CESA definition of take does not include "harm" or "harass," as the ESA definition does. As a result, the threshold for take is higher under CESA than under ESA. Authorization for take of state-listed species may be obtained through a CFGC Section 2081 incidental take permit or CFGC Section 2080.1 consistency determination (for applicants who have already obtained a federal incidental take statement or permit for the same species) or a Section 2081 ITP.

Natural Community Conservation Planning Act

The NCCP Act of 1991, amended 2003, is a federal and state cooperative effort to engage in regional multiple species conservation planning. The ESA Section 4(d) special rule for interim take of coastal California gnatcatchers was promulgated in response to California's NCCP Act of 1991 and the initiation of NCCP plans targeting coastal sage scrub (gnatcatcher habitat). NCCPs provide regional or area-wide protection of plants and animals, reconcile urban development and wildlife needs, "conserve" state-listed species to the point where they can be delisted, and maintain or enhance conditions for covered species such that listing will not become necessary (CFGC Section 2800 et seq.). The NCCP Act was amended again in 2011 to allow CDFW to authorize incidental take of "fully protected" species if they are "covered species" under an adopted NCCP.

California Fish and Game Code Section 1602: Lake or Streambed Alteration

CDFW regulates alterations to or impacts on streambeds or lakes under Section 1602 of the CFGC. All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that

supports wildlife resources are subject to regulation by CDFW under CFGC Section 1602. Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first submitting a complete notification of lake or streambed alteration to CDFW:

- substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The California Fish and Game Commission defines "stream" as a body of water that flows at least periodically or intermittently through a bed or channel that has banks and supports fish or other aquatic life. This definition includes watercourses with a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. CDFW requires a streambed alteration agreement (SAA) for projects that would result in an impact on a river, stream, or lake; divert or obstruct the natural flow of water; change the bed, channel, or bank of any stream; or use any material from a streambed. The SAA is a contract between the applicant and CDFW stating what activities can occur in the riparian zone and stream course.

California Fish and Game Code Sections 3503 and 3503.5: Protection of Birds, Nests, and Raptors

CFGC Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. These code sections do not provide for the issuance of any type of ITP.

Fully Protected Species under the California Fish and Game Code (California Fish and Game Code Sections 3511, 4700, 5050, and 5515)

Protection of fully protected species is described in CFGC Sections 3511, 4700, 5050, and 5515. These statutes prohibit take or possession of fully protected species under most circumstances. Incidental take of fully protected species may be authorized under an adopted NCCP. SB 147 of 2023 also authorizes take of fully protected species for certain project types under certain conditions, These include transportation projects that do not increase highway or street capacity.

California Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (CFGC Section 1900 et seq.) directs CDFW to carry out the legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gives the California Fish and Game Commission the power to designate native plants as "endangered" or "rare," and to protect endangered and rare plants from take.

Porter-Cologne Water Quality Control Act: California Water Code Section 13000 et seq.

SWRCB and the RWQCBs, as appropriate, have the responsibility to implement and enforce the Porter-Cologne Water Quality Control Act (Porter-Cologne Act, California Water Code Section 13000 et seq.), which regulates waste discharge into waters of the state. The Porter-Cologne Act grants the RWQCBs the authority to implement and enforce the water quality laws, regulations, policies, and plans to protect the groundwater and surface water of the state. The RWQCB regulates the "discharge of waste" to waters of the state. Discharge of waste is also broadly defined in the Porter-Cologne Act, such that discharges of waste include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact waters of the state relative to implementation of Section 401 of the CWA.

Under the Porter-Cologne Act, all parties proposing to discharge waste that could affect the quality of waters of the state, other than into a community sewer system, are required to file with the appropriate RWQCB a report of waste discharge (ROWD) containing such information and data as may be required by the RWQCB. The RWQCB will then respond to the ROWD by issuing a waste discharge requirement (WDR) in a public hearing or by waiving WDRs (with or without conditions) for that proposed discharge.

The RWQCB collaborates with other agencies on the enforcement of the act, such as CDFW and USACE. Generally, when staff issue or waive 401 certification, WDRs are simultaneously waived. However, for large or multiyear projects that are being reviewed under Section 401 of the CWA, staff may determine that WDRs should also be issued, whereby additional review by the RWQCB and a public hearing will be necessary. However, waters of the state that are not regulated as federal waters by the USACE, the RWQCB may require issuance of WDR authorization.

On April 2, 2019, SWRCB adopted a state wetland definition and procedures for discharges of dredged or fill material to waters of the state (Procedures), which became effective on May 28, 2020 (SWRCB 2020). SWRCB developed the Procedures to address multiple issues, including the need to strengthen protections of waters of the state that are not protected under CWA due to past Supreme Court rulings. The Procedures define an area as a wetland if it meets three criteria: wetland hydrology, wetlands substrate, and wetland plants. The state wetland definition varies slightly from the federal definition to account for wetlands in arid portions of the state and clarifies that under normal circumstances an area may be a wetland even if it lacks wetland vegetation. The Procedures further clarify when a wetland is a water of the state. In light of the 2020 waters of the United States rule, wetlands that are no longer regulated under the CWA will likely remain waters of the state requiring issuance of a WDR. In December 2020, a Sacramento trial court enjoined SWRCB implementation of the Procedures due to errors in the adoption process. SWRCB responded to several legal challenges and approved a resolution on April 6, 2021 (SWRCB 2021), to apply the Procedures to waters of the state as a matter of state policy for water quality control. Therefore, the Porter-Cologne Act continues to require WDRs for discharges to waters of the state, as implemented through the 2019 Procedures as revised on April 26, 2021.

California Coastal Act

Pursuant to California Public Resource Code Section 30000 et seq., CCC regulates coastal resources within the coastal zone under jurisdiction of the CCA (as amended). The coastal zone is identified as the land and water area of the state of California extending seaward to the state's outer limit of jurisdiction (3 miles offshore) including all offshore islands and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine habitat and recreational areas, it extends inland to the first major ridgeline paralleling the sea or 5 miles from the mean high tide line of the sea, whichever is less, and in developed urban areas, the zone generally extends inland less than 1,000 yards.

The CCC, through provisions of the CCA, is authorized to issue a coastal development permit (CDP) for projects located within the coastal zone. In areas where a local entity has a certified local coastal program (LCP), the local entity can issue a CDP only if it is consistent with the LCP. CCC, however, has permit and appeal authority for portions of LCPs and retains jurisdiction over certain public trust lands and in areas without an LCP (CCC 1994).

With respect to biological resources, Section 30240 of the CCA states that environmentally sensitive habitat areas (ESHAs) "shall be protected against any significant disruption of habitat values and only uses dependent on those resources shall be allowed within those areas." It further states that development in areas adjacent to ESHAs, parks, and recreation areas must be sited and designed to prevent impacts that would significantly degrade those areas and must be compatible with the continuance of those habitat and recreation areas. Section 30233 of the CCA addresses the diking, filing, or dredging of open coastal waters, wetlands, and estuaries.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

Natural Community Conservation Planning Program and Habitat Conservation Plans

California's NCCP Program focuses largely on conserving large areas of native habitat and the habitats that link those areas to help preserve California's native fauna and flora at the landscape and regional levels. While NCCPs are governed by the California NCCP Act, the ESA requires the issuance of HCPs. NCCPs and HCPs are prepared to be compliant with the requirements under CESA, the NCCP Act, the NPPA, and Section 10(a)(1)(B) of ESA, respectively. NCCPs and HCPs may be combined to provide take authorization under federal and state law.

The following sections describe approved and adopted subarea or subregional plans under the NCCP within the San Diego region. Conflicts with unapproved or unadopted plans do not require analysis under CEQA (see CEQA Guidelines Section 15125[d][e]). In March 2021, the County of San Diego reinstated the planning agreement with USFWS and CDFW for the North and East County MSCP plans (County of San Diego 2021). The reinstatement sets the parameters, goals, and completion schedule for both plans, which will include impacts on aquatic resources under federal and state jurisdictions. Under the interim project processing guidelines outlined in the planning agreement, the County of San Diego considers impacts on the proposed preserve design of the Draft North County MSCP (County of San Diego 2019) during the projects' CEQA process to ensure that proposed projects are consistent with the preliminary conservation objectives and do not compromise the successful completion of the plans. These NCCPs are included in Appendix E-4.

Multiple Species Conservation Program

The MSCP was approved in August 1997 as a cooperative effort by the City of San Diego, County of San Diego, and other jurisdictions in the southwestern San Diego region to implement a regional NCCP and HCP (see Table 4.4-5) the document was updated in 1998 (County of San Diego 1998). The MSCP serves as an umbrella document and gives local jurisdictions the opportunity to obtain coverage as signatories through their respective subarea plan agreements. The MSCP subarea plans contribute collectively to the landscape-level conservation of vegetation communities and species in the MSCP study area by identifying contiguous preserves and setting conservation goals and schedules. Entities with adopted subarea plans must employ a system to track habitat gains and losses over time toward their conservation goals, which are included in annual reports for each subarea plan. Annual reports are available to the public.

Municipal MSCP Subarea Plans

USFWS and CDFW have issued a permits (50-year permit term) to five of the nine jurisdictions within the MSCP plan boundary. The Cities of Chula Vista, La Mesa, Poway, and San Diego (City of San Diego 1997), and the County of San Diego (South County) have adopted subarea plans under the County of San Diego MSCP and have developed municipal guidelines and ordinances to implement their subarea plans. The cities of Coronado, Del Mar, El Cajon, and Santee do not have approved adopted subarea plans under the MSCP (the City of Santee is currently preparing a subarea plan for approval), thereby requiring project-based regulatory approvals under ESA and CESA.

The County of San Diego developed the South County MSCP Subarea Plan to cover all unincorporated areas of the County south of Lake Hodges (County of San Diego 1997). The MSCP Subarea Plan identified MSCP Preserves, which include areas that were negotiated to be preserve land prior to or concurrently with the approval of the South County MSCP Subarea Plan, and softline preserve areas that are identified to contain future preserved lands as part of the Plan's conservation cores and linkages. The County of San Diego is also currently finalizing the North County MSCP, which includes lands within the unincorporated county that are not covered under the MHCP or South County MSCP. While the County is not yet implementing the North County MSCP, it has completed the conservation design and identified priority areas for conservation that are being considered in the CEQA analysis of development projects within the North County MSCP planning area. Although a planning effort for the eastern portions of the San Diego region was considered by the County of San Diego in 2008, the East County MSCP planning efforts have slowed. Preliminary conservation design has been completed for this area and has identified

focused areas for conservation that are considered during CEQA analysis of development projects, as described above for North County. Neither the North County nor the East County MSCP has been adopted.

Although the County is not yet implementing the North County MSCP, it has developed a preserve system consisting of hardline and softline preserves (Pre-Approved Mitigation Area [PAMA]) that is being considered in the CEQA analysis of development projects within the North County MSCP planning area. While a planning effort for the eastern portions of the San Diego region was considered by the County of San Diego in 2008, the East County MSCP planning efforts have slowed because the majority of the eastern San Diego region is occupied by federal lands (e.g., U.S. Forest Service and Bureau of Land Management) and already receives an appreciable degree of conservation under federal laws, ordinances, and guidelines.

In March 2021, the County of San Diego reinstated their planning agreement with USFWS and CDFW regarding the North and East County MSCPs. The planning agreement includes milestones for the finalization of the MSCPs and a draft covered species list. The North County MSCP adoption is anticipated in late 2026.

A summary of approved adopted subarea plans under the County of San Diego MSCP Subregional Plan is provided in Table 4.4-5. Regional habitat conservation planning areas and conserved lands are illustrated in Figure 4.4-17.

City of San Diego Vernal Pool Habitat Conservation Plan

The City of San Diego, in order to provide more comprehensive federal coverage for these habitats than offered under the city's MSCP Subarea Plan for vernal pool species, has developed a VPHCP (City of San Diego 2017) covering seven threatened and endangered vernal pool species, including five plant and two crustacean (fairy shrimp) species. The VPHCP provides take authorization for these species and specific "covered projects," and expands the city's existing multi-habitat planning area preserve boundary to conserve additional vernal pools. The VPHCP also includes a management and monitoring plan to provide for long-term protection, management, and enhancement of vernal pool habitat and the seven covered species.

Table 4.4-5 Summary of Approved or Implemented Subarea Plans under Adopted MSCP/MHCP Subregional Plans in the San Diego Region

Plan	Effective Date	Description
City of San Diego MSCP Subarea Plan	1997	The subarea plan encompasses 206,124 acres and was approved in July 1997 (City of San Diego 1997). The City of San Diego's Subarea Plan developed an MHPA that delineates core biological resource areas and corridors targeted for conservation. Specific policies and directives have been developed for different areas within the MHPA, which is largely composed of core biological resource areas and regional linkages leading to biological core areas within existing reserves and parks. The MHPA covers approximately 56,831 acres, of which 90% will be preserved for biological purposes.
City of San Diego Vernal Pool Habitat Conservation Plan (VPHCP)	2018	The Vernal Pool HCP was developed as a response to legal action that removed all vernal pool–associated covered species from the city's MSCP Subarea Plan (City of San Diego 2018). The VPHCP was finalized in 2017, approved by the city in January of 2018, and permitted by USFWS on August 3, 2018. It covers the same plan area as the city's MSCP Subarea Plan.
County of San Diego (South County) MSCP Subarea Plan	1997	The County subarea is located in the eastern part of the MSCP Subregion. The subarea encompasses 252,132 acres (184,248 acres is habitat), of which 101,268 acres will be conserved. The County MSCP Subarea Plan was approved by the wildlife agencies in March 1998 (County of San Diego 1997). Three segments are included in the plan: Lake Hodges, South County, and Metro-Lakeside-Jamul.
City of Chula Vista MSCP Subarea Plan	2005	This subarea plan covers approximately 57,828 acres and seeks to preserve 5,000 acres within the city's jurisdiction, while 4,200 acres outside the city's jurisdiction is proposed for preservation. The plan will preserve approximately 9,201 acres. Approved in 2003, the Final MSCP Subarea Plan was completed in 2005 (City of Chula Vista 2003).
City of La Mesa MSCP Subarea Plan	2000	Remaining habitat in this subarea consists largely of coastal sage scrub, and all losses will be mitigated elsewhere. Approved in 1999, permits were issued in 2000 (City of La Mesa 2000).

Plan	Effective Date	Description
City of Poway MSCP Subarea Plan	1996	The City of Poway MSCP Subarea Plan provides for incidental take coverage for 43 plant and animal species. It encompasses 35,000 acres and establishes a 13,300-acre mitigation area. This was the first subarea plan approved under the Subregional MSCP (City of Poway 1996).
City of Carlsbad HMP–MHCP Subarea Plan	2004	On November 15, 2004, the City of Carlsbad HMP was approved, and state and federal permits were issued to implement the city's MHCP (City of Carlsbad 2004). The Carlsbad Subarea Plan is the first to be approved and permitted under the MHCP Subregional Plan. The subarea encompasses 24,570 acres (8,758 acres is habitat). At build-out, the preserve system is expected to cover approximately 6,786 acres, consisting mostly of natural upland and wetland habitats, including coastal sage scrub, chaparral, oak woodland, riparian scrub, riparian forest, freshwater marsh, and grasslands. The Carlsbad Subarea Plan provides for the conservation of 43 species.

Notes: MSCP = Multiple Species Conservation Program; MHPA = Multi-Habitat Planning Area; MHCP = Multiple Habitation Conservation Program; HMP = Habitat Management Plan.

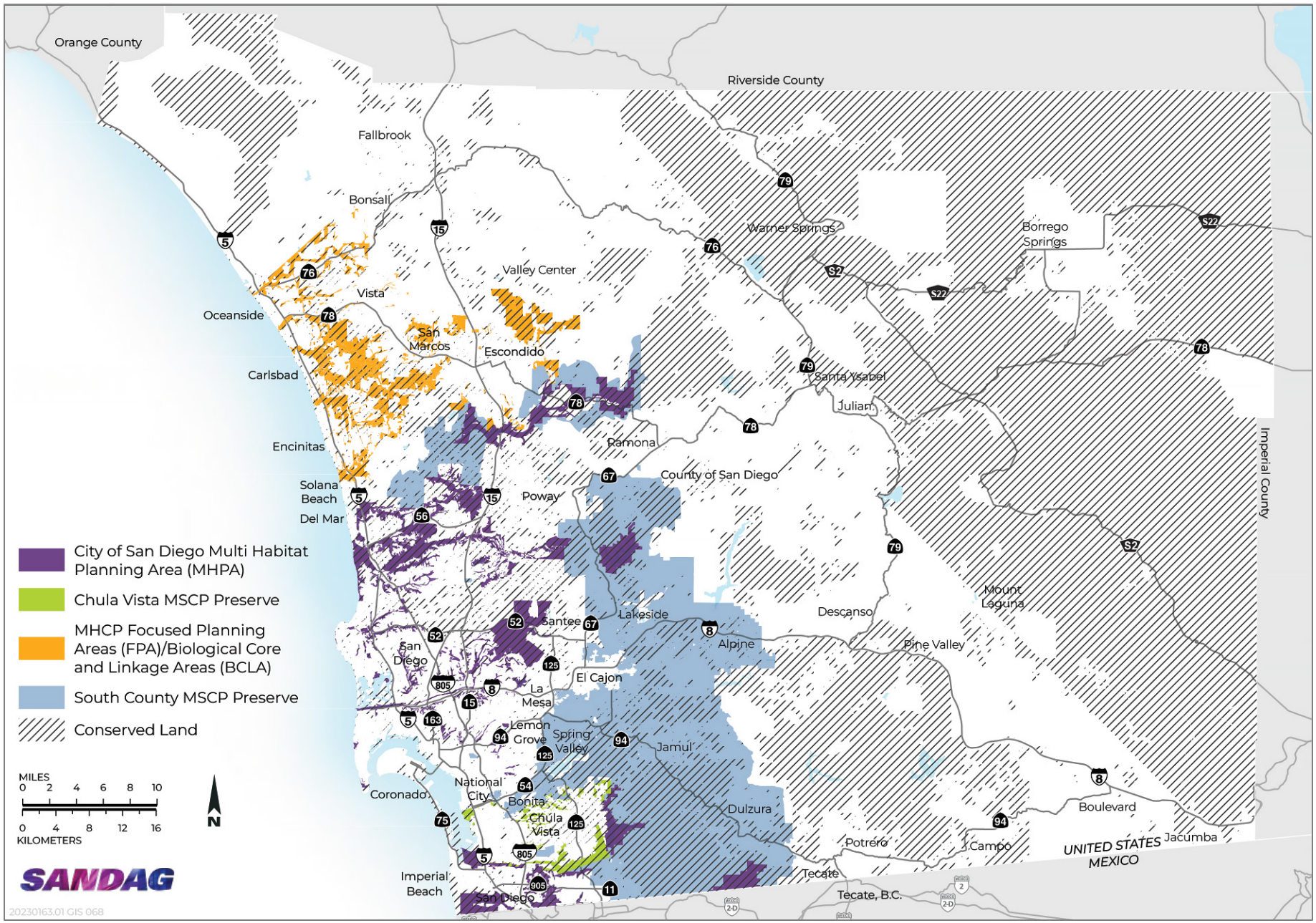
Multiple Habitat Conservation Program

The MHCP is an NCCP and HCP for the northwestern portion of the San Diego region (cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach, and Vista) and was approved by the SANDAG Board of Directors on March 28, 2003 (SANDAG 2003). The MHCP encompasses 111,908 acres (29,962 acres of natural habitat) and provides conservation for 77 species in a 20,593-acre reserve. Similar to the MSCP, the MHCP serves as an umbrella document for local jurisdictions that implement their respective portions of the MHCP through subarea plans. The MHCP subarea plans contribute collectively to the conservation of vegetation communities and species in the MSCP study area. The MHCP also received a 50-year Implementing Agreement (IA) from USFWS and CDFW; gains and losses to the overall preserve system is tracked similarly as those for the MSCP.

On November 15, 2004, the City of Carlsbad Habitat Management Plan (HMP) (City of Carlsbad 2004) was approved, and state and federal permits were issued. The Cities of Encinitas, Escondido, Oceanside, San Marcos, and Vista do not have adopted subarea plans under the MHCP. The City of Encinitas implements an Open Space Management Plan that identifies local conservation goals according to the MHCP. The City of Oceanside in collaboration with the USFWS and CDFW implements the Oceanside Draft MHCP Subarea Plan through the city's plan check approvals (City of Oceanside 2021; Gamble, pers. comm. 2025). The City of Solana Beach does not require take authorizations and therefore did not prepare a subarea plan. The status of the subarea plans under the MHCP is summarized in Table 4.4-5. Regional habitat conservation planning areas and conservation lands (which consists of the preserve design comprised of biological cores and linkages consistent with the MHCP preserve design) are illustrated in Figure 4.4-17.

San Diego County Water Authority Natural Community Conservation Plan/Habitat Conservation Plan

The San Diego County Water Authority (SDCWA) adopted a combined NCCP/HCP to address potential impacts on sensitive resources associated with new construction and typical expansion of existing infrastructure; ongoing installation, use, maintenance, and repair of its aqueduct and water conveyance, treatment, and storage systems; and acquisition of new and management/monitoring of all existing preserve area lands throughout the plan area (SDCWA 2011). The plan area covers approximately 992,000 acres in western San Diego and southwestern Riverside counties. The implementing agreement for the plan was issued by USFWS and CDFW on September 28, 2011. The plan covers 28 plant species and 38 wildlife species for a total of 66 covered species. Of the approximately 1,920 acres of preserve area committed to be conserved by the plan, 1,220 acres have been set aside as compensation for previously permitted projects, and approximately 700 acres are available or will be created to be used as credits to compensate for project impacts on upland and wetland habitats. In addition, SDCWA has previously conserved 1,147 acres of regionally important habitat lands (i.e., managed mitigation areas) that contribute to the baseline of conservation within the plan area.



Sources: BIOS 2025a, 2025b; Hoang, pers. comm., 2025; SANGIS 2025b; SDMMP 2020, 2024; adapted by Ascent in 2025.

Figure 4.4-17 San Diego Conservation Planning Areas and Conserved Lands

San Diego Gas and Electric Subregional NCCP

In 1995, San Diego Gas and Electric (SDG&E 1995) developed the first NCCP in the region for linear projects and specified operation and maintenance activities in SDG&E's service area from southern Orange County south to the Mexico border. The NCCP covers 110 plant and animal species and emphasizes avoidance of impacts while establishing mitigation requirements that may include revegetation or use of mitigation credits set aside in several land parcels purchased by SDG&E as a conservation bank. SDG&E's properties and easements play an important role in the NCCP region in providing habitat connectivity in areas where little natural habitat remains. The NCCP authorizes up to 400 acres of permanent and temporary impacts on habitat for covered species; an amendment would be required to authorize additional take. SDG&E received approval of a low-effect HCP for Quino checkerspot butterfly (*Euphydryas editha quino*) in 2008. On March 15, 2017, USFWS issued an ITP (TE26660C-0) for the *Low-Effect Habitat Conservation Plan for Areas Where San Diego Gas and Electric Company Conducts Its Routine Utility Operations and Maintenance,* which provided coverage for an additional 60 acres supporting 37 covered species and extended the permit term by 5 years (USFWS 2017).

On April 10, 2024, SDG&E requested that USFWS and CDFW coordinate to issue a Fish and Game Code Section 2080.1 consistency determination as an alternative to a full NCCP amendment due to agency timing limitations, and this state process is still ongoing at the time of Draft EIR preparation. Finally, on November 16, 2023, USFWS approved the amendment to SDG&E's HCP (PRT-809637) providing coverage for additional species for the remaining 27-years of the permit. The plan covers 41 listed species and 11 nonlisted species.

TransNet Environmental Mitigation Program

An important component in regional conservation planning is the TransNet Extension Ordinance and Expenditure Plan, which was approved countywide by voters in November 2004 and includes the Environmental Mitigation Program (EMP) administered by SANDAG and implemented by the Regional Conservation Task Force. The EMP consists of direct mitigation of planned transportation projects and the regional habitat acquisition, management, and monitoring activities necessary to implement ongoing regional habitat conservation planning efforts (SANDAG 2025). Through the Regional Conservation Task Force, SANDAG works collaboratively with representatives from the City of San Diego, County of San Diego, the four SANDAG subregions, state and federal wildlife agencies (CDFW and USFWS), other regulatory agencies (CCC, USACE, EPA, and RWQCB), and representatives of various stakeholder groups, including conservation and habitat management organizations, the environmental community, and the science/technical community (SANDAG 2025). The EMP provides funding for the acquisition, restoration, and management costs associated with mitigation for impacts on habitat resulting from regional and transportation projects and local streets and road, and for the implementation of the local NCCPs.

The SDMMP, established in 2008, facilitates and assists SANDAG, local jurisdictions, wildlife agencies, and other regional stakeholders and land managers in the implementation of conservation management and monitoring within the San Diego region. This region-wide effort was created to implement long-term management strategies identified in the San Diego NCCPs and is partially funded through SANDAG's EMP. The SDMMP's goal is to assist with the alignment of regional efforts to implement activities identified in the Management Strategic Plan (MSP) (SDMMP 2017). The MSP identifies priority species, and has developed and is currently developing, best management practices (BMPs) and protocols for sensitive plants and animals, wildlife movement, fire management, and grazing management. The SDMMP developed and maintains a conserved lands and species database (Master Occurrence Matrix, MOM) that is frequently updated (Figure 4.4-17) and a library containing studies and reports relevant to the regional conservation efforts funded by the TransNet Program.

Local Jurisdiction General Plan Policies and Ordinances

Local jurisdictions have adopted ordinances or general plan policies to protect and preserve open space, trees, sensitive habitats, and waters and wetlands. The County of San Diego has promulgated biological protection ordinances, regulations, and guidelines, including the BMO for implementing the South County MSCP Subarea Plan; the RPO for regulating impacts on sensitive biological resources and wetlands; the HLP Ordinance consistent

with the Special 4(d) Rule under ESA (50 CFR 17.41[b]); and the Zoning Ordinance that applies specific restrictions and provisions.

Several ordinances or regulations, such as the City of Chula Vista's Habitat Loss and Incidental Take regulations, and the City of San Diego's ESL Regulations and accompanying Biology, Steep Hillside, and Coastal Bluffs and Beaches Guidelines, are used to implement their respective city's adopted subarea plans. Local jurisdictions have general plan policies and various resource protection ordinances that must be addressed on a project-specific level and may result in added level of protection of biological resources.

Table 4.4-6 Relevant General Plan Policies and Biological Resource Protection Ordinances in the San Diego Region by Local Jurisdiction

Ordinance/General Plan	Purpose
Carlsbad	
Chapter 21.210, "Habitat Preservation and Management Requirements"	Preserves the diversity of natural habitats and unique biological resources in Carlsbad through implementing the goals and objectives of the land use and the open space/conservation elements of the City of Carlsbad General Plan and the city's HMP under the MHCP (see Table 4.4-5) and the regulations for development review.
Chapter 21.203, "Coastal Resource Protection Overlay Zone"	Preserves, protects, and enhances the habitat resource values; provides regulations in areas that provide the best wildlife habitat characteristics; deters soil erosion; and implements conservation of sensitive habitats and the approved Carlsbad LCP.
Chapter 21.95, "Hillside Development Regulations"	When grading occurs, assures that alteration of natural hillsides is done in an environmentally sensitive manner to reduce impacts on lagoons, riparian systems, wildlife habitats, and native vegetation.
Chapter 21. 33, "Open Space Zone"	Provides for open space and recreational uses. This zone also protects areas preserved as natural habitat and the biological resources located in the areas in conformance with the Carlsbad HMP.
Chapter 21.45, "Planned Developments"	Provides a method for clustered property development on environmentally and topographically constrained land.
Chapter 20.22, "Environmental Subdivisions"	Provides provisions for perpetual maintenance of the habitat and that perpetual easement will be recorded that prohibits construction of improvements except for those specifically identified.
Chapter 15.16, "Grading and Erosion Control"	Requires compliance with grading regulations, protection of public facilities, protection of adjacent property, and preservation of adjacent environmental resources from impacts of the grading operation.
Chapter 21.42, "Minor Conditional Use Permits and Conditional Use Permits"	Guides the minor use permit process, including the application of a biological habitat preserve.
General Plan	The Open Space, Conservation, and Recreation Element of the Carlsbad General Plan contains Goal 4-G.3, which aims to protect environmentally sensitive lands, wildlife habitats, and sensitive plant and animal communities, and Policy 4-G.4, which aims to promote conservation of hillsides and ridgelines. Policies 4-P.9 through 4-P.19 include habitat and open space conservation policies.
Chula Vista	
Chapter 17.30, "Otay Ranch Grazing"	Implements the Otay Ranch general development plan and resource management plan within Chula Vista.
Chapter 17.35, "Habitat Loss and Incidental Take"	Protects and conserves native habitat within Chula Vista and the viability of the species supported by those habitats.
Chapter 19.86, "Bayfront Specific Plan—Environmental Management Program"	Reduces and mitigates impacts on the refuge from new development within the bayfront.
General Plan	The Environment Element of the Chula Vista General Plan contains Policy E 1.1 to implement the MSCP Subarea Plan and Policy E 5.3 to ensure that approved mining reclamation plans fully comply with applicable requirements regarding the restoration of biological habitats and the creation of trails and parkland.

Ordinance/General Plan	Purpose
Coronado	
Chapter 86.38, "Open Space Zone"	Provides for the protection and preservation of open space areas within Coronado that are unique due to natural resources, visual amenities, public safety purposes, or recreational opportunities.
Chapter 86.64, "Wildlife Preserve Zone (Modifying Overlay Zone)"	Protects and preserves valuable and unique environmental resources for the enjoyment and benefit of present and future generations of Californians.
Chapter 86.72, "Diking, Dredging, Filling, and Dredge Spoils Disposal"	Requires issuance of a coastal permit from the city for diking, dredging, filling, and dredge spoils disposal in open coastal waters and wetlands.
Chapter 86.76, "Protection of Natural Ocean and Bay Processes"	Requires the issuance of a coastal permit from the city for the construction or placement of any improvement that may significantly affect the natural erosion process resultant from the interaction of water bodies upon their shores, or cause significant adverse alteration of the bay or ocean environment.
Chapter 61.04, "Stormwater and Urban Runoff Management Program"	Establishes requirements for the management of stormwater flows from development projects, both to prevent erosion and to protect and enhance existing water-dependent habitats.
Chapter 61.08, "Discharge Regulations and Requirements"	Implements postconstruction best management practices for permanent control of erosion from slopes, including structures to convey water, vegetation to stabilize disturbed slopes, and velocity controls.
General Plan	The Open Space and Conservation Elements of the Coronado General Plan contain objectives to protect biological resources, natural resources, wildlife, and promote habitat preservation.
Del Mar	
Chapter 30.53, "Lagoon Overlay Zone"	Protects the wetland resources of these lagoon areas and their sensitive upland habitats by requiring that all development activities are designed and implemented in a manner that is consistent with wetland habitat protection and enhancement.
Chapter 30.52, "Bluff, Slope, and Canyon Overlay Zone"	Protects downstream resources from the adverse impacts of erosion and sedimentation.
Chapter 23.50, "Trees"	Encourages conservation of trees and the application of management techniques to create a healthy, diverse urban forest.
Chapter 23.33, "Land Conservation Ordinance"	Regulates soil disturbances of existing or natural terrain and vegetation to prevent soil erosion, silting of lower slopes, slide damage, flooding problems, or severe cutting or scarring.
General Plan	The Del Mar Community Plan contains objectives to preserve or restore habitat and biological resources.
El Cajon	
Chapter 17.155, "O-S (Open Space) Zone"	Protects and preserves open space land as a limited and valuable resource, permits a reasonable use of open space while preserving and protecting inherent open space characteristics, and implements the open space provisions of the general plan.
Chapter 16.60, "Standard Urban Stormwater Mitigation Plan"	Requires a drainage study report prepared by a registered civil engineer of downstream conditions following field reconnaissance, including the susceptibility to erosion or habitat alteration from altered flow.
General Plan	The City of El Cajon General Plan does not contain policies or regulations specific to biological resources.
Encinitas	
Chapter 23.24, "Grading, Erosion, and Sediment Control"	Establishes minimum requirements for grading, excavating and filling of land, to provide for the issuance of grading permits.
General Plan	The Resource Management Element of the Encinitas General Plan contains policies to preserve significant mature trees, vegetation, and wildlife habitat and integrates the California Coastal Commission-certified LCP for the city.
Escondido	
Chapter 33-3, "Open Space Zone"	Implements the open space/conservation element of the general plan and the public lands/parks land use designation, while also including protection of unique or rare plant and/or animal habitat.

Ordinance/General Plan	Purpose
Chapter 33-75, "San Dieguito River Valley Focus Planning Area"	Establishes appropriate design guidelines and provides for comprehensive planning of the San Dieguito River Valley Focus Planning Area in conjunction with general plan policies and preservation of significant natural resources.
Chapter 33-55, "Grading and Erosion Control"	Ensures that development occurs in a manner that protects the natural and topographic character and identity of the environment.
Chapter 33-5: "Open Space Development Standards"	Establishes standards for the development of lands identified by the open space/conservation element of the general plan.
General Plan	Residential Clustering Policy 5.6 of the Land Use and Community Form Element and Biological and Open Space Resources and Policies 1.1 through 1.12 of the Resource Conservation Element of the Escondido General Plan aim to protect biological resources. In addition, as stated in the Land Use and Community Form Element of the General Plan, core themes including, "smart growth principles [that] represent a shift in focus from how to development vacant land to how to reinvest in existing neighborhoods."
Imperial Beach	
Chapter 19.29, "OS Open Space Zone"	Provides for land set aside for the protection of sensitive and fragile natural resources. This zone is intended to limit and control access and intensity of uses in these areas. This zone applies to the Tijuana River Valley.
General Plan	The City of Imperial Beach General Plan and Local Coastal Plan contain Policies 4.3.1 through 4.3.5 to protect, restore, and enhance the viability of key coastal habitats and species.
La Mesa	
Chapter 24.09, "Scenic Preservation Overlay Zone"	Retains and incorporates into each proposed development natural topography, vegetation, and scenic features of the site.
General Plan	The Recreation and Open Space Element of the La Mesa General Plan contain policies and conservation objectives to preserve and restore open space and natural features consistent with the city's Habitat Conservation Plan.
Lemon Grove	
Chapter 18.08, "Grading and Excavating"	Ensures that development occurs in a manner that protects environmentally sensitive areas as defined as areas designated as Areas of Special Biological Significance by SWRCB and the RWQCB.
General Plan	The Conservation and Recreation Element of the Lemon Grove General Plan contains Policy 3.1, which aims to limit impacts on biological habitats.
National City	
Chapter 18.28, "Open Space Reserve Zone"	Provides a use category to uses shown in the open space and conservation element of National City's general plan and LCP.
Chapter 18.27, "Open Space Zone"	Provides for public and private improved and unimproved open space.
General Plan	The Open Space and Agriculture Element of the National City General Plan contains Policies OS-1.1 through OS 1.4, which protect and conserve the landforms and open spaces that serve as core biological areas and wildlife linkages, or are wetland habitats; encourage the removal of invasive plant species and the planting of native plants; and limits development of open spaces; and Policies OS-2.1 through OS-2.8, which require the preservation of sensitive habitat areas.
Oceanside	
Chapter 6, "Building Construction Regulations"	Section 6.44 includes provisions for flood hazard reduction
General Plan	The Environmental Resource Management Element and Vital and Sustainable Resources Development of the Oceanside General Plan contains implementation strategies and policies for preservation of natural resources.

Ordinance/General Plan	Purpose
Poway	
Chapter 12.32, "Urban Forestry"	Sets forth all tree-related policies, regulations, and generally accepted standards on public property and public rights-of-way. Maintains the practice of protecting native trees and heritage trees.
Chapter 17.24, "OS-RM Open Space–Resource Management Zone"	This zone is intended for lands where valuable natural resources are located. The mountainous areas, prominent ridges, riparian areas, wildlife corridors, areas of high biological value, areas with geologic hazards, and areas with valuable historic and prehistoric resources are included within this zone.
General Plan	The Natural Resources Element of the City of Poway General Plan identifies biological resources within the city.
City of San Diego	
Chapter 14, "General Regulations"; Article 2, "General Development Regulations"; Division 4, "Landscape Regulations"	Minimizes the erosion of slopes and disturbed lands through revegetation; conserves energy by the provision of shade trees; conserves water; reduces the risk of fire; and improves the appearance of the built environment by increasing the quality and quantity of landscaping.
Chapter 13, "Zones"; Article 2, "Overlay Zones"; Division 6, "Sensitive Coastal Overlay Zone"	Helps protect and enhance the quality of sensitive coastal bluffs, coastal beaches, and wetlands.
Chapter 14, "General Regulations"; Article 3, "Supplemental Development Regulations"; Division 1, "Environmentally Sensitive Lands Regulations"	Protects, preserves, and where damaged restores, the environmentally sensitive lands of San Diego and the viability of the species supported by those lands. Includes development regulations for Environmentally Sensitive Lands to serve as standards for the determination of impacts and mitigation. These standards also serve to implement the city's MSCP by placing priority on the preservation of biological resources within the MHPA, as identified in the City of San Diego Subarea Plan (see Table 4.4-5).
Land Development Manual, "Biology Guidelines"	The Biology Guidelines aid in the implementation and interpretation of the city's Environmentally Sensitive Lands Regulations, San Diego Land Development Code, Chapter 14, Division 1, Section 143.0101 et seq., and the Open Space Residential (OR-1-2) Zone, Chapter 13, Division 2, Section 131.0201 et seq. Section III of the Guidelines ("Biological Impact Analysis and Mitigation Procedures") also serves as standards for the determination of impact and mitigation CEQA and the Coastal Act.
General Plan	The Conservation Element of the City of San Diego General Plan includes the goal for the preservation and long-term management of spaces that serve as core biological areas and wildlife linkages. Policy CE-B.1 protects and conserves important landforms, canyon lands, and open spaces, and Policy CE-B.2 applies the appropriate zoning and regulations to limit development of floodplains and sensitive biological areas.
San Marcos	
Chapter 18.04, "Environmental Protection"	Provides for enhancement and protection of the environment within the city by establishing principles, objectives, criteria, definitions, and procedures for evaluation of the environmental impact of public and private projects in an orderly manner.
Chapter 23.330, "Water Efficient Landscape Standards"	Establishes that landscape plans must address all BMPs, coincide with grading plans, address brush management Zones, and address biological constraints.
Chapter 20.260, "Ridgeline Protection and Management Overlay Zone"	Interfaces with Biological Reserves/Subarea Plan (Focused Planning Areas) Preserved Design. All development within the zone must be consistent with the city's Multiple Habitat Conservation/Subarea Plan.
General Plan	The City of San Marcos General Plan, in the Conservation Element, includes Policies COS-1.1 to support the protection of biological resources, COS 1.2 to ensure that new development maintain the value of sensitive biological habitats, COS 1.3 to continue to implement SANDAG's MHCP, COS-2.2 to limit the conversion of open space to urban uses, and COS-2.6 to preserve healthy mature trees where feasible.

Ordinance/General Plan	Purpose
Santee	
Chapter 13.22.040, "Hillside Overlay District"	Maintains natural open space character; protects natural land forms; minimizes erosion; provide for public safety; protects water, flora, and fauna resources; and establishes design standards to provide for limited development in harmony with the environment.
General Plan	The Conservation Element of the Santee General Plan includes Policies 2.1 through 2.7 and Policies 7.1 through 7.4 to protect biological resources.
Solana Beach	
Chapter 17.40, "Open Space/Recreation Zone"	Preserves, protects, and enhances the value of natural resources, including topographical and geological features, plant and wildlife habitats, coastal wetlands, beaches, coastal bluffs, watershed areas, resource buffer areas, and scenic areas.
Chapter 17.42, "Open Space/Preserve"	Preserves and protects open space; scenic views; the natural environment; and habitat for aesthetic, conservation, and ecological purposes.
Chapter 18.04, "Environmental Protection"	Provides for enhancement and protection of the environment within the city by establishing principles, objectives, criteria, definitions, and procedures for evaluation of the environmental impact of public and private projects in an orderly manner.
General Plan	The City of Solana Beach Municipal Code contains Objective 5.0 to preserve important biological habitat and protect sensitive, rare, and endangered species of flora and fauna. Policies 5.a through 5.f identify specific requirements to protect biological resources.
Local Coastal Program: Land Use Plan	The land use policies in the City of Solana Beach map ESHA and identify policies to protect ESHAs. ESHAs shall be protected against any significant disruption of habitat values, and development in areas adjacent to ESHAs and parks and recreation areas shall be sited and designed to prevent impacts.
Vista	
Chapter 15.04, "Environment"	Implements CEQA and the CEQA Guidelines for the city by applying the provisions and procedures contained in CEQA to development projects proposed within the city.
Chapter 18.15, "BPO Biological Preserve Overlay Zone"	Establishes the biological preserve overlay zone to protect valuable natural resources in accordance with the provisions of the MSCP, ensures that development minimizes disturbance to sensitive natural habitats, as feasible, and enhances or improve natural resources.
General Plan	The City of Vista General Plan contains policies specific to Resource Conservation and Sustainability (RCS) Element Goal 5 to preserve and protect the range of natural biological communities and species native to the city and region, and conserve viable populations of key sensitive species and their habitats; RCS Goal 6 to implement the provisions of the regional MHCP; and RCS Goal 7 to conserve, enhance, and restore open space areas.
County of San Diego	
Chapter 5, "Biological Mitigation Ordinance"	Protects the County's biological resources and prevents their degradation and loss by guiding development outside of biological resource core areas, and by establishing mitigation standards. Chapter 5 also enables the County of San Diego to achieve the conservation goals set forth in the Subarea Plan for the MSCP. Further, native tree protection and appropriate mitigation ratios are provided under this ordinance.
Chapter 6, "Resource Protection Ordinance"	Protects sensitive lands and prevents their degradation. Chapter 6 also preserves and protects the County's unique topography, natural beauty, diversity, and natural resources.
General Plan	The San Diego County General Plan includes several policies in the Conservation and Open Space (COS) Element related to the protection of biological resources. Policies COS-1.1 through COS-1.11 relate to a regionally managed, interconnected preserve system; Policies COS-2.1 and COS-2.2 are related to sustainable ecosystems; and Policies COS-3.1 and COS-3.2 ensure protection and enhancement of wetlands.
Subregional Plan for the Otay Ranch	Implements the Otay Ranch general development plan and resources management plan within the County of San Diego.

Notes: MSCP = Multiple Species Conservation Program; MHCP = Multiple Habitation Conservation Program; HMP = Habitat Management Plan MHPA = Multi-Habitat Planning Area; ESHA = environmentally sensitive habitat area; LCP = local coastal program.

Sources: City of Carlsbad 2015, 2025; City of Chula Vista 2005, 2022; City of Coronado 2003, 2025; City of Del Mar 1976, 2025; City of El Cajon 2001, 2025; City of Encinitas 1995, 2025; City of Escondido 2012, 2025; City of Imperial Beach 2019, 2025; City of La Mesa 2013, 2025; City of Lemon Grove 1996, 2025; City of National City 2011, 2025; City of Oceanside 2002, 2025; City of Poway 1991, 2025; City of San Diego 2024, 2025b; City of San Marcos 2012, 20252021; City of Santee 2003, 2025; City of Solana Beach 2014, 2025; City of Vista 2012, 2025; County of San Diego 2011, 2025.

4.4.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan.

Checklist questions for biological resources are provided in Section IV (a–f) of CEQA Guidelines Appendix G. To better focus the potential impacts associated with the proposed Plan, the CEQA Guidelines Appendix G questions have been combined and modified. Specifically, checklist questions (b) and (c), which address impacts on sensitive natural communities and protected aquatic resources, are addressed in BIO-1. Question (a), effects on special-status species, is addressed in BIO-2. Question (d), effects on migration and wildlife nurseries, is addressed in BIO-3. Questions (e) and (f), conflicts with local policies, ordinances, or HCPs, are addressed in BIO-4.

Therefore, implementation of the proposed Plan would have a significant biological resources impact if it would:

BIO-1 Have a substantial adverse effect on any sensitive natural communities identified in local or regional plans, policies, regulations, or by CDFW or USFWS; or have a substantial adverse effect on state or federally regulated waters and wetlands through direct removal, filling, hydrological interruption, or other means.

BIO-2 Have a substantial adverse effect, either directly or indirectly, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or listed by CDFW or USFWS, including their federally designated critical habitat, or species that are considered sensitive in CEQA Guidelines Section 15380.

BIO-3 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

BIO-4 Conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources.

4.4.4 Environmental Impacts and Mitigation Measures

This analysis examines whether regional growth and land use change or planned transportation network improvements would physically displace or alter biological resources. Impacts are assessed quantitatively or qualitatively based on the project description, the regional growth and land use change forecasts mapped as areas and the transportation network improvement footprint. The transportation network footprints are estimated through a coordinated effort by SANDAG transportation modeling, GIS, engineering, and planning staff. Buffer-size assumptions are specific to each travel mode and rely on engineering plan estimates from similar project improvements to calculate footprint width using model input geographies. The assumptions for each travel mode were presented at a peer review, and SANDAG staff are in agreement regarding the overall process and assumptions used.

Highway transportation and regional arterial improvement project footprints are defined by buffering line segment project geographies from the SANDAG highway model network. These layers are an early approximation of the dimensions of the planned improvements, which factor in lane width and buffer/movable barrier size assumptions from engineering drawings of similar projects, and the proposed number of lanes and auxiliary lanes from the SANDAG transportation model network. For highways, it was assumed that each travel lane is 12 feet wide, multiplied by the total number of proposed lanes. Shoulder widths added an additional 24 feet, accounting for a 12-foot outer shoulder and 12-foot inner shoulder in the highway footprint. Express Lane buffers are assumed to be 8 feet, or 4 feet in each direction. Where a movable barrier is assumed, another 4-foot buffer is applied. In addition, where there are ramps or connectors, it is assumed that each lane on the ramp or connector is 12 feet wide with an added 8 feet to account for inner and outer ramp shoulders. For regional arterials, each lane is assumed to be 12 feet wide, and a 4-foot buffer in each direction is assumed to account for sidewalks.

Rail transit improvement project footprints, specifically Trolley, Los Angeles–San Diego–San Luis Obispo (LOSSAN), and SPRINTER lines only in areas where there are new extensions or alignment changes, are defined by a rail-width buffer of 50 feet. Bus transit improvement footprints are not developed because routes would use existing or planned road or highway or Express Lane segments. New bikeway footprints (i.e., active transportation elements) are estimated assuming bikeways are 14 feet wide. Bikeway footprints are not developed in situations where they would occur within existing or planned road or highway segments.

Direct impacts are evaluated using GIS methods by overlaying transportation improvement project footprints (i.e., area encompassing permanent and temporary land disturbance) and regional growth and land use change with the baseline biological datasets identified in "Analysis Methodology" subsections for each significance criterion (BIO-1 through BIO-4) below. The analysis evaluates permanent and temporary direct and indirect impacts as defined in the introduction to this chapter.

- *Direct:* Direct impacts are caused by the project and occur at the same time and place as the project.
- *Indirect:* Indirect impacts may have an effect later in time or are farther removed in distance but are still reasonably foreseeable and attributable to project-related activities.
- *Permanent:* All impacts that result in irreversible effects or removal of biological resources are considered permanent.
- *Temporary:* Any impacts considered to have reversible effects on biological resources may be viewed as temporary. The period of time under which an impact would be viewed as "temporary" will vary by habitat type, project context, and local regulations. As a general rule, impacts are considered temporary only if timely efforts would ensure the impact is corrected to conditions equal to or superior to the conditions that existed prior to impact.

BIO-1 HAVE A SUBSTANTIAL ADVERSE EFFECT ON ANY SENSITIVE NATURAL COMMUNITIES IDENTIFIED IN LOCAL OR REGIONAL PLANS, POLICIES, REGULATIONS, OR BY CDFW OR USFWS; OR HAVE A SUBSTANTIAL ADVERSE EFFECT ON STATE OR FEDERALLY REGULATED WATERS AND WETLANDS THROUGH DIRECT REMOVAL, FILLING, HYDROLOGICAL INTERRUPTION, OR OTHER MEANS

Analysis Methodology

Direct Impacts

Direct impacts on sensitive natural communities and regulated aquatic resources are quantified using the GIS methods outlined below. Direct impacts include permanent and temporary impacts to wetland and non-wetland waters. Wetlands are considered "three-parameter" (i.e. presence of hydrophytic vegetation, hydric soils and wetland hydrology) vegetated aquatic resources and may include riparian forests and scrub, marshes and meadows; however, not all these vegetation communities would be considered jurisdictional. Non-wetland waters are streams, channels and drainages that may lack extensive vegetation, but typically feature an Ordinary High Water Mark (OHWM) or other mean high tide line by which the aquatic resource limits can be delineated.

Permanent impacts to aquatic resources, including both wetland and non-wetland features, were not quantified using GIS or qualitatively described because specific spatial impact calculations would be generated through a formal wetland delineation method and qualitative analysis would also rely on project-specific level context of a particular activity and site, which will be available in the future for projects that would be covered by this EIR. However, likely direct impacts to wetland vegetation communities and non-wetland waters potentially under the jurisdiction of regulatory agencies (i.e., USACE, RWQCB, CDFW, and/or CCC) were estimated based on the best regional data available and likely future project areas. Temporary impacts such as access routes, equipment staging, trenching, etc. were not analyzed using GIS methods because they would also require project-level details that are not currently known. This EIR assumes that all temporary impacts would be restored to pre-project conditions.

Regional Growth and Land Use Change

Regional growth and land use change impacts are evaluated by identifying the extent of currently undeveloped areas (2021 data) that contain sensitive and wetland vegetation communities and that would be converted to developed land uses for each horizon year. Polygon layers from the land use layers up to years 2035, and 2036 through 2050 that include all developed land use categories were created in GIS. The developed land use layers were overlaid on the baseline vegetation layer (see "Sensitive Vegetation Communities" in Section 4.4.1, "Existing Conditions") to determine the areas that would be converted from undeveloped to developed land uses for each horizon year.

Regional growth and land use impacts are quantified based on two categories of land use: spaced rural residential land use and all other developed land uses. Impacts from these two categories are summed together to present an estimate of the total impact from regional growth and land use. Rural residential land use impacts were quantified by determining the maximum portion of those areas that would be developed based on required MSCP, MHCP, General Plan, County Guidelines, and respective identified mitigation ratios. The adopted NCCPs and their subarea plans contain percentages of the amount of land to be conserved[7] within identified preserve categories.

All MSCP Preserves are considered 90–100% conserved and the MHCP hardline preserves were considered 100% conserved. Softline preserves and Subarea Plan preservation areas were assigned a range of conservation values. For the purpose of the programmatic evaluation of this EIR, the County MSCP PAMA was assigned an 80% conservation value. All other Softline and Subarea Plan preserves were assigned a 75% conservation value, including the MHPA for the City of San Diego and City of Chula Vista MSCP, and MHCP Focused Planning Area [FPA]. The Biological Core and Linkage Area (BCLA) for the MHCP was considered 70% conserved. Major Amendment Areas for the South County MSCP received a 50% conservation multiplier respectively. According to County of San Diego Guidelines, single-family residential development in the unincorporated areas of the County on parcels of 10 acres or less fall within the Minor Amendment Areas of the South County MSCP. According to the County's BMO, the parcels within the PAMA were considered 80% conserved, and outside the PAMA 50% conserved.

The County of San Diego does not assign conservation goals to anything except hardline preserves and evaluates all other development proposals on a case-by-case basis. However, the overall MSCP goal is to conserve approximately 75% of sensitive lands within the PAMA. Major Amendment Areas may be completely developed but require mitigation according to prescribed mitigation ratios identified in the BMO. For the purpose of the programmatic analysis, this analysis assigned an average mitigation ratio of 2:1 to impacts in the Major Amendment Area, which would translate to a 50% conservation goal. The take-authorization areas within the South County MSCP assume that MSCP-covered species and habitats can be developed; therefore, this analysis assigned no conservation value to the take-authorization areas. All other developed land use categories are

[7] The term "conserved" reflects the projected conservation of habitats and biological resources as identified in the HCPs. Hardline preserves cannot be developed, and impacts will be avoided. When allowed development occurs in other preserve dedications, such as the PAMA, FPA, or MHPA, the conservation component required by the respective HCP will be implemented through the dedication of conservation easements or other site protection instruments that require the conservation, management, and monitoring of the conserved resources in perpetuity. Note: the transportation network impacts were removed from the regional growth and land use change impacts to avoid double counting.

considered 100% developed; that is, the entire parcel would be considered permanently converted from its previous condition to fully developed, with no habitat value. Some preserve designations, specifically the MHCP FPA, the City of Chula Vista MSCP preserve, and City of San Diego MHPA, have varying degrees of conservation percentages. For the purpose of this programmatic analysis, the highest conservation percentages were used where available to calculate impacts from regional growth and land use changes. This method results in an overestimation of impacts, i.e. impacts are estimated to occur to the highest level of conservation. This is a conservative approach and assumes that impacts on sensitive vegetation communities would be mitigated at approved offsite mitigation banks (assuming several additional wetland mitigation banks would be established in the County), which has become common practice in San Diego County. The rationale and detailed methodology to quantify impacts for each category are described below. Appendix E-5 details which land use classifications are categorized as undeveloped and developed (i.e., spaced rural residential land use and other developed land uses) for purposes of this EIR.

Development under the spaced rural residential land use designation occurs at a much lower density than other developed areas. The majority of this type of development occurs in the unincorporated county and is subject to County of San Diego ordinances that restrict development to varying degrees; none set a limit on the amount of parcels or lots that can be developed except for areas covered by the South County and Draft North County MSCPs. Habitat mitigation ratios or conservation levels, determined by MSCP guidance or County of San Diego Guidelines for Determining Significance for Biological Resources, ultimately limit the amount of habitat that can be developed within the unincorporated areas.

Other developed land use areas, (i.e., not designated spaced rural residential) would also require mitigation for biological resources impacts, but development in these areas typically occurs at a higher density than spaced rural residential lands. All assumptions detailed above may overestimate biological resources impacts on vegetation communities and wetlands because exact conservation and mitigation measures can only be quantified once a specific site and footprint has been identified and evaluated against conservation and mitigation requirements identified in plans, policies and ordinances.

Transportation Network Improvements and Programs

Sensitive wetlands and uplands vegetation community impacts are evaluated through GIS by overlaying transportation improvement project footprints onto with the baseline vegetation dataset described in Section 4.4.1, "Existing Conditions." Transportation improvement project impacts to vegetation communities and land cover types are calculated for each project that requires new construction in undeveloped areas. Transportation improvement project footprints are based on what is known about planned transportation network improvements contained in the proposed Plan at the time of analysis (see Chapter 2.0 "Project Description" of this EIR). Refer to Section 4.2, "Agricultural and Forestry Resources," for a detailed discussion regarding the development of the transportation network footprint used for this analysis.

Indirect Impacts

Indirect impacts that may occur on sensitive vegetation communities and regulated aquatic resources in proximity to areas experiencing regional growth and land use change or transportation network improvements cannot be quantified because they may be project-specific and are not always foreseeable. They are, therefore, qualitatively analyzed on a broad scale.

Impact Analysis

2035

Regional Growth and Land Use Change

Direct Impacts

Direct impacts on sensitive vegetation and wetlands communities for the 2035 horizon year are provided in Table 4.4-7.

Table 4.4-7 Estimated Direct Impacts on Sensitive Vegetation Communities and Regulated Aquatic Resources within the San Diego Region up to Year 2035 (acres)

Vegetation Community	Regional Growth and Land Use Change	Transportation Network Improvements	Total
Riparian and wetlands			
Beach/coastal dunes/saltpan/mudflats*	—	—	—
Marsh*	14	36	50
Meadows and seeps*	26	—	26
Open water and streams*	11	18	29
Riparian forest/woodland*	171	54	225
Riparian scrub*	39	16	54
Vernal pools*	—	—	—
Riparian and wetlands total	*261*	*123*	*384*
Uplands			
Chaparral*	5,042	47	5,089
Coastal sage scrub*	1,623	29	1,652
Desert dunes	0.1	—	0.1
Desert scrub	1,024	—	1,024
Oak woodlands*	454	7	461
Forest/woodland	150	2	152
Grasslands*	545	245	790
Uplands total	*8,838*	*330*	*9,168*
Grand total	**9,099**	**453**	**9,552**

Source: Data downloaded from SDMMP, CBDDB, USFWS, and SANGIS in 2025; adapted by Ascent in 2025.

The riparian and wetland vegetation communities with the largest impact acreage as a result of land use change through 2035 are riparian forest/woodland followed by riparian scrub, meadows and seeps and marsh (including coastal salt marshes) (Table 4.4-7). Mapped and highly sensitive vernal pools would be avoided as much as feasible (due to the coarse mapping unit, small vernal pool habitats are not reported in the vegetation communities data; however, the critical habitat data for endemic vernal pool species indicate that vernal pools would likely be impacted). The upland vegetation communities with the greatest amount of impacts are chaparral, followed by the regionally protected coastal sage scrub and desert scrub (Table 4.4-7).

Up to the 2035 plan year, regional growth and land use change is relatively evenly spread across the County and in the majority of the urban centers, including Borrego Springs, where desert scrub is the most affected vegetation community. The most intense growth is centered in the South County around Chula Vista and Otay Mesa in chaparral and coastal sage scrub habitats. Regional growth and land use change is primarily focused in existing urban areas and currently undeveloped areas adjacent to the existing urbanized area in the western third of the County, except for Otay Mesa and the city of Chula Vista Otay Ranch neighborhood, which will continue to encroach into currently undeveloped land (Figure 4.4-16). Shrubland vegetation communities bear the majority of projected impacts to wetlands and riparian communities. These habitats are generally limited in distribution and unique to the San Diego region, and therefore are important for the survival of many special-status plant and animal species. Coastal sage scrub, one of the most sensitive vegetation communities in the County, receives the second highest impact quantities (after chaparral).

Indirect Impacts

Indirect impacts from regional growth and land use change on sensitive natural communities and regulate aquatic resources would be associated with the spread of invasive plant species through introductions from outside the County or from disturbed areas within the County. Indirect impacts may also occur as type conversion from fires, floods, landslides, or other disturbances or the lack of management of conservation lands. Indirect impacts may also occur from edge effects of increasingly urbanized areas through the spread of ornamental vegetation into natural lands and open spaces, effects from irrigation of adjacent ornamental landscapes, or land disturbance by unauthorized pedestrian, mountain bike and off-road vehicles uses.

Summary

Although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2 would reduce impacts of the proposed Plan on biological resources, it cannot be concluded that adherence would ensure impacts would be less than significant for all projects.

Considering both direct and indirect impacts, ground-disturbing activities related to land use change under the proposed Plan would result in substantial adverse change to sensitive natural communities and regulated aquatic resources. This would be a significant impact.

Transportation Network Improvements and Programs

Direct Impacts

Transportation network improvements are primarily focused within and adjacent to existing urbanized areas along all major highways through linear construction (including managed freeway lanes and rail projects) and the construction of transportation hubs. Many improvements are located in the coastal and western portion of the County (i.e., along the entire stretch of I-5, managed lanes in the western portion of I-8 and western portions of State Routes 76 and 78). The majority of transportation improvements occur via bikeways and transportation hubs in urban areas that have little direct impacts on sensitive vegetation communities. Likewise, most road improvement projects would impact urban and developed land cover types and disturbed habitats rather than sensitive vegetation communities. The highest impacts to vegetation communities, including wetlands and upland communities, occur from the various planned regional rail projects (i.e. Pacific Surfliner Los Angeles to San Diego [LOSSAN] corridor improvements, realignment, and double tracking projects) that would impact significant amounts of open water, riparian forest/woodlands, marshes (including coastal salt marsh, i.e. Los Peñasquitos Lagoon), chaparral, coastal sage scrub and grasslands habitats. New ground-disturbing activities through improved connections in the rural East County would impact sensitive vegetation communities and regulated waters, including wetlands.

Estimated direct impacts on vegetation communities due to transportation network improvements between 2026 and 2035 are provided in Table 4.4-7. Table E-6-1 in Appendix E-6 summarizes the project-by-project impacts on vegetation communities for each horizon year. The riparian and wetland vegetation communities with the greatest amount of impacts as a result of transportation network improvements are riparian forest/woodland followed by marsh (including coastal salt marshes as a result of rail construction projects) (Table 4.4-7). The upland vegetation communities with the greatest amount of impacts as a result of transportation network improvements are grasslands, chaparral, and coastal scrub (Table 4.4-7).

Indirect Impacts

The type and nature of indirect impacts would be similar to those described above for regional growth and land use change.

Summary

By 2035, implementation of the transportation network improvements included as part of the proposed Plan would impact wetlands and sensitive vegetation communities, specifically coastal sage scrub. Adherence to existing federal, state, and local laws, regulations, and programs would help reduce impacts but would not ensure impacts would be less than significant.

Considering both direct and indirect impacts, ground-disturbing activities related to transportation network improvements under the proposed Plan would result in a substantial adverse change to sensitive natural communities and regulated aquatic resources. This would be a significant impact.

2035 Conclusion

Implementation of the regional growth and land uses changes and the transportation network improvements for between 2026 and 2035 would result in substantial adverse effects on sensitive natural communities and regulated aquatic resources. These impacts (BIO-1) would be significant in the year 2035.

2050

Regional Growth and Land Use Change

Direct Impacts

The type and nature of direct impacts on regional growth and land uses changes would be same as described above for the 2035 horizon year. Overall, the amount of regional growth and land use change is significantly reduced from the 2035 horizon year and mainly occurs as expansion of 2035 land use patterns in the South County along a swath between La Mesa, Lemon Grove and National City (Figure 4.4-16). Rural growth in form of residential land use patterns is mainly centered around Bonsall in the North County and Alpine in South/Central San Diego County. Estimated direct impacts on vegetation communities and regulated aquatic resources between 2036 and 2050 are provided in Table 4.4-8.

Table 4.4-8 Estimated Direct Impacts on Sensitive Vegetation Communities and Regulated Aquatic Resources within the San Diego Region 2036-2050 (acres)

Vegetation Community	Regional Growth and Land Use Change	Transportation Network Improvements	Total
Riparian and wetlands			
Beach/coastal dunes/saltpan/mudflats	—	1	1
Marsh	2	32	34
Meadows and seeps	—	1	1
Open water and streams	1	18	19
Riparian forest/woodland	1	52	53
Riparian scrub	3	29	32
Vernal pools	—	—	—
Riparian and wetlands total	*7*	*133*	*140*
Uplands			
Chaparral	95	50	145
Coastal sage scrub	167	86	253
Desert dunes	—	—	—
Desert scrub	2	—	2
Oak woodlands	5	40	45
Forest/woodland	3	5	8
Grasslands	167	124	291
Uplands total	*439*	*304*	*743*
Grand total	**446**	**437**	**883**

Source: Data downloaded from SDMMP, CBDDB, USFWS, and SANDGIS in 2025; adapted by Ascent in 2025.

Overall, direct impacts on sensitive vegetation communities are significantly less than for the plan years up to 2050 due to a reduction in projected developments. The riparian and wetland vegetation communities with the largest impact acreage as a result of land use change through 2050 is riparian scrub followed by marsh (including coastal salt marshes) (Table 4.4-8). The upland vegetation communities with the greatest amount of impacts are grasslands and coastal sage scrub, followed by chaparral (Table 4.4-8).

By 2050, regional growth and land use change is primarily focused in the South County, specifically around Santee (Fanita Ranch), Lemon Grove, the city of Chula Vista Bayfront and Otay Ranch neighborhoods, and Otay Mesa. Shrubland vegetation communities, specifically coastal sage scrub, experience the majority of the projected impacts. Coastal sage scrub is limited in distribution and unique to the San Diego region, and is also sensitive to the effects of fire and type conversion. This vegetation community is important for the survival of many special-status plant and animal species. Coastal sage scrub, one of the most sensitive vegetation communities in the region, receives the highest impact quantities (after grasslands).

Indirect Impacts

The type and nature of indirect impacts would be similar to those described above for 2035.

Summary

As discussed for 2035, although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2, "Regulatory Setting," would reduce impacts of the proposed Plan on biological resources, it cannot be concluded that adherence would ensure impacts would be less than significant for all projects. However, growth and transportation related impacts are significantly less than those anticipated for the 2035 plan year.

Considering both direct and indirect impacts, ground-disturbing activities related to land use change under the proposed Plan would result in substantial adverse change to sensitive natural communities and regulated aquatic resources. This would be a significant impact.

Transportation Network Improvements and Programs

Direct Impacts

Similar to 2035, transportation network improvements are primarily focused within and adjacent to existing urbanized areas in the western one-third of the San Diego Region for the 2050 horizon year (see Figures 2-1 through 2-21), but also include major transportation corridors in the North and East County along State Routes 76, 78 and 79 and in the South County along State Routes 52, 56 and 94. New ground-disturbing activities would impact sensitive marsh habitats, specifically coastal salt marsh.

Estimated direct impacts that would occur on vegetation communities as a result of transportation network improvements up to the 2050 horizon year are provided in Table 4.4-8. Table E.6-2 summarizes the project-by-project impacts on vegetation communities for each horizon year. The three riparian and wetland vegetation communities with the greatest amount of impacts as a result of transportation network improvements are riparian forest/woodlands marsh (including coastal salt marsh of 11.4 acres of impact), and riparian scrub (Table 4.4-8). Significant impacts on coastal salt marsh occurs from the construction of the rail corridors, specifically Regional Rail 398 and 598. The upland vegetation communities with the greatest amount of impacts are grasslands and coastal scrub from improvements to the above-mentioned state routes (Table 4.4-8).

Indirect Impacts

The type and nature of indirect impacts would be similar to those described above for 2035.

Summary

By 2050, transportation network improvements included as part of the proposed Plan would impact wetlands and sensitive vegetation communities. However, impacts are significantly less than for the 2035 plan year. As discussed under regional growth and land use change for 2050, adherence to existing federal, state, and local laws, regulations, and programs discussed in Section 4.4.2 would help reduce impacts but would not ensure impacts would be less than significant.

Considering both direct and indirect impacts, ground-disturbing activities related to transportation network improvements under the proposed Plan would result in substantial adverse change to sensitive natural communities and regulated aquatic resources. This would be a significant impact.

2050 Conclusion

Implementation of the regional growth and land uses changes and the transportation network improvements for the 2050 horizon year, although substantially reduced compared to 2035, would result in substantial adverse effects on sensitive natural communities and regulated aquatic resources. These impacts (BIO-1) would be significant in the year 2050.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would cause greater impacts on sensitive natural communities, regulated waters, and wetlands. The vegetation communities most affected by climate change, regional growth, and land use change include riparian forest/woodland, riparian scrub, marsh, waters and streams, grasslands, coastal sage scrub, and chaparral.

High temperatures and extended periods of drought could affect forests, and warmer winter temperatures may promote survival and reproduction of pests that can cause damage to trees (Messner et al. 2011) Coastal sage scrub in Southern California is moderately vulnerable to climate change due to its sensitivity to climate stressors; increased wildfire frequency and intensity could shift scrublands to nonnative grasslands (EcoAdapt 2017). For all vegetation communities, higher temperatures and shifting rainfall patterns could affect plant germination and habitat composition, which in turn may also impact soil carbon sequestration levels and rates (EcoAdapt 2017; Bradford et al. 2016; Ren et al. 2020).

Sea-level rise could increase saltwater intrusion into freshwater ecosystems and higher temperatures could cause thermal stress in streams (ICLEI 2012, Jennings et al. 2018). More frequent and intense drought conditions may also change stream levels and damage riparian habitats (EcoAdapt 2017; Jennings et al. 2018). Sea-level rise could also result in coastal flooding and inundate coastal wetlands (Heberger et al. 2009).

The proposed Plan's impacts would be worsened by climate change. Climate change would disrupt sensitive natural communities and regulated aquatic resources, leaving them more susceptible to changing environmental conditions and the proposed Plan's impacts.

MITIGATION MEASURES

BIO-1 HAVE A SUBSTANTIAL ADVERSE EFFECT ON ANY SENSITIVE NATURAL COMMUNITIES IDENTIFIED IN LOCAL OR REGIONAL PLANS, POLICIES, REGULATIONS, OR BY CDFW OR USFWS; OR HAVE A SUBSTANTIAL ADVERSE EFFECT ON STATE OR FEDERALLY REGULATED WATERS AND WETLANDS THROUGH DIRECT REMOVAL, FILLING, HYDROLOGICAL INTERRUPTION, OR OTHER MEANS.

2035, 2050

BIO-1a: Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Vegetation Communities and Regulated Aquatic Resources. During project planning, design, project-level CEQA review, and construction of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, avoid impacts on sensitive natural communities and regulated aquatic resources when feasible. Avoidance measures include, but are not limited to, the following:

- Conduct early coordination with the wildlife agencies and the respective local jurisdictions to design alignments that avoid sensitive resources and preserved lands.
- During the site identification and project design process, to the extent feasible, prioritize the least environmentally constrained site, and select a design that avoids and minimizes impacts on biological resources and NCCP lands, and maintains habitat integrity.

- Confine development footprints to the minimum amount of undeveloped area necessary for construction and safe, reliable operation. Limit access routes and staging areas to existing roadways and developed or disturbed areas. Direct drainages away from sensitive habitats, such as canyons. Clearly delineate all construction areas, staging areas, and access routes in the final engineering plans.
- Limit grading and earth-moving activities to the permitted impact footprint. Install environmentally sensitive area fencing or flagging along the limits of disturbance prior to the start of construction to avoid incidental loss of sensitive habitat types.
- Require biological monitoring and regular inspections for construction in the vicinity of and adjacent to sensitive habitats to avoid impacts on these habitats. Report any special-status species and natural communities detected during project surveys to the CNDDB.

BIO-1b: Provide Compensatory Mitigation. Where impacts are unavoidable, during project planning, design and project-level CEQA review of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, provide compensatory mitigation, as specified by and consistent with adopted MSCP or MHCP guidelines and agreements, applicable federal and state regulatory requirements for mitigating impacts on wetlands and regulated aquatic resources, and applicable local regulations protecting sensitive natural communities, or through consultation with resource agencies (including federal and state wildlife and regulatory agencies, such as USFWS, CDFW, USACE and RWQCB). SANDAG shall, and other implementing agencies can and should, establish appropriate mitigation ratios where ratios have not already been established through ordinances and guidelines, specifically for impacts on sensitive coastal, riparian, and shrubland communities. SANDAG shall, and other implementing agencies can and should, design compensatory mitigation to result in the conservation, establishment, or creation of self-sustaining sensitive natural and native communities, replacing the lost habitat or habitat value as required to offset those lost from project implementation. Otherwise, mitigation measures would include the requirement for and financing of long-term conservation and management requirements of the mitigation projects.

For impacts outside the coastal zone, provide compensatory mitigation in the form of project- and habitat-specific onsite or offsite mitigation. Offsite mitigation would occur through several options, including (1) the purchase of credits at an existing authorized mitigation bank within or adjacent to the ecoregion or watershed within which the impacts occurred; (2) in-lieu fee program; or (3) project-specific (permittee responsible) mitigation, such as habitat enhancement, establishment (creation), or reestablishment (restoration). Mitigation should occur as close to the impact and in the same local watershed as feasible, unless compelling ecological benefits, as supported by the state and federal wildlife agencies, would result from mitigation located in another area.

Compensatory mitigation for impacts inside the North Coast Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP, 2014) should be consistent with Chapter 6B Resources Enhancement and Mitigation Program. Compensatory mitigation for impacts inside the coastal zone and outside the PWP/TREP should be provided within the coastal zone as close as feasible to the impact. Consistent with the resource agencies' approval and applicable adopted plans, ordinances, and policies, provide compensatory mitigation for sensitive upland vegetation communities through the following:

- Onsite restoration and post-restoration monitoring for temporary impacts using appropriate native species and natural habitat configurations similar to or better than those impacted.
- On- or offsite preservation of existing habitats through acquisition or restoration using TransNet and other (e.g., project-specific) mitigation funds for permanent impacts. Protect mitigation lands in perpetuity (e.g., through a conservation easement or similar legal conservation assurance to be approved by the regulatory agencies), fund long-term management (e.g., through the establishment of an endowment for habitat management and for easement management), and adequately manage such lands to maintain the originally intended biological quality and function in perpetuity.

- Offsite mitigation requirements met through TransNet or other (e.g., project specific) mitigation funds. When mitigation is provided outside of an adopted NCCP/HCP plan area, the following conditions should apply:
  - Give priority to mitigation lands connected to existing conserved open space.
  - Consider contributing to the establishment of large blocks of habitat or lands that are otherwise critical for covered species or providing for biological core areas and habitat linkages consistent with current regional conservation planning goals.
  - Mitigate impacts on critical habitat within the same Critical Habitat Unit where the impacts occurred.
  - Purchase of habitat credits at an approved mitigation bank, or through payment into an in-lieu mitigation fee program applicable to the impacts and as approved by the wildlife agencies.
  - Construction within regulated aquatic resources would be subject to prior authorization by USACE, the RWQCB, CDFW, and CCC (as applicable in the coastal zone). Consistent with the resource agencies' permitting and applicable adopted plans, ordinances, and policies, provide project-specific mitigation for impacts on regulated aquatic resources, including waters and wetlands, and associated state-regulated riparian habitat, through one of the following, in order of priority:
  - Purchase of credits at an existing authorized mitigation bank (as available) or in-lieu fee program, except within the coastal zone. Provide compensatory mitigation for impacts inside the coastal zone at sites within the coastal zone close to the impact. Mitigation of impacts to aquatic resources within the coastal zone may require offsets outside the coastal zone and would be negotiated with CCC on a case-by-case basis.
  - Project-specific (permittee responsible) mitigation. Apply an appropriate mitigation ratio for regulated aquatic resources in consultation with the regulatory agencies (i.e., following the USACE Standard Operating Procedure and any other applicable standards) to ensure no net loss of wetlands functions and services, account for temporal losses, and set in coordination with USACE, the RWQCB, and CDFW. Use bioengineered soft structure creek and wetland restoration methods where feasible. Impacts on vernal pools in the city of San Diego would require mitigation consistent with the VPHCP (City of San Diego 2017); impacts on vernal pools outside the city of San Diego would require permitting through the RWQCB.

BIO-1c: Prepare a Habitat Restoration Plan. During planning, design, and project-level CEQA review of transportation network improvements or development projects, and as part of the regulatory permitting process, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should—as specified through consultation with and as approved by the resource agencies, and consistent with adopted MSCP or MHCP guidelines and agreements, and applicable federal and state regulatory requirements—prepare and implement a habitat restoration plan for impacts on sensitive natural communities or a habitat mitigation and monitoring plan consistent with the requirements of and approved by USACE, the RWQCB, and CDFW for all impacts on regulated waters, including wetlands. This mitigation measure applies provided that mitigation does not occur through credit purchase at a mitigation bank. The restoration plan should include the following:

- Details regarding the location of the site, site conditions and functions, site preparation (e.g., grading, bioengineering methods), recontouring, planting specifications (including native seed mixes and plant palettes), irrigation design (if determined necessary), and measures to control exotic vegetation.
- Details on avoidance of impacts on any extant sensitive biological resources that may occur as the result of habitat restoration, including direct loss and indirect effects related to changes in hydrology and associated potential effects on species composition.
- Identification of locally appropriate plant species for the plan, sourcing (e.g., seed collection, contract-growing of container plants), and outline of performance standards (success criteria). Success should be measured by comparing a similar, natural (undisturbed) reference site containing the same vegetation communities and

located within the same watershed as the restoration site, and should use statistical metrics in consideration of the temporal difference between an established reference site and an immature restoration site.

- Performance standards sufficient to create self-sustaining habitat providing the functions and values required to offset those lost to the impacts and meet the requirements of applicable agency and adopted plans, ordinances, and policies. After final performance standards have been met and any relevant permitting agencies have approved the mitigation project as complete, the mitigation areas must be conserved and managed in perpetuity (see BIO-1d).
- Maintenance and monitoring procedures (including post-restoration monitoring and reporting). Any habitat restoration and mitigation site should be monitored for a minimum of 5 years or as required by regulatory agencies but continue maintenance and monitoring until performance standards are met.
- Identification of remedial measures if the mitigation efforts fall short of the performance standards. Remedial measures typically consist of, but are not limited to, replanting, reseeding, topographical/surface contour adjustments, supplemental irrigation, access control, increased weed control, and extended maintenance and monitoring periods.
- Climate science and climate change resiliency and adaptation measures, to be developed as adaptive management strategies for restoration and long-term management planning, to reflect the latest available information on climate change impacts and adaptation measures, such as seed storage and adaptation of the seed mixes and planting palettes to adapt to changing climate conditions and sea-level rise.

BIO-1d: Prepare Habitat/Long-Term Management Plans. During project-level CEQA review of transportation network improvements or development projects and as part of the regulatory permitting process, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions should—as specified through consultation with and approved by the resource agencies, and consistent with adopted MSCP or MHCP guidelines and agreements, and applicable federal and state regulatory requirements—prepare and implement a long-term management plan (LTMP) consistent with the requirements of USACE, the RWQCB, and CDFW for all impacts on regulated waters, including wetlands, or an HMP or resources management plan (RMP) for upland mitigation areas. The management plans can and should be consistent with the SDMMP MSP and be prepared by qualified and experienced ecologists to develop appropriate management and monitoring measures. The management plans should describe management in perpetuity of the mitigation and conservation areas, illustrate adaptive management measures, outline management goals and objectives, and identify management tasks consistent with these goals and objectives. Management goals should include adaptive management measures for climate adaptation and resiliency. Furthermore, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, prepare a management cost analysis to identify long-term management costs pursuant to measures outlined in the LTMP, HMP, or RMP. Long-term management should be funded using endowments or other financial assurances to generate sufficient annual interest to manage mitigation areas in perpetuity. In addition to the funding requirements, the management plans should also identify the habitat manager and propose a site protection instrument, such as an agency-approved conservation easement (CE), restrictive covenant, long-term conservation assurances (i.e., through an approved NCCP), or other title restriction that identifies the mitigation site to be conserved in perpetuity. In some cases, compensatory mitigation would occur through adding lands through public lands that are already preserved (e.g., National Wildlife Refuge).

BIO-1e: Implement Best Management Practices to Avoid Indirect Impacts. During planning, design, project-level CEQA review, and construction of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, include location-specific measures to avoid and minimize construction-generated dust, erosion, runoff, and sedimentation, and exotic plant invasion, within or into sensitive natural habitats and jurisdictional waters. Location-specific measures consist of, but are not limited to, the following:

- Place construction materials, staging, storage, dispensing, fueling, and maintenance activities in upland areas outside of sensitive habitat, and take adequate measures to prevent any runoff from entering regulated waters, including wetlands.
- Fuel equipment on existing paved roads. Check contractor equipment for leaks prior to operation and repaired as necessary.
- Monitor construction activities using a qualified biologist when construction is occurring in, or adjacent to, sensitive natural communities and grant the biologist the authority to stop work if it deviates from approved plans and mitigation measures.
- Prohibit planting or seeding of invasive plant species that appear on the most recent version of the California Invasive Plant Council (Cal-IPC) California Invasive Plant Inventory, including the development of an integrated invasive plant control plan describing protocols and enforcement schedules for maintenance, construction, and emergency activities working within and moving between important habitat areas.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measures BIO-1a through BIO-1e would reduce or minimize this impact (BIO-1). However, while projects under SANDAG's control would implement these measures, there is no assurance that these mitigation measures would be implemented by non-SANDAG project sponsors or would be equally effective for all projects due to the wide variety of circumstances, such as lack of available mitigation sites, shortage of acreage at mitigation banks, mitigation complexity and cost, lack of long-term management and monitoring, and lack of enforcement. For some projects, impacts may not be reduced to less-than-significant levels. Therefore, this impact (BIO-1) would remain significant and unavoidable.

BIO-2 HAVE A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR INDIRECTLY, ON ANY SPECIES IDENTIFIED AS A CANDIDATE, SENSITIVE, OR SPECIAL-STATUS SPECIES IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS, OR LISTED BY CDFW OR USFWS, INCLUDING THEIR FEDERALLY DESIGNATED CRITICAL HABITAT, OR SPECIES THAT ARE CONSIDERED SENSITIVE IN CEQA GUIDELINES SECTION 15380

Analysis Methodology

Direct Impacts

As described in the above "Data Mapping Sources and Methods" subsection in Section 4.4.1, the identification of species locations requires direct field observations. In order to quantify impacts on special-status species populations, project-specific focused surveys would need to be conducted when project-level detail is available, including for new candidate species for listing, such as Crotch's bumble bee, monarch butterfly, southwestern pond turtle (*Actinemys pallida*), western spadefoot, and western burrowing owl, which has no federal critical habitat designation and, therefore, cannot be accurately assessed on a programmatic level. Some of these species, such as western burrowing owl and monarch butterfly, may occur in nonsensitive habitats, such as fallow agricultural habitats, disturbed ruderal habitats and eucalyptus woodland; others, such as the Crotch's bumble bee, are habitat generalists and may occur in many of the upland habitats in the County that feature nectaring and flowering plant species. Therefore, no programmatic impact quantification was conducted for these species.

This EIR's analysis considers impacts on nonlisted special-status species based on a more general habitat level and qualitative analysis, including impacts on those regionally sensitive, but not listed species, such as the coastal cactus wren (*Campylorhynchus brunneicapillus*), in addition to narrow endemic plant species and other NCCP-covered species. Direct impacts on the habitats of listed special-status plant and animal species (which for purposes of this EIR include species proposed for listing) and designated critical habitat are quantified using the GIS methods described under Impact BIO-1. Impacts identified for vegetation communities and land cover types in the GIS analysis described under Impact BIO-1 are used to classify suitable sensitive plant and animal species

habitats and generally describe direct impacts that may occur on non-listed special-status species based on their habitat preferences. Direct impacts to species occurrences were not quantified because this information is not uniformly reliable and would be collected on the project-specific level. However, where available, Appendix E-7 identifies whether special-status species would potentially be affected by the regional growth and land use change and transportation network improvement projects. This method provides a conservative estimate of impacts on special-status species because it uses the assumption that suitable habitats within 500 feet of identified projects would be occupied by special-status species, which is not always the case and can only be verified on a project-specific basis.

Temporary impacts were not analyzed using GIS methods because they are not known until project-specific plans have been prepared. It is assumed that all temporary impacts would be restored to or superior to preconstruction conditions

Regional Growth and Land Use Change

Special-status species impacts were evaluated using both GIS and qualitative methods. Typically, USFWS protocol surveys would be required to identify presence and quantify impacts for these species; however, these data are not practical or necessary on a programmatic level. In lieu of species- and site-specific information, analysis in this EIR conservatively assumes that special-status species are present within the areas that would be converted from undeveloped to developed land use (i.e., regional growth and land use change data) if there are mapped special-status species occurrences or suitable habitat present within these areas or within 500 feet thereof (taking into consideration any impacts on sensitive species from such sources as noise and lighting, as commonly required by the wildlife agencies and pursuant to local regulations and ordinances, such as the implementation documents for the local NCCPs).

Specifically, the GIS analysis used data on known occurrences of plant and animal species listed or proposed for listing (including candidate species) under ESA and CESA. GIS layers were developed to identify the extent of undeveloped areas that would be converted to developed land uses or rural residential land uses, and rural residential land uses that would be converted to developed land uses for each horizon year (see "Regional Growth and Land Use Change" under the analysis methodology for Impact BIO-1). These layers were superimposed over known occurrences for special-status plant and animal species and USFWS-designated critical habitat layers developed from the dataset identified in Section 4.4.1, "Existing Conditions."

The EIR analysis considers impacts on nonlisted and non-proposed-for-listing special-status species based on a more general habitat level and qualitative analysis. Impacts on vegetation communities identified in the GIS analysis are used to generally identify direct impacts that may occur on nonlisted special-status species that inhabit these vegetation communities. Impacts on nonlisted special-status species that are covered by an NCCP typically require mitigation in accordance with the implementing entity's guidelines.

Transportation Network Improvements and Programs

Analysis in the EIR conservatively assumes that special-status species would be present within the transportation project footprint if there are known special-status species occurrences or suitable habitat is present within project footprints or within 500 feet thereof (understanding that special-status species may occur outside the 500-foot radius). For each horizon year, species occurrences from three regional species occurrence databases—the CNDDB (CNDDB 2025), the SanBIOS (SANGIS 2025a) points and areas, and the USFWS Carlsbad Field Office sensitive species occurrences (USFWS 2024)—were overlaid within 500 feet of the identified projects and tabulated. Special-status species impacts were evaluated using both GIS and qualitative methods described for the regional growth and land use change. GIS layers were developed for transportation improvements project footprints (see the definition provided in Section 4.4.4 describing road, transit and bikeway footprints, and "Transportation Network Improvements and Programs" in the analysis methodology for Impact BIO-1, and analyzed as discussed for the regional growth and land use change methods).

Indirect Impacts

Indirect impacts that may occur on special-status species or their habitat (including critical habitat) in proximity to areas experiencing regional growth and land use change as well as transportation network improvements are qualitatively described on a broad scale.

Impact Analysis

2035

Regional Growth and Land Use Change

Direct Impacts

Regional growth and land use change would be the same as previously described under the 2035 analysis for Impact BIO-1. Approximately 14 special-status species would be affected by regional growth and land use change between 2026 and 2035, including 20 listed plant species and14 listed or candidate wildlife species. Tables E-7-1 and E-7-2 in Appendix E-7 provide a detailed list of listed plant and wildlife species that would be affected by regional growth and land use change by 2035, respectively. Locations that would have the most impacts on listed species would coincide with the areas that would experience the most extensive loss of sensitive vegetation communities and regulated waters, including wetlands, by 2035, as described in Impact BIO-1, because these areas provide habitat for listed species.

Estimated direct impacts that would occur on critical habitat as a result of regional growth and land use change between 2026 and 2035 are provided in Table 4.4-9. Of species that have designated critical habitat, the species with the greatest acreage of impacts on critical habitat as a result of regional growth and land use change are the California gnatcatcher, Quino checkerspot butterfly, Hermes copper butter, and arroyo toad, which reflects that projected growth for the 2035 plan year would mainly occur in sensitive scrubland habitats but also affect streams that are occupied by arroyo toad (Table 4.4-9). Furthermore, impacts to highly sensitive vernal pool–associated endemic species would also occur. This estimate is based on the regional growth and land use change impacts on critical habitat, which grossly overestimate the actual impact on the species. Most of the sensitive plant and animal species identified herein are covered by the regional NCCPs and impacts on these species would be regulated and mitigated consistent with the NCCP regulations and programs and regulatory mitigation requirements, which would substantially reduce the quantitative impacts to these species.

As stated above, special-status or candidate species that lack a federal critical habitat designation and occupy nonsensitive habitats or are habitat generalists were not captured in the data However, the last remaining breeding nodes for the western burrowing owl are concentrated in the City and County of San Diego Otay Mesa and City of Chula Vista Otay Ranch areas where a large amount of regional growth and land use change is planned for the 2035 plan year. Therefore, significant impacts on this species are expected. The species is an MSCP-covered species, and avoidance, minimization, and mitigation provisions are required by regional programs and regulations on a project-specific level. Impacts on federally listed plant species would be addressed at a project-specific level under CEQA if a federal nexus is absent, in which case a federal consultation would be required.

In addition to listed species, many nonlisted special-status species and their habitat would be impacted by regional growth and land use change because nonlisted special-status species inhabit sensitive vegetation communities and regulated waters, including wetlands, that would be impacted, as described in Impact BIO-1. In general, nonlisted special-status species that would be most impacted are those that inhabit the vegetation communities most impacted, including riparian forest/woodland, riparian scrub, meadows and seeps, chaparral, grasslands, forest/woodland, and coastal scrub. Because forecasted development is concentrated in the western third of the San Diego region, coastal and shrublands would bear the majority of projected impacts; however, species occupying desert scrub in the eastern portion of the County would also be affected. Species with larger home ranges, such as raptors, bats, and large mammals, may be more susceptible to impacts from regional growth and land use change that occurs away from current urban areas as opposed to regional growth and land

use change that is concentrated around urban areas. Appendices E-2 and E-3 list the vegetation communities where nonlisted special-status species and their habitat may occur.

Indirect Impacts

The type and nature of indirect impacts would be similar to those described for Impact BIO-1.

Table 4.4-9 Forecasted Direct Impacts on Areas Designated as Final Critical Habitat within the San Diego Region between 2026 and 2035 (acres)

Common Name	Scientific Name	Regional Growth and Land Use Change	Transportation Network Improvements	Total
Plants				
San Diego thornmint	*Acanthomintha ilicifolia*	217	—	217
San Diego ambrosia	*Ambrosia pumila*	57	—	57
Thread-leaved brodiaea	*Brodiaea filifolia*	173	—	173
Otay tarplant	*Deinandra conjugens*	263	—	263
Spreading navarretia	*Navarretia fossalis*	69	—	69
Plants total		*778*	—	*778*
Invertebrates				
Quino checkerspot butterfly	*Euphydryas editha quino*	2,098	—	2,098
Hermes copper butterfly	*Lycaena hermes*	1,160	—	1,160
San Diego fairy shrimp	*Branchinecta sandiegonensis*	123	—	123
Riverside fairy shrimp	*Streptocephalus wootoni*	19	—	19
Invertebrates total		*3,400*	—	*3,400*
Fish				
Tidewater goby	*Eucyclogobius newberryi*	10	—	10
Fish total		*10*	—	*10*
Reptiles and amphibians				
Arroyo toad	*Anaxyrus californicus*	1,254	7	1,261
Reptiles and amphibians total		*1,254*	*7*	*1,261*
Birds				
California gnatcatcher	*Polioptila californica*	3,224	8	3,232
Least Bell's vireo	*Vireo bellii pusillus*	460	14	474
Southwestern willow flycatcher	*Empidonax traillii extimus*	87	—	87
Birds total		*3772*	*21*	*3,793*
Grand total		**9,213**	**28**	**9,241**

Source: Data downloaded from USFWS in 2025; adapted by Ascent in 2025.

Summary

By 2035, regional growth and land use change would result in development that would significantly impact special-status species and their habitat. Although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2, "Regulatory Setting," would reduce impacts on special-status species and their habitat, it cannot be concluded that impacts would be less than significant for all projects. Considering both direct and indirect impacts, ground-disturbing activities related to land use change under the proposed Plan would result in a substantial adverse change to species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. This is a significant impact.

Transportation Network Improvements and Programs

Direct Impacts
Transportation network improvements would be the same as previously described in the 2035 analysis for Impact BIO-1. The total number of listed species occurrences impacted by all transportation network improvements in place between 2026 and 2035 includes 18 listed plant species and 17 listed wildlife species, including those associated with riparian habitats. The 2035 horizon year includes the majority of Complete Corridor construction, including river and creek crossings that may result in impacts on least Bell's vireo and arroyo toad. Tables E-7-1 and E-7-2 in Appendix E-7 summarizes the project-by-project impact on listed plant and wildlife species that would occur by 2035.

Of species that have designated critical habitat, the three species impacted as a result of transportation network improvements are arroyo toad, least Bell's vireo, and coastal California gnatcatcher (Table 4.4-9).

In addition to listed species, many nonlisted special-status species would be affected by regional growth and land use change because nonlisted special-status species inhabit sensitive vegetation communities and regulated waters, including wetlands, that would be impacted, as described in Impact BIO-1. In general, nonlisted special-status species that would be most impacted are those that inhabit the vegetation communities most impacted, including riparian forest/woodland, riparian scrub, meadows and seeps, chaparral, grasslands, forest/woodland, and coastal scrub. Appendices E-2 and E-3 describe the vegetation communities where nonlisted special-status species and their habitat may occur.

Indirect Impacts
The type and nature of indirect impacts would include impacts from noise, lighting, edge effects, and effects of recreations, especially mountain biking, off-road vehicles and equestrian uses.

Summary
By 2035, the transportation network improvements projected in the proposed Plan would impact special-status species. As discussed for 2025, although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2 would reduce impacts on special-status species, it cannot be concluded that impacts would be less than significant for all projects. Considering both direct and indirect impacts, ground-disturbing activities related to transportation network improvements under the proposed Plan would result in a substantial adverse change to species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS, and the habitat of these species. This is a significant impact.

2035 Conclusion
Implementation of the regional growth and land use change as well as transportation improvements and programs would result in substantial adverse change to species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS, and the habitat of these special-status species. Therefore, this impact (BIO-2) in the year 2035 would be significant.

2050

Regional Growth and Land Use Change

Direct Impacts
Regional growth and land use change would be the same as previously described in the 2050 analysis under Impact BIO-1. The types and nature of the direct impacts that may occur on special-status species and their habitat are similar to 2035. The total number of listed species occurrences impacted by regional growth and land use change between 2036 and 2050 includes 15 listed plant species and 14 listed wildlife species. Tables E-7-3 and E-7-4 in Appendix E-7 provides a detailed list of listed plant and animal species that would be impacted by regional growth and land use change by 2050. As stated above, impacts to federally listed plant species would be addressed at a project-specific level under CEQA if a federal nexus is absent, in which case on federal consultation would be required.

Estimated direct impacts that would occur on critical habitat as a result of regional growth and land use change between 2036 and 2050 are provided in Table 4.4-10. Of species that have designated critical habitat, the three species with the greatest acreage of impacts on critical habitat as a result of regional growth and land use change are coastal California gnatcatcher, Hermes copper butterfly, and Otay tarplant due to development projects planned in the South County (specifically Chula Vista and Otay Mesa) (Table 4.4-10).

Table 4.4-10 Forecasted Direct Impacts on Areas Designated as Final Critical Habitat within the San Diego Region, 2036–2050 (acres)

Common Name	Scientific Name	Regional Growth and Land Use Change	Transportation Network Improvements	Total
Plants				
San Diego ambrosia	*Ambrosia pumila*	2	—	2
Thread-leaved brodiaea	*Brodiaea filifolia*	8	—	8
Otay tarplant	*Deinandra conjugens*	476	—	476
Spreading navarretia	*Navarretia fossalis*	71	0.1	71
Plants total		*557*	*0.1*	*557*
Invertebrates				
Quino checkerspot butterfly	*Euphydryas editha quino*	180	—	180
Hermes copper butterfly	*Lycaena hermes*	824	—	824
San Diego fairy shrimp	*Branchinecta sandiegonensis*	210	0.1	210
Riverside fairy shrimp	*Streptocephalus woottonii*	56	0.1	56
Invertebrates total		*1,270*	*0.2*	*1,270*
Fish				
Tidewater goby	*Eucyclogobius newberryi*	—	—	—
Fish total		—	—	—
Reptiles and amphibians				
Arroyo toad	*Anaxyrus californicus*	149	—	149
Reptiles and amphibians total		149	—	*149*
Birds				
California gnatcatcher	*Polioptila californica*	1,044	6	1,050
Least Bell's vireo	*Vireo bellii pusillus*	111	—	111
Southwestern willow flycatcher	*Empidonax traillii extimus*	33	—	33
Birds total		1,188	*6*	*1,194*
Grand total		**3,162**	**6**	**3,168**

Source: Data downloaded from USFWS in 2025; adapted by Ascent in 2025.

In addition to listed species, many nonlisted special-status species and their habitat would be affected by regional growth and land use change because nonlisted special-status species inhabit sensitive vegetation communities and regulated waters, including wetlands, that would be impacted, as described in Impact BIO-1. In general, nonlisted special-status species that would be most impacted are those that inhabit the vegetation communities most impacted, including riparian forest/woodland, riparian scrub, meadows and seeps, chaparral, grasslands, forest/woodland, and coastal scrub. Because forecasted development is concentrated in the western third of the San Diego region, coastal and montane nonlisted species would bear the majority of projected impacts. Species with larger home ranges, such as raptors, bats, and large mammals, may be more susceptible to impacts from regional growth and land use change that occurs away from current urban areas as opposed to regional growth

and land use change that is concentrated around urban areas. Appendices E-2 and E-3 describe the vegetation communities where nonlisted special-status species and their habitat may occur.

Indirect Impacts

The type and nature of indirect impacts would be similar to those described for 2035.

Summary

By 2050, regional growth and land use change would result in development and redevelopment that would affect special-status species and their habitat. As discussed for 2025 and 2035, although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2, "Regulatory Setting," would reduce impacts on special-status species, it cannot be concluded that impacts would be less than significant for all projects. Considering both direct and indirect impacts, ground-disturbing activities related to land use change under the proposed Plan would result in a substantial adverse change to species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS, and habitat for these species. This is a significant impact.

Transportation Network Improvements and Programs

Direct Impacts

Transportation network improvements would be the same as previously described in 2050 analysis under Impact BIO-1. The total number of listed species occurrences impacted by all transportation network improvements in place between 2036 and 2050 includes 20 listed plant species and 17 listed wildlife species. Tables E-7-3 and E-7-4 in Appendix E-7 summarizes the project-by-project impact on listed plant and wildlife species that would occur by 2050.

Of species that have designated critical habitat, the species with the greatest amount of impacts on critical habitat as a result of transportation network improvements are coastal California gnatcatcher and vernal pool species, such as San Diego fairy shrimp and spreading navarretia (Table 4.4-10).

In addition to listed species, many nonlisted special-status species would be affected by forecasted regional growth and land use change because nonlisted special-status species inhabit sensitive vegetation communities and regulated waters, including wetlands, that would be impacted, as described in Impact BIO-1. In general, nonlisted special-status species that would be most affected are those that inhabit the vegetation communities most impacted, including riparian forest/woodland, riparian scrub, meadows and seeps, chaparral, grasslands, forest/woodland, and coastal scrub. Appendices E-2 and E-3 describe the vegetation communities where nonlisted special-status species may occur.

Indirect Impacts

The type and nature of indirect impacts would be the similar to those described for 2035.

Summary

By 2050, the transportation network improvements projected in the proposed Plan would affect special-status species and their habitat, although to a much lesser extent than for the 2035 plan year. Although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2, "Regulatory Setting," would reduce impacts on special-status species, it cannot be concluded that impacts would be less than significant for all projects. Considering both direct and indirect impacts, ground-disturbing activities related to transportation network improvements under the proposed Plan would result in substantial adverse change to species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS, and habitat for these species. This is a significant impact.

2050 Conclusion

Implementation of the regional growth and land use change as well as transportation improvements and programs would result insubstantial adverse change to species identified as candidate, sensitive, or special-status

species in local or regional plans, policies, or regulations, or by CDFW or USFWS, and habitat for these species-status species. Therefore, this impact (BIO-2) in the year 2050 would be significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would cause greater effects on special-status species and their habitat. Changing temperature, precipitation patterns, and wildfire associated with climate change could force species to shift their ranges to survive, and species may diminish, die, or relocate to new habitats if their current habitats become inhospitable. For example, habitat fragmentation due to land use change and other factors associated with the proposed Plan may reduce the ability for species displaced by climate change to seek refuge (EcoAdapt 2017). Increased temperatures could also cause reduced fitness, increased mortality, and reduced reproductive success, and alter timing of breeding, flowering, or emergence of pests and disease incidence (Jennings et al. 2018). Increased drought incidence can cause die-off of plants that serve as sources of food or shelter, and changing fire regimes may damage habitats or create conditions for invasive species to thrive (Jennings et al. 2018). Changes in plant biomass production due to reduced growth rates or increased mortality can also impact soil carbon sequestration levels and rates (Bradford et al. 2016; Ren et al. 2020). For aquatic species, warmer temperatures and changes in stream flow rates could degrade aquatic ecosystems and introduce invasive species (Jennings et al. 2018).

The proposed Plan is expected to adversely affect the habitats of many special-status species, including the California gnatcatcher, San Diego fairy shrimp, arroyo toad, least Bell's vireo, and Otay tarplant. Climate change could also adversely affect these habitats:

- Climate change could threaten coastal sage scrub, which serve as habitat to the Quino checkerspot butterfly and California gnatcatcher (EcoAdapt 2017).
- Climate change may alter hydrology patterns, affecting riparian-dependent species, such as the least Bell's vireo (Rogers et al. 2020).
- Hotter and drier conditions could reduce germination rates or misalign plant phenology with pollinator phenology for the Otay tarplant (USFWS 2021).

The proposed Plan's impacts would be worsened by these and other climate change impacts. Habitat fragmentation due to land use change and transportation projects associated with the proposed Plan may reduce the ability for species displaced by climate change to seek refuge (EcoAdapt 2017).

MITIGATION MEASURES

BIO-2 HAVE A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR INDIRECTLY, ON ANY SPECIES IDENTIFIED AS A CANDIDATE, SENSITIVE, OR SPECIAL-STATUS SPECIES IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS, OR LISTED BY CDFW OR USFWS, INCLUDING THEIR FEDERALLY DESIGNATED CRITICAL HABITAT, OR SPECIES THAT ARE CONSIDERED SENSITIVE IN CEQA GUIDELINES SECTION 15380

2035, 2050

Mitigation Measures BIO-1a through BIO-1d are also applicable to, and avoid, minimize, and mitigate impacts on, sensitive vegetation communities that provide habitat for special-status species.

BIO-2a: Implement Design, Minimization, and Avoidance Measures for Special-Status Animal Species. During planning, design, project-level CEQA review, regulatory permitting process, and construction of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, incorporate measures to avoid and minimize impacts on special-status animal species.

Construction

Construction measures consist of, but are not limited to, the following:

- Identify potential habitats using regionally available data sources and conduct biological field habitat assessments and species surveys as required by regional programs, protocols, or regulatory requirements.
- Avoid construction during the nesting or breeding season of special-status animal species.
- If the nesting or breeding seasons cannot be avoided, conduct focused surveys (by certified or trained biologists approved by the wildlife agencies) and implement mitigation measures. For indirect impacts, noise attenuation measures (e.g., temporary noise barriers) may be required if construction noise levels are found by the focused survey to disturb special-status animal species, specifically during the breeding season.
- Backfill all wildlife pitfalls (trenches, bores, and other excavations) at the end of each work day. If backfilling is not feasible, slope all trenches, bores, and other excavations at a 3:1 ratio at the ends to provide wildlife escape ramps or cover completely to prevent wildlife access.
- Delineate permitted work areas, including staging areas, equipment access, and placement of soils, with fencing or stakes prior to construction to prevent access to areas occupied by special-status species.
- Require monitoring of construction activities by qualified or certified biologists when construction occurs in, or adjacent to (i.e., within buffer areas approved by the regulatory agencies), areas suitable for or occupied by special-status species, with authority to stop work if it deviates from approved plans and mitigation measures. Avoidance buffers may vary by species and should be approved by the wildlife agencies.
- Avoid nighttime construction or minimize lighting. When activities must occur at night, direct lighting (e.g., staging areas, equipment storage sites, roadway) downward and away from sensitive vegetation communities. Use light glare shields to reduce the extent of illumination into adjoining areas.
- Remove spoils, trash, or any debris to an offsite, approved disposal facility. Contain trash and food items in closed containers and remove daily to reduce the attractiveness to opportunistic predators, such as coyotes and feral dogs and cats that may prey on sensitive species. Prohibit workers from bringing pets and firearms to the site.
- Clear vegetation outside of the typical breeding season of special-status animal species as determined by the wildlife agencies or qualified biologist. If activities must occur during special-status species breeding season timeframes, conduct a preconstruction survey by a qualified biologist to determine whether the species of concern, including special-status birds protected under the MBTA, are present within the proposed work area or appropriate buffer (buffer distance may vary depending on the type of activity and the species and other site conditions). If the species of concern are found onsite, implement measures, surveys, and construction monitoring to avoid impacts as determined by the regulatory agencies or the qualified biologist.

Operation and Maintenance

Operation and maintenance measures may incorporate the same measures as detailed above and consist of, but are not limited to, the following:

- If permanent lighting is necessary, use motion sensitive lighting rather than steady burning, and direct downward and away from natural vegetation communities. Use light glare shields to reduce the extent of illumination into adjoining areas.
- In the event that vegetation clearing or other vegetation maintenance is required, schedule vegetation clearing outside special-status animal species breeding seasons.
- Implement operational noise-reduction measures described in Section 4.13, "Noise and Vibration" (see Mitigation Measure N-1b).

BIO-2b: Provide Compensatory Mitigation for Special-Status Plant Species. Where impacts are unavoidable, during planning, design, regulatory permitting, and project-level CEQA review of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, provide compensatory mitigation for impacts on special-status plant species as specified through consultation with resource agencies, and consistent with adopted MSCP or MHCP guidelines and agreements, federal and State regulatory requirements, or local regulations.

Federally and State-Listed Plant Species

- If an individual project would result in take of a federally or state-listed plant species, consult with the wildlife agencies or require the applicant to obtain appropriate take authorizations (e.g., Section 2081 Incidental Take Permit, NCCP, Section 7, Section 10 HCP) prior to construction as required by state and federal law. Federally listed plant species may not fall under this requirement if no federal project nexus is provided. If the area is covered by an adopted NCCP (e.g., MSCP, MHCP), provide mitigation according to the requirements of the NCCP, subarea plan, and associated ordinances and guidelines.
- Establish appropriate habitat mitigation ratios—depending on the location of the impact and the species—that are also consistent with the requirements of resource agencies and applicable adopted plans, ordinances, and policies that include the appropriate habitat, area, and species in compensation lands. If appropriate, require the applicant to acquire suitable mitigation habitat as part of the SANDAG EMP or use a mitigation bank or in-lieu fee program to compensate for impacts.
- Prepare a species and habitat mitigation plan to identify effective methods for reestablishing the affected species and habitat, consisting of, but not limited to, seed collection, salvage of whole plants and soil/root masses (i.e., for impacts to San Diego ambrosia), translocation of transplantation of populations or plant parts, and planting seeds or root masses in an area with suitable conditions as approved by the wildlife agencies or authorized jurisdiction. Include in the mitigation plan success criteria for reestablishing the affected species and habitat, and remedial measures that must be implemented if the project is not meeting specified performance criteria.
- Implement habitat and species-specific mitigation measures that may include habitat restoration with species-specific habitat components, such as constructing artificial burrowing owl burrows; creating vernal pools in the appropriate historical habitat context; establishing habitat components for sensitive amphibians and reptiles, such as cover boards; and including nectaring and flowering plant species in the restoration planting specifications for sensitive invertebrates.
- Include a monitoring program designed to maintain the resources on lands used as mitigation. Design the monitoring program to evaluate the current and probable future health of the resources and their ability to sustain populations following the completion of the program.
- Design remedial measures appropriate for the species and habitat. Appropriate remedial measures consist of, but are not limited to, exotic species management, access control, replanting and reseeding of appropriate habitat elements, maintenance of habitat structures (i.e., artificial burrows), and propagation and seed bulking programs.
- Conserve any restoration and translocation sites in perpetuity, fund a long-term management endowment, identify a long-term habitat manager, and provide long-term adaptive habitat management measures through an HMP.

Nonfederally and Nonstate-Listed Special-Status Plant Species

- For plant species covered by adopted NCCPs or other ordinances, such as the San Diego County RPO, obtain all appropriate authorizations prior to construction as required by state, federal, and regional conservation plan (NCCP/HCP) regulations and local ordinances. This may include species-specific mitigation for covered narrow endemic plant species according to MSCP or MHCP requirements.

- Mitigate loss of habitat using mitigation banks or through project-specific mitigation. Mitigate habitat impacts through preservation, translocation/transplantation, restoration, or creation of self-sustaining suitable habitat as described above for federally and state-listed species. Establish appropriate habitat mitigation ratios, depending on the location of the impact and the species, to meet the requirements of resource agencies and applicable adopted plans, ordinances, and policies.

BIO-2c: Provide Compensatory Mitigation for Special-Status Animal Species. Where impacts are unavoidable, during planning, design, regulatory permitting, and project-level CEQA review of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, provide compensatory mitigation for impacts on special-status animal species as specified through consultation with resource agencies, and in adopted MSCP or MHCP guidelines and agreements, federal and state regulatory requirements, or local regulations.

Federally or State-Listed Animal Species and Plant Species with Federal Nexus

- If an individual project would result in take of a federally or state-listed animal species, consult with the wildlife agencies and require the project applicant to obtain appropriate take authorizations (e.g., Section 2081 Incidental Take Permit, Section 7, NCCP, HCP) prior to construction as required by state and federal law. If the area is covered by an adopted NCCP (e.g., MSCP, MHCP), provide mitigation according to the requirements of the NCCP, subarea plan, and associated ordinances and guidelines. As identified through the appropriate take authorizations, develop mitigation plans and long-term conservation and management strategies, as required and approved by the wildlife agencies.
- Mitigate loss of habitat through open space conservation, using mitigation banks (as available) or through project-specific mitigation. Mitigate habitat impacts through preservation, restoration, or creation of self-sustaining suitable habitat following the most recent scientific information and guidance available.
- Establish appropriate habitat mitigation ratios—depending on the location of the impact and the species—that are also consistent with the requirements of resource agencies and applicable adopted NCCP plans, and local ordinances, and policies that include the appropriate habitat, area, and species in compensation lands. If appropriate, require the applicant to acquire suitable mitigation habitat as part of the SANDAG EMP or use a mitigation bank or in-lieu fee program to compensate for impacts.
- Prepare a species and habitat mitigation plan to identify effective methods for reestablishing the affected species and habitat based on available scientific information and as recommended by the respective species experts. If appropriate and approved by the regulatory agencies, mitigation may include translocation (active or passive) of the species (plants and animals). Include in the mitigation plan success criteria for reestablishing the affected species and habitat, and remedial measures that must be implemented if the project is not meeting specified performance criteria.
- Include a monitoring program designed to maintain the resources on lands used as mitigation. Design the monitoring program to evaluate the current and probable future health of the resources, and their ability to sustain populations following the completion of the program.
- Design remedial measures appropriate for the species and habitat. Appropriate remedial measures consist of, but are not limited to, exotic species management, access control, habitat restoration, species translocation, and predator control programs.

Nonfederally and Nonstate-Listed Special-Status Animal Species

- Obtain all appropriate authorizations prior to construction as required by state, federal, and regional conservation plan (NCCP/HCP) regulations and local ordinances (such as the County RPO).
- Follow guidelines that identify mitigation requirements, such as local biology guidelines and mitigation ordinances, or MOU between the respective jurisdiction and wildlife agencies.

- Mitigate loss of habitat using mitigation banks or through project-specific mitigation. Mitigate habitat impacts through preservation, restoration, or creation of self-sustaining suitable habitat. Create species-specific breeding opportunities and protect mitigation areas from edge effects (e.g., roadkill). Establish appropriate habitat mitigation ratios, depending on the location of the impact and the species, to meet the requirements of resource agencies and applicable adopted plans, ordinances, and policies.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measures BIO-1a through BIO-1d, and BIO-2a through BIO-2c would reduce this impact (BIO-2). However, there is no assurance that these mitigation measures would be implemented for all projects or be equally effective due to the wide variety of circumstances, complexity of some sites, and complexity of impacts on special status species. Therefore, this impact (BIO-2) would remain significant and unavoidable.

BIO-3 INTERFERE SUBSTANTIALLY WITH THE MOVEMENT OF ANY NATIVE RESIDENT OR MIGRATORY FISH OR WILDLIFE SPECIES OR WITH ESTABLISHED NATIVE RESIDENT OR MIGRATORY WILDLIFE CORRIDORS, OR IMPEDE THE USE OF NATIVE WILDLIFE NURSERY SITES

Analysis Methodology

Regional Growth and Land Use Change

Direct Impacts

Regional corridor impacts are analyzed by broadly reviewing regional growth and land use change across the region and qualitatively and quantitatively assessing impacts on the wildlife movement corridors described in Section 4.4.1, "Existing Conditions." The review is based on modeled wildlife movement corridors across San Diego County (Jennings et al. 2020; Jennings et al. 2019). The SDMMP is conducting a variety of local and regional wildlife movement studies and provides baseline data (SDMMP 2025); however, these studies are still in progress. Wildlife usually moves across large expanses of the landscape, and site-specific information may overlook comprehensive movement corridors and connections. Therefore, for the purpose of the programmatic analysis appropriate for this EIR, the discussion identifies regional corridors that occur in areas that would experience extensive land use change and development. Mapped movement corridors from SDSU's Multi-Species Linkages and Climate Resilient Connectivity Prioritized Linkage Network (Jennings et al. 2019) (see Figure 4.4-15) were overlaid with the GIS layers for those areas that would be converted to developed land uses for each horizon year (see "Regional Growth and Land Use Change" in the analysis methodology for Impact BIO-1). This overlay is used to qualitatively and quantitatively identify where potential conflicts with mapped wildlife corridors could occur. Wildlife nursery sites are included in the discussion about wildlife movement corridors to note species in Southern California that use specific vegetation communities for nursery sites (i.e., areas for raising offspring); a specific discussion was not included because no regional data on nursery sites are available. Any direct impact on regional or local wildlife corridors is considered a "substantial adverse effect" on the movement of resident or migratory fish or wildlife species because it could significantly affect the survival of the species and interfere with wildlife movement for the purpose of climate change adaptation.

Indirect Impacts

Indirect impacts that may occur on wildlife corridors in proximity to the areas experiencing regional growth and land use change are qualitatively described on a broad scale. Indirect impacts are due to an increase of human presence in and around wildlife movement corridors and include noise and light levels that would preclude animals from traveling through a given area. Wildlife movement corridors that lead to a dead end or that would increase roadkill risk (i.e., through lacking or inadequately planned or constructed directional fencing) would also be an indirect impact as this could increase mortality or impact breeding success.

Transportation Network Improvements and Programs

Direct Impacts

Most of the regional data compiled as part of the statewide habitat connectivity model and the South Coast Wildlands Linkages modeling efforts are relatively coarse-scaled and were, therefore, not used for the analysis presented in this EIR. Finer-scaled models, including the MSCP cores and linkages maps (County of San Diego 1998) and the climate resilient wildlife movement models developed by SDSU (Jennings et al. 2019) were used for the quantitative analysis described in this EIR.

Regional corridor impacts were quantitatively analyzed by overlaying the transportation network footprint on the modeled wildlife movement network developed by SDSU (Jennings et al. 2019) and by reviewing the intersection of the transportation network improvements with mapped wildlife movement corridors described in Section 4.4.1, "Existing Conditions." The analysis overlays the transportation network project footprints (see Section 4.4.4 description of the road, transit and bikeway footprint, and "Transportation Network Improvements and Programs" in the analysis methodology for Impact BIO-1) with the mapped movement corridors described above to calculate where potential conflicts with mapped wildlife corridors could occur. The discussion identifies specific regional corridors that occur in areas with transportation network improvements for each horizon year and quantifies the acreage that could potentially be impacted by the transportation network improvement program's linear projects. The impact analysis includes wildlife movement corridors that would be used by wildlife to move to and from wildlife nursery sites (nursery sites were not specifically assess because regional data on nursery sites are not available).

Indirect Impacts

Indirect impacts that may occur on wildlife corridors in proximity to the areas subject to transportation network improvements are qualitatively described on a broad scale, and are similar to those described under regional growth and land use change indirect impacts.

Impact Analysis

2035

Regional Growth and Land Use Change

Direct Impacts

Direct impacts on wildlife corridors reflect physical changes to the corridor itself and typically include the direct removal of habitat or the creation of obstructions that would bisect linear wildlife movement corridors and prevent wildlife from moving across their dispersal habitats. Direct impacts on wildlife corridors are those actions that result in the elimination of a corridor, the creation of a barrier across a corridor, the widening of a barrier, the lengthening of a corridor that might preclude wildlife from reaching habitat, or the narrowing of a corridor through removal of habitat and/or topographical changes. Removal of habitat that narrows wildlife corridors and/or increases the distance wildlife would have to travel through, under, and/or over the urban matrix created by regional growth/land use change and transportation network improvements is a direct impact. Riparian corridors through developed areas are critical to regional connectivity if they function properly and do not result in an ultimate reduction of productivity (e.g., ecological sink). For example, direct impacts on corridors, including urban and riparian corridors, fragment the landscape and can impact species by isolating populations. Additionally, direct impacts on aquatic habitat from dams, diversions, grade-control structures, and highway crossings in streams can inhibit movements of resident or migratory fish and fragment aquatic habitat for native aquatic wildlife. These structures can prevent aquatic species' access to spawning and rearing habitats. Finally, some species in Southern California use specific vegetation communities for nursery sites (i.e., areas for raising offspring). Amphibian species, in particular, require access to upland habitat for foraging and wintering habitat and return to riparian habitat to breed. Other species, such as bats and birds, use particular areas to establish maternity or breeding colonies. Direct impacts adjacent to these areas or between foraging/wintering habitat and breeding habitat can impede the use of these nursery sites.

As discussed above, regional growth and land use change is relatively evenly spread across the County and in most of the urban centers and would constrain some regional movement corridors and eliminate or narrow corridors and further increase the permeability of existing barriers. Regional growth and land use change would directly and indirectly impact several wildlife movement corridors, specifically by spaced rural residential development in the East County (including Borrego Springs) and developments in open space context in Chula Vista (Otay Ranch), Otay Mesa, San Marcos, Santee, and adjacent to the existing urbanized area in the western third of the County. Large-scale impacts would occur to both the MSCP and the MHCP cores and linkages (Table 4.4-11).

Indirect Impacts

Indirect impacts on wildlife corridors reflect changes that reduce the suitability of corridors for species that use them. Corridors with degraded functionality can result in species choosing not to use the corridor or in increased rates of mortality or reduced reproduction rates among those individuals that do choose to use the corridor. When the rate of mortality a species experiences within a corridor exceeds the breeding and health benefits provided by the corridor, it acts as a population sink for the species.

Indirect impacts on wildlife corridors would occur as a result of increased human disturbance, noise, and/or lighting due to regional growth and land use change. As noted in Section 4.4.1, riparian corridors are important to regional connectivity in Southern California and often are the only connections left to large core habitat patches. Increased human presence and/or density, noise, and/or lighting may deter wildlife species from using wildlife corridors, including riparian corridors, and impede use of wildlife nursery sites. Indirect impacts driven by edge effects on corridors vary depending on the scale of the corridor. Most edge effects have a given range of influence from the source. A given edge effect (e.g., lighting) may affect the entire width of a narrow local corridor and thus seriously impede its function but would reach only a short distance into a wide corridor and thus have a negligible effect on its function. The increased presence of humans in some riparian habitat may alter wildlife behavior relative to current conditions, but many of these areas are already heavily disturbed by human presence.

As discussed above, many terrestrial species can utilize agricultural land that is adjacent to native habitat for supplemental forage or cover depending on the intensity and type of the agricultural activity present. Additionally, agricultural land situated between native habitat patches can provide movement corridors for terrestrial species. Conversion of agricultural land to urban uses further limits wildlife movement through these areas. Dredge and fill activities in riverine and riparian habitats can affect fisheries habitat in a number of ways. Indirect impacts can include changes in water flow rates, water quality, and increased predation and can lead to the loss or deterioration of upstream or downstream habitat. These negative changes can be detrimental to upstream and downstream fish migration.

Increased predation from domestic animals and/or mesopredators adapted to urban conditions makes it less likely native species would survive while using a corridor. Roads can function as a particularly hostile matrix to native wildlife species, at times forming an impenetrable barrier to necessary movement. Negative indirect effects of highways on wildlife can include habitat fragmentation and changes in movement and distribution patterns (Trombulak and Frissell 2000; Schaefer et al. 2003; Brehme et al. 2013). Additional effects of roads can also include alteration of chemical environment, spread of exotic species, and increased alteration and use of habitat by humans (Trombulak and Frissell 2000). There have been many studies of carnivores in Southern California reflecting various responses to habitat fragmentation and roads (Crooks 1999, 2002; Crooks and Soulé 1999; Lyren 2001; Fedriani et al. 2000; Tigas et al. 2002; Riley et al. 2003; Riley 2006; George and Crooks 2006; Lyren et al. 2006; Riley et al. 2006; Morin 2007). These responses include changes in behavior as well as patterns of spatial occurrence.

Even in regionally preserved core areas of Southern California, continued development and road construction negatively impact and alter general movement patterns and survival of some native species (Lyren et al. 2006). Riley et al. (2006) found a Southern California freeway, US-101, to operate as a genetic barrier to both bobcats and coyotes, suggesting that, even when these animals are crossing the highway, there is still a social barrier reflected in a lack of reproductive success of migrants. These genetic consequences threaten overall population health

despite limited structural connectivity. The fact that coyotes, a common, adaptive, and opportunistic predator, are impacted by fragmentation indicates the effects on other more sensitive species may be even more pronounced.

Summary

As discussed in Section 4.4.2, numerous federal, state, and local laws, regulations, and programs are in place that protect sensitive species; however, wildlife movement corridor conservation is not mandated by any federal regulations, and only recommended on the State level where wildlife movement corridors are identified. Federal laws and regulations including FESA, MBTA, and BGEPA specifically protect federally listed species, migratory birds, and eagles, and State laws and regulations, including CESA and CFGC, protect state- listed and other sensitive species and their habitats. The local NCCP and HCP programs implemented in the San Diego region identify core and linkage areas, protect linkages, and provide a process to strategically facilitate connectivity between open space habitats (cores). Conservation of agricultural lands discussed in Section 4.2 may help to maintain connectivity in some locations because many avian species and medium to large mammal species can utilize agricultural lands as habitat for foraging and/or temporary cover to traverse between native habitats.

While adherence to the existing federal, state, and local laws, regulations, and programs discussed in Section 4.4.2 would reduce impacts on wildlife movement, it cannot be concluded that adherence would result in less- than-significant impacts for all projects. Considering both direct and indirect impacts, land use change under the proposed Plan would interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites. This is a significant impact.

Transportation Network Improvements and Programs

Direct Impacts

As discussed for Bio-1, transportation network improvements are primarily focused within and adjacent to existing urbanized areas along all major highways and in the coastal and western portion of the County. The majority of transportation improvements occur via bikeways and transportation hubs in urban areas that have little direct impacts on wildlife movement. However, additional lanes and highway and rail improvements planned along major highways by 2035 would impact wildlife corridors and linkages. These impacts would include impacts on riparian corridors as a result of bridge crossings or existing bridge widenings or impacts to wetlands buffers. Transportation network improvements that would impact wildlife corridors are planned for existing highways, rail and transit projects, or arterials that already act as wildlife barriers. New road construction would likely require wildlife over- and underpasses (e.g., the Beyer Boulevard extension for the Southwest Village Specific Plan includes a wildlife overpass). However, they may make existing crossings less attractive for use by wildlife species or result in ecological sinks because migration corridors would be cut off, and the greater width may lead to additional highway mortality for terrestrial and avian species that attempt to cross transportation corridors at grade. Direct impacts to and effects between modeled wildlife movement corridors and linkages from the linear transportation network projects are presented in Table 4.4-11.

Almost the entire planned transportation network could potentially affect regional wildlife corridors and linkages. The majority of arterials are existing roads in highly urbanized areas and do not cross canyons or riparian areas that provide movement corridors for wildlife. Bikeways would have relatively little impact on corridors because most are within or directly adjacent to developed areas. However, the planning of new rail corridors, double tracking, and relocation of rail corridors through undeveloped areas (i.e., the relocation of LOSSAN Rail Corridor along Los Peñasquitos Lagoon) may significantly inhibit the movement of wildlife species.

Table 4.4-11 Forecasted Encroachments into Wildlife Movement Corridors and Linkages within the San Diego Region 2026–2035 (acres)

Corridor and Linkage Categories	Regional Growth and Land Use Change	Transportation Network Improvements	Total
SDSU climate resilient wildlife movement corridors	9,880	138	10,018
MSCP core and linkages	2,887	352	3,239

Corridor and Linkage Categories	Regional Growth and Land Use Change	Transportation Network Improvements	Total
MHCP core and linkages (BCLA)	491	19	510
Total	**13,258**	**509**	**13,767**

Note: SDSU = San Diego State University; MSCP = Multiple Species Conservation Program; MHCP = Multiple Habitat Conservation Program; BCLA = Biological Core and Linkage Area.

Source: Data downloaded by SDMMG in 2025; adapted by Ascent 2025.

Indirect Impacts

The type and nature of indirect impacts that may occur on wildlife movement by 2035 include impacts from light and noise pollution, development encroachment and edge effects (i.e. wildlife may get lured into dead-ends of vegetated spaces such as parks or greenbelts), poorly designed and installed wildlife underpasses and directional fencing (wildlife may get trapped or discouraged from crossing or may experience effects from lack of food or shelter).

Summary

By 2035, the transportation network improvements projected in the proposed Plan would impact wildlife movement. Although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2, "Regulatory Setting," would reduce impacts on wildlife movement, it cannot be concluded that adherence would result in less-than-significant impacts for all projects. Considering both direct and indirect impacts, transportation network improvements under the proposed Plan would interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites. This is a significant impact.

2035 Conclusion

Implementation of the regional growth and land use change as well as transportation network improvements and programs would interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites. Therefore, this impact (BIO-3) in the year 2035 would be significant.

2050

Regional Growth and Land Use Change

Direct Impacts

As discussed above, regional growth and land use change is significantly reduced relative to the 2035 horizon year and occurs mainly from La Mesa to National City, and in Bonsall and Alpine (Table 4.4-12).The types and nature of the direct impacts that may occur on wildlife movement by 2050 are similar to those reported for the 2035 horizon year, but substantially reduced. By 2050, as discussed for 2035, regional growth and land use change would directly and indirectly impact several corridors as a result of development adjacent to open space and expansion into modeled wildlife movement corridors (linkages identified in the MSCP and MHCP plans are conserved and impacts would be limited). Spaced rural residential development would further impact the corridors already identified as impacted in 2035, specifically in rural East and South County where most of the wildlife movement occurs.

Indirect Impacts

The type and nature of indirect impacts that may occur on wildlife movement are similar to the impacts that may occur by 2035.

Summary

As discussed for 2035, while adherence to the existing laws, regulations, and programs detailed in Section 4.4.2, "Regulatory Setting," would reduce impacts on wildlife movement, it cannot be concluded that adherence would result in less-than-significant impacts for all projects. Considering both direct and indirect impacts, land use

change under the proposed Plan would interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites. This is a significant impact.

Transportation Network Improvements and Programs

Direct Impacts

Similar to 2035, transportation network improvements are primarily focused within and adjacent to existing urbanized areas in the western one-third of the San Diego Region, but also include major transportation corridors in the North and East County along State Routes 76, 78 and 79 and in the South County along State Routes 52, 56 and 94. Wildlife movement impacts are most frequent along linear projects that cross major movement corridors. The types and nature of direct impacts that may occur on wildlife movement by 2050 are similar to the 2035 horizon year. Additional lanes and improvements planned along major highways by 2050 would impact riparian corridors. Transportation network improvements that would impact wildlife corridors are planned for existing highways, rail and transit projects, or arterials that already act as wildlife barriers. Widening these transportation corridors would not necessarily cut off these corridors because bridges that would be widened would likely be designed to allow for continued wildlife movement. However, as discussed above for regional growth and land use change, they may make existing crossings less attractive for use by wildlife species, and the greater width may lead to additional highway mortality for terrestrial and avian species that attempt to cross transportation corridors at grade. Direct impacts to modeled wildlife movement corridors and linkages from the linear transportation network projects are presented in Table 4.4-12.

Table 4.4-12 Forecasted Encroachments into Wildlife Movement Corridors and Linkages within the San Diego Region, 2036–2050 (acres)

Corridor and Linkage Categories	Regional Growth and Land Use Change	Transportation Network Improvements	Total
SDSU climate resilient wildlife movement corridors	532	313	845
MSCP core and linkages	1,205	370	1,575
MHCP core and linkages (BCLA)	27	21	48
Total	**1,764**	**704**	**2,468**

Notes: SDSU = San Diego State University; MSCP = Multiple Species Conservation Program; MHCP = Multiple Habitat Conservation Program; BCLA = Biological Core and Linkage Area.

Source: Data downloaded by SDMMG in 2025; adapted by Ascent 2025.

Bikeways in 2050 would have relatively little impact on corridors because most are within or directly adjacent to developed areas. The increased presence of humans in some riparian areas may alter wildlife behavior, but these areas are already heavily disturbed by human presence.

Indirect Impacts

The type and nature of indirect impacts that may occur on wildlife movement by 2050 are similar to the indirect impacts that may occur by 2035.

Summary

By 2050, the transportation network improvements projected in the proposed Plan would impact wildlife movement. As discussed for 2035, although adherence to the existing laws, regulations, and programs detailed in Section 4.4.2, "Regulatory Setting," would reduce impacts on wildlife movement, it cannot be concluded that adherence would result in less-than-significant impacts for all projects.

Considering both direct and indirect impacts, transportation network improvements under the proposed Plan would interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites. This is a significant impact.

2050 Conclusion

Implementation of the regional growth and land use change as well as transportation improvements and programs would interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites. Therefore, this impact (BIO-3) in the year 2050 would be significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would cause greater impacts on the movement of fish and wildlife species or wildlife corridors. Climate change could increase the rate at which plant and animal species require corridors by rapidly changing temperature and precipitation patterns and thus altering habitats. Vegetation specifically may not be able to move as quickly to keep up with changing climate, and some habitats may expand while others are lost (Moser et al. 2012). Increased temperatures and drought could also affect the Pacific Flyway, which encompasses the San Diego region and provides areas for migratory birds to stop and feed (Murphy 2018). Climate change could also affect migratory corridors themselves because changes to temperature, precipitation, drought, and wildfire patterns may affect the corridor vegetation and fragment or completely remove the corridors.

The proposed Plan's impacts would be worsened by climate change. Habitat fragmentation due to land use change, transportation network improvements, and other factors associated with the proposed Plan may interfere more with habitat and migratory corridors and reduce the ability for species displaced by climate change to seek refuge (EcoAdapt 2017).

MITIGATION MEASURES

BIO-3 INTERFERE SUBSTANTIALLY WITH THE MOVEMENT OF ANY NATIVE RESIDENT OR MIGRATORY FISH OR WILDLIFE SPECIES OR WITH ESTABLISHED NATIVE RESIDENT OR MIGRATORY WILDLIFE CORRIDORS, OR IMPEDE THE USE OF NATIVE WILDLIFE NURSERY SITES

2035, 2050

BIO-3a: Facilitate Wildlife Movement. During planning, design, and project-level CEQA review of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement project designs that provide for continued movement of wildlife by limiting edge effects and assisting wildlife navigation through or across barriers in areas where wildlife corridors and nursery sites are impacted, as determined by best available information, modeled wildlife corridors, linkages identified in adopted HCP/NCCPs, studies conducted by the SDMMP with their partners, or project-specific wildlife movement studies. Wildlife movement studies, and before-after-control-impact-studies where data are lacking, shall be conducted prior to project design, including identifying corridor widths and wildlife crossing structures and balancing conservation and recreation. Adaptive management and monitoring measures in the CEQA review and mitigation measures, shall be included in project design. Design measures consist of, but are not limited to, the following:

- Incorporate wildlife movement and corridor planning data generated by SDMMP into project design.
- Allow corridor buffer zones and wide movement corridors to remain or incorporate periodic larger habitat patches along a corridor's length.
- Where feasible, site linear projects, including pedestrian trails, away from wildlife corridors and conserved lands or NCCP lands.
- Where feasible, prohibit nighttime trail use and enforce seasonal trail closure, and plan access points and infrastructure carefully to minimize the effects on biological resources and wildlife corridors.
- As feasible, within 200 feet of a wildlife corridor, use nonreflective glass or glass treated with nonreflective coating for all exterior windows and building surfaces.

- Use only native species for landscaping within at least 200 feet of identified wildlife corridors.
- Incorporate dimmed, shielded, and directed lighting in areas near corridors that only illuminate the project site; consider high-pressure sodium or cut-off fixtures as feasible, and provide vegetative screening to reduce light pollution on corridors.
- Include permanent noise barriers and sound-attenuating features as part of the project design and incorporate temporary noise barriers and noise-reduction devices on equipment during construction; require the use of hydraulically or electrically powered tools, as feasible. Barriers could be in the form of outdoor barriers, sound walls, buildings, or earth berms to attenuate noise at adjacent sensitive uses.
- Install physical barriers (e.g., wildlife fencing) that prevent human and domestic predator entry into the corridor and, if appropriate, limit the amount of noise and lighting that enters the corridor. Use techniques such as grade separation, buffer zones, landscaped berms, dense plantings, sound walls, reduced-noise paving materials (i.e., rubberized asphalt), and traffic calming measures.
- Minimize the number of road crossings through identified wildlife corridors.
    - Incorporate the appropriate wildlife crossing infrastructure into project design. Wildlife crossing infrastructure will be designed following the latest scientific information and should include upgrading existing culverts to facilitate functional wildlife movement, installing crossing and directional fencing at roadkill hotspots, installing wildlife bridges (overpasses) or undercrossing, and managing in perpetuity both sides of the wildlife crossings. Construct or retrofit with features such as open span bridges instead of closed culverts to allow for wildlife movement under linear transportation corridors.
    - Maximize the use of overpasses strictly for the use of wildlife movement when feasible (i.e., not paired with other recreational uses that may interfere with the use of the overpass by wildlife). However, if the construction of or retrofitting with wildlife bridges is infeasible, incorporate undercrossings or other crossing structures that use scientifically accepted openness ratios to allow for continued movement of wildlife where transportation facilities create barriers to wildlife movement and use of nursery sites. Evaluate size-class-specific crossing structures and movement enhancement features (e.g., habitat refugia within structure, soft bottom undercrossings) for each species to ensure that crossings are functional for movement. Additionally, within aquatic habitat impacting fish corridors for species such as southern steelhead, create passable aquatic barriers for migratory fish species in order to provide fish access to spawning and rearing habitats.
    - Maintain undercrossings and other crossing structures as needed to ensure wildlife movement. Prepare a fencing and wildlife crossing structure maintenance plan for projects with edge effects to maintain permeability for wildlife across corridors.
    - Install directional fencing, where appropriate, to reduce vehicle mortality and guide wildlife to proposed bridges, undercrossings, and other crossing structures. Where fencing stops, extend the fence and angle it away from the roadways to deter wildlife from being funneled to roadways. Because it is not possible to install a continuous fence, use one-way gates or jump-outs so animals that do get around fence end runs can safely exit roadways.

In addition, consistent with the California Ecosystems Protection Act (AB 1788), ban the use of anticoagulant rodenticides near open space, conserved lands, and areas identified as core, linkages, wildlife corridors, or other connectivity areas. The use of anticoagulant rodenticides causes secondary poisoning in predators and may contribute to reduced functional connectivity in an already constrained landscape.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measure BIO-3a would reduce this impact (BIO-3). However, there is no assurance that this mitigation measure would be implemented for all projects or equally effective due to the wide variety of circumstances, complexity of some sites, and complexity of impacts on them. Therefore, this impact (BIO-3) would remain significant and unavoidable.

BIO-4 CONFLICT WITH THE PROVISIONS OF AN ADOPTED HCP, NCCP, OR OTHER CONSERVATION PLAN, OR WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES

Analysis Methodology

The proposed Plan is designed to comply with the applicable provisions of all approved local, regional, state, and federal regulations, policies, ordinances, and finalized conservation plans (HCP/NCCP, specifically the MSCP and MHCP and their respective subregional plans).

The locally adopted MSCP and MHCP and their respective subregional plans identify and map lands that are targeted for conservation in the future but within which some development is allowed (i.e., softline preserves, partial land conservation targets, amendment areas, PAMA, etc.). By the year 2035, the County of San Diego North County MSCP would likely be approved. No additional NCCP subarea plans are anticipated for the 2035 and 2050 horizon years, and the City of Oceanside has rescinded their Draft MHCP Subarea Plan (although the city still implements certain Draft Subarea Plan provisions through their General Plan update; the policies are generally embodied in the Draft Vital & Sustainable Resources Development). These conservation plans describe the processes by which future development impacts on target habitats and species both inside and outside preserves are evaluated and approved while meeting conservation targets. The proposed Plan is designed to follow the policies and procedures of the adopted MSCP and MHCP (County of San Diego 1998; SANDAG 2003) and their adopted subregional plans, and it can safely be assumed that all development within the plan areas would comply with all associated guidelines and ordinances, and that project-specific review and analysis would ensure compliance. Furthermore, plans, such as the South County MSCP, have specific accommodations for implementation of the adopted circulation network.

It should be noted that the MSCP IA is a 50-year permit issued by the USFWS and CDFW. The IAs for the Poway Subarea Plan (1996), the County of San Diego MSCP (1997), and the City of San Diego Subarea Plan (1997) expire prior to the 2050 horizon year. The County applied for an amendment to the MSCP in 2020. This EIR assumes that the IA for each plan would be amended and extended past the 2050 horizon year. For the purpose of this EIR, it is assumed that all permits associated with the MSCP and its subarea plans (e.g., City of Poway 1996, both the County and City of San Diego 1997) would be renewed, and the analysis for the horizon year 2050 was conducted accordingly.

The analysis methodology includes a quantitative analysis of potential encroachment into MSCP and MHCP Preserves (i.e., areas currently protected, or partially protected, from development or permanently conserved) identified and mapped in locally adopted HCP/NCCPs and their corresponding implementing ordinances. This may also include vacating and replacing conservation easements, for example for the extension of Beyer Boulevard to serve the Southwest Village Specific Plan in Otay Mesa. Allowable development and uses within these preserves are generally limited to activities considered compatible with conservation goals, for example passive recreation, scientific study, and essential public safety activities, such as fuel management, fire response and suppression, law enforcement, border patrol use, and repair of infrastructure. Development of homes, businesses, and new or expanded infrastructure, and similar community elements are not allowed within NCCP preserve areas except where identified in the subregional plans. Softline preserves and minor and major amendment areas are excluded from the analysis because these areas would be impact-neutral, meaning that loss of these areas would be compensated by adding and conserving lands of equal or higher habitat value into the NCCP preserve system consistent with the requirements of the respective NCCP and IA.

Any regional growth and land use change or transportation network improvement that encroaches into NCCP preserve areas would have the potential to conflict with the HCP/NCCP and violate the NCCP permits; it is assumed that the majority of impacts on NCCP preserves would be avoided due to provisions in the local NCCP implementation policies and ordinance that require avoidance of and adjustments to NCCP preserve boundaries. For example, under the adopted NCCP subarea plans and associated ordinances, procedures are in place to process preserve boundary line adjustments (e.g., City of San Diego 2018), or major or minor amendments to the NCCP subarea plans (e.g., County of San Diego 2010). Boundary adjustment or amendment approvals would require biologically equivalent or superior habitat compensation or project redesign when there is encroachment into NCCP preserve areas; major amendments also require approval by the regional offices of USFWS and CDFW. There may be cases where a preserve boundary adjustment is not possible, and a project would be redesigned to avoid the preserve area as necessary. GIS data layers are used to identify existing NCCP preserve areas in the San Diego region. This database makes it possible to determine whether any elements of the proposed Plan encroach into NCCP preserve areas that prohibit development, notwithstanding the possibility of a boundary adjustment that would compensate for impacts of encroachment, and to quantitatively assess the encroachment into NCCP preserves.

Some NCCP preserves are already conserved, whereas others are still in the planning stage. In order to avoid double-counting of overlay in areas where NCCP preserves are already conserved, the impact acreage in the tables below for each horizon year is assigned to the "Conserved Lands and Habitat Preserves" category rather than in the respective NCCP preserve layer. The overlay of already conserved areas on the NCCP preserves is illustrated in Figure 4.4-17.

Furthermore, the analysis also includes potential encroachments into lands conserved outside the NCCP boundaries, including open space preserves and mitigation sites. Impacts on these conserved lands are highly unlikely due to the agreements that govern the conservation agreements that govern many, if not most, of these lands. The analysis is based on programmatic impact footprints; on a project-specific level, most of these impacts would likely be avoided through project redesign. The Public Park Preservation Act of 1971 (Public Resources Code Sections 5400–5409) requires that any "take" of public parkland may require compensation that is sufficient to acquire substantially equivalent substitute parkland or provide substitute parkland of comparable characteristics.

In addition, local policies and ordinances are qualitatively reviewed for potential conflicts with regional growth and land use change or transportation improvement projects. Table 4.4-6 identifies policies and ordinances that regulate the implementation of the respective NCCP plans (see Table 4.4.-5). All future projects are required to comply with these policies and ordinances.

Impact Analysis

2035

Regional Growth and Land Use Change

Regional growth and land use change by 2050 would be the same as previously described in the 2035 analysis for Impact BIO-1. By 2035, implementation of the regional growth and land use change in the proposed Plan would encroach into conservation areas and lands designated for conservation in all approved NCCP Plans in the County, including the existing South County MSCP preserves, the City of San Diego MHPA 100% preservation areas, Chula Vista MSCP preserve, and MHCP FPA (Table 4.4-13). The majority of encroachment is a result of spaced rural residential development within the South County MSCP and the MHCP FPA/BCLA. Impacts to the City of San Diego MSCP include land exchanges in Otay Mesa due to boundary line adjustments for the Southwest Village Specific Plan Project, which will be mitigated through land exchanges. Impact acreages for spaced rural residential development overestimate impacts within NCCP preserves because development occurs at a much lower density than other developed areas and only portions of properties are developed and impacts on NCCP preserves will likely be avoided consistent with land use policies. However, because any developed land use category for lands within NCCP preserve conflicts with the compatible land use designated for NCCP preserves, the entire acreage is

quantified. Encroachment into MHPA 100% preservation areas consist of small fragments of urban development. Such development as Fanita Ranch in Santee would occur based on a development-specific HCP that would include conservation and mitigation strategies.

By 2035, the regional growth and land use change projected in the proposed Plan would allow for development and redevelopment within NCCP Preserve areas identified by adopted HCP/NCCPs from regional growth. The majority of impacts occur to South County MSCP preserve lands. However, significant conservation gains occurred with the acquisition of 1,291 acres of formerly planned development property in Proctor Valley in southwestern San Diego County. The area is located adjacent to CDFW's Rancho Jamul Ecological Reserve and USFWS's San Diego National Wildlife Refuge and was added to the CDFW Rancho Jamul Ecologist Reserve on January 31, 2024[8]. Project-specific planning, review by local agencies, regulatory agencies, and wildlife agencies, and CEQA review of development projects would minimize any potential conflict with policies and ordinances protecting biological resources. Because avoidance of conflicts with regional conservation plans and programs are built into these programs by way of local policies and ordinances, and the regulations guiding the implementation of the programs (i.e. boundary line adjustment requirements), no conflicts are expected with any approved local regional, state, or federal regulations, policy, ordinance, or plan, except for encroachment into NCCP preserve areas identified by adopted HCP/NCCPs. Regional growth and land use change associated with the proposed Plan would be unlikely to violate policies and procedures of the adopted HCP/NCCPs, and MSCP and MHCP preserve conflicts would be resolved through boundary adjustments, compensation, or project redesign, so that impacts would be less than significant.

Table 4.4-13 Forecasted Encroachments into Conservation Areas and Lands Designated for Conservation by Regional Conservation Plans within the San Diego Region, 2026–2035 (acres)

Corridor and Linkage Categories	Regional Growth and Land Use Change	Transportation Network Improvements	Total
City of San Diego MHPA	4	140	144
City of Chula Vista MSCP	_	0.2	0.2
South County MSCP	1,677	67	1,744
MHCP	388	28	416
Conserved lands and habitat preserves[9]	28	8	36
Total	*2,096*	*244*	***2,340***

Notes: MSCP = Multiple Species Conservation Program; MHCP = Multiple Habitat Conservation Program.

Source: Data downloaded from SANGIS in 2025; adapted by Ascent in 2025.

Transportation Network Improvements and Programs

Transportation network improvements would be the same as previously described in the 2035 analysis for Impact BIO-1. By 2035, more encroachment would occur from the transportation network improvements into the MHCP FPA/BCLA, County MSCP preserve, and City of San Diego MHPA 100% preservation areas (Table 4.4-13). The City of Chula Vista MSCP preserve would not experience any significant encroachments or changes.

By 2035, the transportation network improvements projected in the proposed Plan would impact NCCP preserve areas identified by adopted HCP/NCCPs, although hardline preserves would largely be avoided (except for a small impact on MHCP hardline preserves (most jurisdictions within the MHCP do not operate under approved Subarea Plans and the majority of impacts to the MHCP would be analyzed and mitigated on a project-specific basis). Impacts to the NCCP lands, specifically the City of San Diego's MHPA, would be offset through Boundary Line

[8] At the time of this document, the acquired and conserved lands have not yet been added to the conserved lands layer in the San Diego County conserved lands database (SDMMP 2025).

[9] Conserved lands and habitat preserves are derived from the San Diego County Conserved Lands Database (SDMMP 2025) and include mitigation lands preserved in perpetuity, lands owned or managed by lands trusts (i.e. San Diego Habitat Conservancy) and land conservancies (i.e. San Diego River Park Conservancy, Endangered Habitat Conservancy, etc.), and ecological or wildlife reserves and preserves managed by federal and state wildlife agencies.

Adjustments with lands of biologically equal or higher quality, Project-specific planning, review by local agencies, regulatory agencies, and wildlife agencies, and CEQA review of transportation projects would minimize any potential conflict with policies and ordinances protecting biological resources. Because avoidance of conflicts with regional conservation plans and programs are built into these programs by way of local policies and ordinances, and the regulations guiding the implementation of the programs (i.e. boundary line adjustment requirements), no conflicts are expected with any approved local, regional, state, or federal regulations, policy, ordinance, or plan, with the exception of encroachment into NCCP preserve areas identified by adopted HCP/NCCPs. Transportation network improvements associated with the proposed Plan would be unlikely to violate policies and procedures of the adopted HCP/NCCPs, and MSCP and MHCP, and preserve conflicts would be resolved through boundary adjustments, compensation, or project redesign so that impacts would be less than significant.

2035 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs associated with the proposed Plan would result in less-than-significant impacts related to conflicts with adopted conservation plans. Regional growth and land use change associated with the proposed Plan would be unlikely to violate policies and procedures of the adopted HCP/NCCPs, Projects implementing the proposed Plan would require biologically equivalent or superior habitat compensation or project redesign when there is encroachment into NCCP preserve areas. Project-specific planning, review by local agencies, regulatory agencies, and wildlife agencies, and CEQA review of land use and transportation projects would minimize or remove any potential conflict with policies and ordinances protecting biological resources. Pursuant to the review of local NCCP implementation policies and ordinances, no conflicts are expected with any approved local, regional, state, or federal regulations, policy, ordinance, or plan. Therefore, this impact (BIO-4) in the year 2035 would be less than significant.

2050

Regional Growth and Land Use Change

Regional growth and land use change by 2050 would be the same as previously described in the 2050 analysis for Impact BIO-1. By 2050 implementation of the regional growth and land use change in the proposed Plan would encroach into conservation areas and lands designated for conservation in all approved NCCP Plan areas across the County, including the existing Chula Vista MSCP preserve, mainly as a result of development in the Otay Ranch preserve, and in Otay Mesa due to development of the specific plan (Table 4.4-14). Impact acreages for spaced rural residential development overestimate impacts within NCCP preserves because development occurs at a much lower density than other developed areas and only portions of properties are developed. However, because any developed land use category for lands within NCCP preserves conflicts with the compatible land use designated for NCCP preserves, the entire acreage is quantified.

Table 4.4-14 Forecasted Encroachments into Conservation Areas and Lands Designated for Conservation by Regional Conservation Plans within the San Diego Region, 2036–2050 (acres)

Corridor and Linkage Categories	Regional Growth and Land Use Change	Transportation Network Improvements	Total
City of San Diego MSCP MHPA (including VPHCP)	2	151	153
City of Chula Vista MSCP	_	1	1
South County MSCP	437	122	559
MHCP	15	30	45
Conserved lands and habitat preserves[10]	19	22	41
Total	*47*	*326*	**799**

[10] Conserved lands and habitat preserves are derived from the San Diego County Conserved Lands Database and include mitigation lands preserved in perpetuity, lands owned or managed by lands trusts (i.e. San Diego Habitat Conservancy) and land conservancies (i.e. San Diego River Park Conservancy, Endangered Habitat Conservancy, etc.), and ecological or wildlife reserves and preserves managed by federal and state wildlife agencies (SDMMP 2025).

Notes: MSCP = Multiple Species Conservation Program; MHCP = Multiple Habitat Conservation Program.

Source: Data downloaded from SANGIS in 2025; adapted by Ascent in 2025.

By 2050, the regional growth and land use change projected in the proposed Plan would allow for more development and redevelopment within NCCP preserve areas identified by adopted HCP/NCCPs (except for the City of Chula Vista's MSCP preserve lands), including hardline preserves. Because avoidance measures are built into the plans, no conflicts are expected with any approved local, regional, state, or federal regulations, policy, ordinance, or plan, with the exception of encroachment into NCCP preserve areas identified by adopted HCP/NCCPs. As discussed above for 2035, regional growth and land use change associated with the proposed Plan would be unlikely to violate policies and procedures of the adopted HCP/NCCPs, and MSCP and MHCP preserve conflicts would be resolved through boundary adjustments, compensation, or project redesign, so that impacts are less than significant.

Transportation Network Improvements and Programs

Transportation network improvements would be the same as previously described in the 2050 analysis for BIO-1. By 2050, implementation of the transportation network improvements in the proposed Plan would encroach into any existing NCCP preserves (Table 4.4-14). Because avoidance measures are built into the plans and implementation policies and ordinances, no conflicts are expected with any approved local, regional, state, or federal regulations, policy, ordinance, or plan, with the exception of encroachment into NCCP preserve areas identified by adopted HCP/NCCPs.

As discussed above for the 2035 horizon year, transportation network improvements associated with the proposed Plan would be unlikely to violate policies and procedures of the adopted HCP/NCCPs, and NCCP preserve conflicts would be resolved through boundary adjustments, compensation, or project redesign, so that impacts are less than significant.

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs associated with the proposed Plan would result in less-than-significant impacts related to conflicts with adopted conservation plans. Regional growth and land use change associated with the proposed Plan would be unlikely to violate policies and procedures of the adopted HCP/NCCPs, and projects implementing the proposed Plan would require biologically equivalent or superior habitat compensation or project redesign when there is encroachment into NCCP preserve areas. Project-specific planning, review by local agencies, regulatory agencies, and wildlife agencies, and CEQA review of land use and transportation projects would minimize or remove any potential conflict with policies and ordinances protecting biological resources because of built-in provisions in the NCCP implementation policies and ordinances to avoid impacts to the preserve system. Pursuant to the review of local NCCP implementation policies and ordinances, no conflicts are expected with any approved local, regional, state, or federal regulations, policy, ordinance, or plan. Therefore, this impact (BIO-4) in the year 2050 would be less than significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would cause similar impacts related to conflicts with an HCP, NCCP, other conservation plan, local biological protection policies, or ordinance.

MITIGATION MEASURES

BIO-4 CONFLICT WITH THE PROVISIONS OF AN ADOPTED HCP, NCCP, OR OTHER CONSERVATION PLAN, OR WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES

2035, 2050

No mitigation measures are needed because no significant impacts would occur.

4.4.5 Cumulative Impacts Analysis

C-BIO-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON BIOLOGICAL RESOURCES

The area of geographic consideration for cumulative impacts on biological resources is the Southern California and northern Baja regions. Biological resources have common characteristics across the expanse of this region while also having very unique and specific attributes in more discrete locations. Biological resources extend beyond jurisdictional boundaries and can be impacted by development and projects across an expansive area; thus, it is necessary to consider the entire region to adequately include broad-reaching impacts and overall effects to sensitive resources.

A hybrid approach to considering cumulative biological impacts includes evaluation of general patterns of regional urbanization, growth, and land use changes while also allowing for explicit analysis of individual large-scale probable future projects with impacts on specific biological resources per their available environmental documents.

Information on planned residential development and land use changes in Southern California is available in adopted land use plans for individual cities and counties. The plans considered and relied on for this cumulative biological analysis include the SCAG 2024-2050 RTP/SCS and its EIR (SCAG 2024); SANDAG MHCP and associated EIS/EIR (SANDAG 2003); County of San Diego Multiple Species Conservation Plan (MSCP) and associated EIR (County of San Diego 1998); SDCWA Subregional Natural Community Conversation Plan/Habitat Conservation Plan (NCCP/HCP) and associated EIR/EIS (SDCWA 2010); Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP) and associated EIR/EIS (County of Riverside 2003); Coachella Valley MSHCP and associated EIR/EIS (Coachella Valley Association of Governments 2007); Strategic Plan of the Commission for Environmental Cooperation 2010-2015 (Commission for Environmental Cooperation 2010); and California-Baja 2021 California Border Master Plan (Caltrans 2021).

The cumulative impact is the combination of the impacts of the proposed Plan, probable future projects, and impact projections in adopted plans. Significant cumulative impacts related to biological resources would occur if the land use changes and transportation network improvements associated with the proposed Plan, together with adopted plans and related projects, would have a substantial adverse effect on any sensitive natural vegetation community or regulated aquatic resources; have a substantial adverse effect on any candidate, sensitive, or special-status species; interfere substantially with the movement of any native resident or migratory fish or wildlife species; or conflict with an adopted conservation plan or local policy or ordinance protecting biological resources.

Impacts of the Proposed Plan

Implementation of the proposed Plan's regional growth and land use change and transportation network improvements would result in substantial direct and indirect adverse effects on sensitive natural communities and regulated aquatic resources (Impact BIO-1); and species identified as candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by CDFW or USFWS (Impact BIO-2). Implementation of the proposed Plan's regional growth and land use change and transportation network improvements would also interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites in 2035 and 2050 (Impact BIO-3). These impacts would remain significant and unavoidable even with mitigation.

The proposed Plan is designed to comply with all approved HCPs, NCCPs, other conservation plans, and local biological protection policies and ordinances. Therefore, no conflicts would occur (Impact BIO-4). Any encroachment into hardline preserve areas would not conflict with HCPs and NCCPs because biologically equivalent or superior compensation of habitat or project redesign would be required when there is encroachment into hardline preserve areas. Thus, the proposed Plan would result in a less-than-significant impact related to conflicts with HCPs, NCCPs, and other conservation plans in 2035 and 2050.

Impacts of Related Projects

Projects identified in the "Cumulative Projects" section of Chapter 4, "Environmental Impact Analysis Approach," include the California High-Speed Rail Los Angeles–San Diego Segment, Midway Rising Specific Plan, Navy Old Town Revitalization Project, San Diego International Airport Development Plan, City of San Diego Pure Water North City Project, and San Diego Unified Port District Port Master Plan Update. The California High-Speed Rail Train (HST) project routes would affect the region of Southern California from Los Angeles to San Diego.

According to the HST EIR/EIS, sufficient information is not available at the program level to conclude with certainty that mitigation will reduce impacts on affected resources to a less-than-significant level in all circumstances (HSRA 2005). Therefore, the EIR/EIS concludes that the "impacts to biological resources and wetlands are considered significant at the program level even with the application of mitigation strategies.". The Naval Base Point Loma Old Town Campus (OTC) Revitalization EIS (U.S. Navy n.d.) and the City of San Diego Pure Water North City project EIR (City of San Diego 2018) concluded there would be less-than-significant impacts related to biological resources. The San Diego Unified Port District Port Master Plan Update PEIR (San Diego Unified Port District 2024), Midway Rising Specific Plan SEIR (City of San Diego 2025b), and San Diego International Airport Development Plan EIR (SDCRAA 2008) determined that impacts on biological resources would be less than significant with the implementation of mitigation.

Impacts of Projections in Adopted Plans

According to the EIR for the SCAG 2024-2050 RTP/SCS, which analyzes impacts through 2050, growth and projects would result in a wide variety of significant and unavoidable biological impacts. While site-specific analyses would be required to identify and minimize the impacts of each particular transportation and/or development project, the SCAG 2024-2050 RTP/SCS would substantially affect vegetation communities and habitat, some of which are utilized by special-status species. The EIR identified the potential to contribute to a cumulatively considerable loss of habitat and biological resources (SCAG 2024).

The MHCP is the Subregional Plan for the northwestern portion of San Diego County that encompasses 111,908 acres (29,962 acres of natural habitat) and provides conservation for 77 species in a 20,593-acre reserve. The EIS/EIR for the MHCP concluded that, because the project has the potential to cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; and reduce the number or restrict the range of an endangered, rare, or threatened species, a significant impact on some biological resources would occur (SANDAG 2003).

The San Diego County MSCP Subregional Plan is a cooperative effort by the County of San Diego and other city jurisdictions in southwestern San Diego County to implement a regional NCCP and HCP and contribute collectively to the conservation of vegetation communities and species in the MSCP study area. The associated EIR/EIR identified significant but mitigable direct and indirect impacts on biological resources (County of San Diego 1997).

The SDCWA NCCP/HCP is a comprehensive program designed to facilitate conservation and management of covered species and habitats associated with SDCWA activities and contribute to ongoing regional conservation efforts. The EIR/EIS found that implementation of the NCCP/HCP would result in less-than-significant impacts on biological resources after mitigation (SDCWA 2010).

The Western Riverside MSHCP encompasses approximately 1,966 square miles and provides for the creation of a Conservation Area that protects and manages 500,000 acres of habitat for 146 covered species. The associated EIR/EIS found significant and unavoidable impacts on sensitive upland communities as well as noncovered species;

however, no cumulative biological impacts were identified as the plan would preserve sufficient acreage of the sensitive vegetation communities present in western Riverside County (County of Riverside 2003).

The Coachella Valley MSHCP protects 240,000 acres of open space and 27 species. The associated EIR/EIS found that effective implementation of the plan will help ensure that impacts on biological resources in the plan area will be less than significant (Coachella Valley Association of Governments 2007).

The Strategic Plan of the Commission for Environmental Cooperation 2021-2025 includes Pillar 2.4, which supports the conservation and sustainable use of biological diversity and protection of ecosystems. While there is no associated environmental analysis document, the intent of the plan is to develop capacity to implement an ecosystem approach to conservation and sustainable use and monitor relevant outcomes in internationally shared ecosystems, with attention to both terrestrial and marine ecosystems (Commission for Environmental Cooperation 2021).

The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land Ports of Entry (POEs) and transportation infrastructure serving those POEs in the California-Baja California region (Caltrans 2021). The projects included in the Master Plan would have construction and operational impacts that could have an adverse effect on biological resources. No detailed analysis of biological impacts was conducted for this Master Plan.

Cumulative Impacts and Impact Conclusions

2035

The planned growth and projects throughout Southern California and northern Baja region and implementation of the proposed Plan resulting in regional growth and land use change and transportation network improvements would contribute to the cumulative loss of biological resources due to conversion of undeveloped lands to developed lands, including direct and indirect adverse effects on sensitive natural communities and regulated aquatic resources; and on species identified as candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the CDFW or USFWS. Cumulative substantial interference with fish and wildlife movement, wildlife corridors, and nursery sites would also occur.

Implementation of the proposed Plan growth and transportation network improvements and programs would have significant impacts related to biological resources in the San Diego Region by the year 2035. Land use changes and transportation network improvements associated with both the proposed Plan and regional projects and plans developed in Southern California and northern Baja by 2035 would allow for more development and redevelopment to occur, and would therefore result in substantial direct and indirect adverse effects on sensitive natural communities and regulated aquatic resources; on species identified as candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the CDFW or USFWS; and on substantial interference with fish and wildlife movement, wildlife corridors, and nursery sites. Thus, the combination of the proposed Plan and continued growth and development through the rest of the Southern California and northern Baja region would result in significant cumulative biological resource impacts. Because cumulative biological resource impacts throughout the Southern California and northern Baja region by 2035 would be significant, and because the proposed Plan's incremental biological resource impacts are significant, the proposed Plan's incremental biological resource impacts are cumulatively considerable and thus significant (Impact C-BIO-1).

The proposed Plan's impacts related to conflicts with adopted policies of HCPs and NCCPs and other local policies and ordinances protecting biological resources, in combination with similar impacts in adopted plans and other cumulative projects, would not cause a significant cumulative impact in 2035, and the proposed Plan's incremental contribution would not be cumulatively considerable.

2050

As described in the 2035 analysis, the planned growth and projects throughout Southern California and northern Baja region and implementation of the proposed Plan resulting in regional growth and land use change and transportation network improvements would contribute to the cumulative loss of biological resources as result of conversion of undeveloped lands to developed lands, including substantial direct and indirect adverse effects on

sensitive natural communities and regulated aquatic resources; and on species identified as candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the CDFW or USFWS. Cumulative substantial interference with fish and wildlife movement, wildlife corridors, and nursery sites would also occur.

Implementation of the proposed Plan growth and transportation network improvements and programs would have significant impacts related to biological resources in the San Diego Region by the year 2050. Land use changes and transportation network improvements associated with both the proposed Plan as well as regional projects and plans developed in Southern California and northern Baja by 2050 would allow for more development and redevelopment to occur, and would therefore result in substantial direct and indirect adverse effects on sensitive natural communities and regulated aquatic resources; and species identified as candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the CDFW or USFWS. The proposed Plan as well as regional projects and plans developed in Southern California and northern Baja by 2050 would also interfere substantially with fish and wildlife movement, wildlife corridors, and nursery sites. Thus, the combination of the proposed Plan and continued growth and development through the rest of the Southern California and northern Baja region would result significant cumulative biological resource impacts.

Because cumulative biological resource impacts throughout the Southern California and northern Baja region by 2050 would be significant, and because the proposed Plan's incremental biological resource impacts are significant, the proposed Plan's incremental biological resource impacts are cumulatively considerable (Impact C-BIO-1).

Similar to the 2035 analysis, the proposed Plan's impacts related to conflicts with adopted policies of HCPs and NCCPs and other local policies and ordinances protecting biological resources, in combination with similar impacts in adopted plans and other cumulative projects, would not cause a significant cumulative impact in 2050, and the proposed Plan's incremental contribution would not be cumulatively considerable.

MITIGATION MEASURES

C-BIO-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON BIOLOGICAL RESOURCES

Implementation of mitigation measures BIO-1a through BIO-1e, BIO-2a through BIO-2c, and BIO-3a would reduce direct and indirect impacts of the proposed Plan. Measures BIO-1a through BIO-1e include design and avoidance measures to be incorporated into projects to avoid impacts on sensitive natural vegetation communities and aquatic resources; provide compensatory mitigation when impacts are unavoidable; implement mitigation and monitoring plans per agency requirements; prepare habitat restorations plans; prepare habitat/long-term management plans; and implement BMPs to avoid indirect impacts. Measures BIO-2a, through BIO-2c include design and avoidance measures to be incorporated into projects to avoid and reduce impacts on special-status wildlife and plant species and provide compensatory mitigation. Measure BIO-3 includes measures to provide for movement of wildlife. Impacts of some projects on sensitive natural communities and regulated aquatic resources; species identified as candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the CDFW or USFWS; and interference with wildlife movement and wildlife corridors remain significant and unavoidable after implementation of all applicable mitigation measures.

Similar types of mitigation measures are provided in other regional plans, such as the SCAG 2024-2050 RTP/SCS EIR, and individual project EIRs have project-specific biological mitigation. The SCAG 2024-2050 RTP/SCS EIR concluded that even with implementation of mitigation, biological resource impacts would remain significant. The HST EIR/EIS provided biological mitigation strategies, but concluded that it could not be determined that all biological impacts would be fully mitigated to below a level of significance. Thus, there is no assurance that the proposed mitigation would reduce impacts of adopted plans and related projects in Southern California and northern Baja to a less-than-significant level.

Mitigation measures BIO-1a through BIO-1e, BIO-2a through BIO-2c, BIO-3a would not reduce the proposed Plan's incremental impacts to less than significant. Therefore, the proposed Plan's incremental contributions to cumulative biological impacts in years 2035 and 2050 would remain cumulatively considerable and thus significant post-mitigation.

4.5 CULTURAL RESOURCES

This section evaluates the cultural resources impacts of the proposed Plan.

4.5.1 Existing Conditions

PRE-EUROPEAN CONTACT SETTING

The major cultural developments in the San Diego region before the arrival of Spanish colonists in 1769 are generally discussed in three major periods (Paleoindian, or Paleoamerican; Archaic; and Late Prehistoric), each marked by certain changes in the archaeological record. These archaeological changes appear to reflect a variety of shifts in technology, settlement, and land use.

Paleoamerican Period (12,000–7000 BP)

Despite decades of research, the early prehistory of coastal Southern California remains poorly understood. The archaeological record reveals that humans appeared about 13,000 years ago on the Channel Islands, where they lived primarily by fishing and shellfishing. These early island components are of interest because they seem to reflect fully developed maritime economies that were distinct from, but roughly contemporaneous with, the Clovis tradition represented throughout much of interior North America. Identified late-Pleistocene components are lacking on the mainland coast of Southern California, although several sites have yielded calibrated dates in excess of 9,000 years (Erlandson et al. 2007: 58–59). Archaeological complexes represented at these early sites include the San Dieguito complex with its finely worked scrapers and leaf-shaped and stemmed projectile points (Byrd and Raab 2007; Warren 1968), and the La Jolla complex represented by simple flaked cobble tools, relatively abundant groundstone, and flexed burials. Although the temporal and cultural relationship between San Dieguito and La Jolla continues to be debated, human populations were well established along the coast of Southern California very early in the Holocene.

Archaic Period (7000–1200 BP)

Sea-level rise had been occurring since the last glacial maximum (about 18,000 years ago), and during the early Holocene, sea levels increased. However, by around 8000 BP, sea levels began to slow to a rate of about 0.25 meters per century, a process that allowed the formation of a complex mosaic of productive lagoon and estuary habitats at many locations along the region's coastline (Masters and Aiello 2007; Masters and Gallegos 1997). These seem to have supported a significant coastal population during the early Archaic because numerous coastal components have been found that date to this interval.

Archaeological remains in these components typically represent the La Jolla complex and often contain abundant shellfish and fish remains, along with flaked cobble tools, basin metates, manos, discoidals, stone balls, and flexed burials. At the same time, archaeological research suggests that the contemporaneous inland Pauma complex may represent seasonal movements of early Archaic populations between coastal and inland resource areas (True and Pankey 1985; Warren et al. 1961). If so, a relatively broad seasonal range is implied for the early portion of the Archaic.

Although the basic toolkit represented by the La Jolla complex appears to have remained consistent throughout the Archaic, there are some indications of significant shifts in settlement. Compilations of radiocarbon assays for Batiquitos Lagoon (Gallegos 1985; Warren et al. 1961), for example, provide evidence for disuse of this location between about 3000 and 1500 BP.

This and evidence from some other locations in the region led Warren (1964, 1968; Warren et al. 1961) and others (Gallegos 1985; Masters and Gallegos 1997) to postulate a population movement inland and southward in response to siltation and declining productivity of coastal lagoons in the northern portion of the region. More recent data, however, have demonstrated continued settlement and use of coastal resources throughout the late Archaic period

in the region's northern areas (Byrd and Reddy 2002). Rather than widespread population movement away from the coast, the changing coastal ecology may have resulted in more localized settlement adjustments.

Late Prehistoric Period (1500–1769)

In Southern California, the appearance of small, arrowhead-size projectile points and ceramics and the practice of cremation around 1,300 years ago mark the beginning of the Late Prehistoric period. Projectile points commonly found in Late Prehistoric assemblages include Cottonwood Triangular and Desert Side-Notched forms, both thought to mark the introduction of the bow and arrow into the region. Regional populations appear to have been relatively high during the Late Prehistoric, resulting in territorial restrictions, increased sedentism, and subsistence intensification. Villages were relatively stable and occupied for much of the year and were positioned for access to a variety of resource areas. Subsistence is thought to have focused on acorns and grass seeds, along with deer and a variety of small mammals. Along the coast, subsistence focused on the collection of shellfish and nearshore fishing.

Settlement patterns during the Late Prehistoric in the northern section of the San Diego region are not well understood, although the data do suggest some important spatial and temporal variation. The strongest settlement data come from the upper San Luis Rey River drainage system, where investigations by True and Waugh (1982) suggest a transition from a fairly wide-ranging mobility pattern into a territorially constricted pattern of seasonally bipolar movement between upland and lowland settlements. This interior-upland pattern is seen as distinct from that of the lower San Luis Rey River, where residential mobility is thought to have been even lower, with one principal village per group area.

POST-EUROPEAN CONTACT SETTING

Spanish Period (1769–1821)

At Spanish contact, the northern portion of the San Diego region was occupied by speakers of a Takic language related to those dialects spoken in the Los Angeles Basin to the north but distinct from the Yuman language spoken to the south in San Diego. These groups were later known generally as the Juaneño and Luiseño, based on their associations with either Mission San Luis Rey or Mission San Juan Capistrano. The region occupied by the Luiseño and Juaneño extended along the coast roughly between Agua Hedionda to approximately Aliso Creek in present Orange County, and inland approximately to Palomar Mountain (Johnson and Crawford 1999; Kroeber 1925). The southern coastal portion of the San Diego region was occupied by the Kumeyaay, a Yuman-speaking group also known as the Kamia, Ipai, and Diegueño. Both the Luiseño/Juaneño and Kumeyaay lived in semi-sedentary, politically autonomous villages that were typically positioned to provide access to a wide variety of resources. The high population densities achieved by the Kumeyaay and Luiseño during the Late Prehistoric period led to the development of a number of intensive land use practices that are documented ethnographically. These included intensive use of a wide diversity of plant and animal foods as well as a number of land-management techniques that were designed to improve and maintain productivity, such as regular vegetation burning, plant husbandry, and erosion control and irrigation (Bean and Shipek 1978; Johnson and Crawford 1999; Kroeber 1925).

In July 1769, the first Spanish colonists arrived in San Diego. In 1769, the Kumeyaay (Diegueño/Kamia/Ipai/Tipai) population was approximately 20,000. (NAHC 2020) The mission and presidio, strategically located on a prominence overlooking the lower San Diego River valley and the northeastern corner of San Diego Bay, were completed the following year and represented the first permanent settlement by the Spanish in Alta California.

A small community of Hispanic settlers followed, establishing a pueblo about 5 miles north of San Diego's current downtown, in the area at the foot of Presidio Hill later known as Old Town (Engstrand and Brandes 1976; Pourade 1963). The pueblo and presidio remained in the Old Town area even after the mission was moved to more favorable agricultural land in Mission Valley in 1774 (Pourade 1961). Under Spanish law, every pueblo was entitled to 4 square leagues of land. As a result, Downtown San Diego was part of the original pueblo land of San Diego, which totaled over 48,000 acres. Most of this land remained undeveloped until the Anglo-American period (Mayer 1978; Pryde 1992).

Mission San Diego and Mission San Luis Rey followed a different policy than most California missions in that after baptism and training most neophytes were allowed to return to their villages. This, despite the considerable disruption imposed by the missions, allowed Native American groups to maintain many aspects of their traditional land use practices while still adapting to and integrating with the mission economic system (Shipek 1988). At the same time, many Kumeyaay maintained active resistance to the mission system (Carrico 2008; Hoover et al. 2002; Luomala 1978; Starr 2005), and many interior portions of the San Diego region were only minimally influenced by the Spanish (Shipek 1988).

Most historians consider the overall effect of the California Mission system on California Native populations to be genocide (Madley 2016). The social order of the Missions saw the native peoples living there as unfree laborers, which reflected the dynamic of the Spanish colonial economy (Champagne and Goldberg 2021:66-68). As such, conditions for native populations within the Mission system, including disease, forced relocation, social control, violence, and heavy labor, were deadly (Jones 2015). This resulted in tens of thousands of premature deaths due to the Missions (Jones et al. 2021). By 1845, the Native Californian population had dropped by half to approximately 150,000 people (Cook 1976).

The Mission System and colonialism of the Spanish Period also led to land dispossession of the native Californian populations, which in turn exacerbated the loss of cultural practices (Akins and Bauer 2021:68). After the Missions were secularized between 1833 and 1834, this dispossession made it hard to establish legal claims to traditional Tribal territories (Hackel 2005; Lightfoot 2005). However, this change was implemented very slowly, causing the relationships between Native groups and the Missions to continue past secularization. People would stay at "their" Missions after it was dissolved because their families and ancestors had built them. Despite the inability to access traditional Tribal lands, the native population was granted mission lands up until 1846. To this day, tribal communities in California trace back their ancestry to these Missions (California State Parks n.d.-a).

The land around the California missions and the first pueblos was gradually developed during the Spanish period as new crops and animals were introduced. The padres and early settlers sought to reproduce the agricultural economy they knew in Spain in north-central Mexico and Alta California, thus creating the Mediterranean style and ambience still associated with the region (Dunmire 2004; Ford 2005; Mayer 1978). The California missions and presidios reflected the Spanish style in their architectural character and layout around courtyard gardens. The gradual introduction of European decorative plants and adaptation of native plants to the casas and courtyards eventually gave the area the colonial appearance still linked in most people's minds with the region today. The Spanish settlers cultivated grapes for wine, olives, oranges, lemons, and a variety of vegetables. They created small canal systems for the irrigation of crops; introduced cattle, sheep, and horses and built in architectural styles derived from Spanish models (Ford 2005; Mayer 1978).

San Diego Bay was used as a port for the fur trade beginning in the early 1800s (Mayer 1978; Pourade 1961). The population of San Diego grew slowly during early 19th century. When the Mexican Revolution began in 1810, the population of the presidio at San Diego was approximately 350 people. By the time Mexico gained independence from Spain in 1821, the population of San Diego had risen to approximately 450 people.

Mexican Period (1821–1846)

The end of Spanish customs regulations and the expansion of trade under Mexico opened California to the world. In 1823, the English firm of McCullough, Hartness, and Co. sent the vessel *John Begg* to San Diego and established a permanent mercantile house, the first foreign trading house in California. On August 17, 1833, the Mexican congress passed the Secularization Act, which transferred mission-controlled land to private ownership. This act opened enormous tracts of new land to settlement, and immigration to San Diego began to increase. Concurrently, the mission system began to decline (Hoover et al. 2002; Luomala 1978; Starr 2005).

In December 1834, San Diego was organized as a pueblo with the election of its first mayor, Juan Maria Osuna, and the presidio was abandoned the following year. The main population center during the Spanish period had been the Mission San Diego de Alcalá, located well inland from the port. With enforced secularization, however, settlement around the mission was abandoned. In 1834, the first urban layout of the city, complete with a typical plaza mayor and substantial adobe buildings, arose near the presidio in the area that later came to be known as

Old Town. Large ranchos were established on the vast private land grants carved out of former mission lands. The new ranch owners were far more interested in mercantile commerce than had been the earlier Spanish padres and actively sought ways to attract foreign, and especially American, traders. Tallow and hides were the main exports in this trade (Dana 1995). By the 1840s, merchants and brokers from the northeastern United States had become a common sight around San Diego Harbor (Ford 2005: 8; Mayer 1978).

American Period (1846–Present)

The forces that led to the foundation of Downtown San Diego began to become manifest after Alta California was ceded to the United States at the conclusion of the Mexican-American War. In the 50-some years that followed, the economic and political center of the city shifted from Old Town to the present downtown area, and the basic outlines of modern San Diego were established. The process was not straightforward or unilateral, but rather a process of fits and starts.

Old Town San Diego was occupied by US forces during the Mexican-American War (1846–1848). The Treaty of Guadalupe-Hidalgo, which ended the war, ceded Alta California to the United States. The US Boundary Commission Survey team arrived in San Diego in 1849 to survey the new border area. Boundary Commissioner John B. Weller assigned Chief Surveyor, Andrew B. Gray, to survey San Diego Bay and fix the beginning point of the survey (Scott 1976: 21). The new international boundary line was located 1 marine league south of San Diego Bay.

The "port" at San Diego was little more than an off-loading beach, located in present-day Point Loma. Gray and his team camped near the Punto de los Muertos, an area settled by Spanish and Mexican residents 3 miles south of Old Town near the present-day Lindbergh Field, where access to the bay was easier. Gray quickly realized the potential for a new "American" seaport town at that site and switched his efforts toward establishing a "New Town" for San Diego (Newland 1992: 30–35; Rolle 1956: 90–91; Scott 1976: 24–26). In January and February of 1850, Gray and Army Lieutenant Thomas Johns surveyed and mapped a 160-acre subdivision and port facility adjacent to the Punto de los Muertos.

Gray then attracted successful San Francisco merchant William Heath Davis and several prominent San Diegans, including José Antonio Aguirre, Miguel de Pedrorena, and William C. Ferrell, to help finance the purchase and development of the waterfront land where Downtown San Diego now stands (Rolle 1956: 91–92; Scott 1976: 28).

This "New Town" consisted of the area bounded by present-day Broadway, Front Street, and the waterfront. Establishing New Town had its difficulties, and it was thwarted by the fact that San Diego went bankrupt. San Diego's fortunes, however, were renewed after the end of the Civil War. By the late 1860s, there were plans for two subdivisions and talk of being the terminus for the transcontinental railroad. That did not come to fruition, but it did attract residents and established New Town for good.

There were periods of boom and bust in the years leading up to the turn of the century. With the dawn of the 20th century, business in San Diego again picked up, and the city experienced reinvigorated growth. Between 1900 and 1920, San Diego's population more than quadrupled from 17,700 to nearly 75,000 (Mills 1960: 37; Pryde 1992: 73). This growth was due in part to events such as commencement of construction on the Panama Canal; plans to build a railroad to Yuma, Arizona; the Panama-California Exposition of 1915–1916; and the U.S. Navy's interest in making San Diego a major naval port. Significant populations were developing in La Jolla, Ocean Beach, Mission Beach, and Point Loma. Smaller populations were in National City, Coronado, Oceanside, Encinitas, Julian, and Chula Vista (Pryde 1992: 73). San Diego's natural harbor also attracted immigrants interested in commercial fishing, and the fishing industry and its associated canneries helped to bolster the city's economy in the 1920s (Hoover et al. 2002; Starr 2005). The expansion of the streetcar line in the 1920s began to alter patterns of development and residence. The streetcar allowed many families to move out to suburbs that were rapidly building up on the outskirts of town (Hoover et al. 2002; Starr 2005).

San Diego suffered like every other city during the Great Depression, but the outbreak of World War II sparked an economic boom in most of the country, particularly in places like San Diego that had an established military presence. The military took over large parts of San Diego, expanding existing bases and developing new ones. San Diego's population stood at 203,341 in 1940; within a year, it grew by 50,000 (Mayer 1978). The post–World War II

era brought recovery in the form of an increased industrial base, a growing tourist business, and the commercial exploitation of rich agricultural lands. These resources, along with expansive military bases, have continued in importance to San Diego's economic well-being to the present day. The era also brought notable shifts in the local economy and residential patterns. The aerospace industry shifted from aircraft to missiles, and a post-war housing crunch led to a construction boom, which included post-war housing tracts in the suburbs served by massive new shopping centers and smaller shopping malls. More houses farther afield meant more cars, and by 1951 San Diego had four major freeway interchanges (McKeever 1985). The 1960s brought construction of a new sports stadium, expansion of the San Diego Zoo, and the formation of the San Diego Padres major league baseball team. Tourism became one of the leading industries and has remained so to this day.

The 1960s to the 1980s saw a significant increase in populations throughout the region, and cities like Del Mar, Poway, Santee, Vista, San Marcos, and Lemon Grove were established (Pryde 1992: 77). Massive housing developments, like Mira Mesa and Rancho Peñasquitos, were built in the 1970s. Despite setbacks in recent years, the San Diego region has continued to grow and prosper.

The region today is home to 18 federally recognized tribal reservations and 17 tribal governments, the most of any county in the United States. Reservations have generally been established by Executive Order, and most of the land within the boundaries of reservations is owned by tribes and held in trust by the federal government. Native American reservations currently cover more than 116,000 acres, or approximately 4 percent of the region's land. Four tribal groupings make up the indigenous peoples of the San Diego region: the Kumeyaay/Diegueno, the Luiseno, the Cupeno, and the Cahuilla (San Diego Integrated Regional Water Management 2013; San Diego State University 2024). Tribal economic development has had an influence on the region’s overall development. This is mostly due to casinos (e.g., Barona, Campo, Sycuan, Viejas), which are mainly responsible for creating 10,000 jobs, supporting a $1 billion industry, and contributing approximately $263 million in goods and services, and $500 million in payroll. The tribes without gaming facilities continue to have economic development, transportation, and infrastructure needs (CNIGA 2012).

KNOWN HISTORICAL RESOURCES

Cultural resources include historic period buildings, structures, districts, and objects; archaeological sites and districts dating from either precontact, or historic times. Numerous cultural resources have been documented in the San Diego region, and some areas of the region have not yet been inventoried. The following information provides a context for the types of cultural resources in the region and a general discussion of the range of known cultural resources that may be present.

In California, cultural resources are recorded in the California Historical Resources Information System (CHRIS), which consists of the California State Office of Historic Preservation (OHP), eight information centers, and the State Historical Resources Commission. The information centers are spread across California and are the repositories for recorded historical resources in their region. The South Coastal Information Center (SCIC) holds the records for historical resources recorded in San Diego, Riverside, and Imperial Counties. According to SCIC, as of January 22, 2025, 39,500 cultural resources (including 13,500 isolated finds) in the San Diego region are recorded in CHRIS (Lennox, pers. comm., 2025).

The following is a description of the types of other listings that exist in the San Diego region for archaeological and historic architectural resources. These descriptions are adapted from the State of California OHP.

- California Historical Landmarks are buildings, sites, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value (California State Parks n.d.-b).
- California Points of Historical Interest are buildings, sites, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other historical value (California State Parks n.d.-c).

- The California Register of Historical Resources includes buildings, sites, structures, objects and districts significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California (California State Parks n.d.-d).
- The National Register of Historic Places includes buildings, structures, objects, sites, and districts of local, state, or national significance in American history, architecture, archaeology, engineering, and culture (California State Parks n.d.-e).

Archaeological Resources: Historic Era and Precontact

Specific information on the location and description of archaeological resources generally must be kept confidential to lessen the potential for vandalism and theft by looters. The specific regulations that provide for this are discussed in Section 4.5.2, "Regulatory Setting."

Historic-era archaeological site types that have been encountered in the San Diego region vary according to the time period and activity with which they are associated. They can contain surface material or be buried. Early period, Spanish period, and Mexican period sites include adobe homesteads and presidio- and mission-related sites. These include the San Diego Presidio, Mission Dam, the San Diego Mission, and the San Luis Rey Mission.

From the Early American period up until about 1920, most archaeological sites present within in an urban environment consist of garbage dumps in wells, cisterns, or trash pits. Building foundations are also common during this period, as are industrial features. The majority of sites already identified from this period exist in developed areas of San Diego. In the San Diego mountains, mining sites are more prevalent. After the 1920s, the establishment of town dumps and sewer and water systems meant that trash-related archaeological features were less common. Archaeological material commonly found associated with historic-era sites include ceramics, glass, metal, and animal bone. Some site types, such as military and farming/ranching complexes, are found throughout the San Diego region and from any period.

Precontact sites tend to fall into distinctive categories that relate to the activities that took place. They are found throughout the region, but tend to be more common in areas close to a water source or resources (such as materials for tool making or readily available food) and on flatter ground. Like historic-era sites, they can be found on the surface or buried. Due to the propensity for settling close to water sources, precontact sites that were originally just surficial can be buried over time by alluvial action. The site types and the materials associated with them are summarized below.

- Habitation sites. These are seasonal or semipermanent. Activities at these sites include food preparation, milling, cooking, tool production, ceramic production, leather working, basket weaving, construction, and ritual activities.
- Temporary camps. A range of activities took place at these camps. This could include any of the activities performed at a habitation site, but at a temporary camp, there would have been a shorter activity period, so less material evidence would be left.
- Artifact scatter. An artifact scatter consists of ceramics, flaked stone, or ground stone that is not accompanied by subsurface deposits. Some animal bone or shell may also occur. An artifact scatter could represent a temporary place to stop or somewhere to process a resource from the surrounding area.
- Lithic scatter. This is a low-density scatter of lithic material used in tool production. Typically, it is the discard from the process that is left behind, not the actual tools.
- Bedrock milling. These are areas of bedrock used to process food, such as acorns or seeds. This was done with a pestle (which crushes the food) or mano (which grinds the food).
- Quarry. A quarry is where raw stone material was extracted for tool making. These sites were visited only briefly.
- Shell midden. This can be an area where shellfish was processed, or it can be associated with a habitation site or temporary camp.

- Rock art. This includes petroglyphs (patterns etched into rocks) and pictographs (patterns "painted" on rocks) that are often associated with ritual.

Major coastal villages were known to have existed along the estuaries and lagoons of the San Diego coastline and up the corresponding rivers, such as the village of Kosti or Cosoy near the mouth of the San Diego River (Kroeber 1925) and Ystagua in the Sorrento Valley area. While many precontact resources have been identified and documented in the San Diego region, many unidentified resources remain. In addition, the exact locations of some of the known sites (such as Cosoy) are yet to be confirmed.

Some areas in the San Diego region have a particularly high potential for precontact cultural resources. For example, lagoons and rivers were areas of high traffic and settlement prior to European contact due, in part, to the abundance of water, food, and other resources, while coastal communities were some of the earliest and heaviest areas of settlement during historic times due to their access to both resources and transportation.

Historic Architectural Resources

In addition to the thousands of archaeological sites recorded within the San Diego region on the California Historic Resources Inventory, numerous historic architectural resources (buildings, sites, structures, objects, or districts) are listed on federal, state, and local registers, such as the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), California Historical Landmarks, and County of San Diego Historical Landmarks. Approximately 9,514 built structures are recorded in the San Diego region (Lennox, pers. comm., 2025). Some of these are part of larger districts.

There are 18 nationally designated historic districts listed in the NRHP in the San Diego region (see Table 4.5-1). This number does not represent those that may be in the process of being listed. Many of the districts are located in more urban areas, specifically in and around the city of San Diego. These include such historic districts as Cabrillo National Monument, Balboa Park, and the Gaslamp Quarter Historic District.

Table 4.5-1 Nationally Designated Historic Districts in the San Diego Region

Historic District	Location
Balboa Park	California Quadrangle 41, San Diego
Cabrillo National Monument	Near southern tip of Point Loma
El Prado Complex	Balboa Park, San Diego
Fages-De Anza Trail-Southern Emigrant Road	Anza-Borrego State Park
Gaslamp Quarter Historic District	Bounded by railroad tracks, Broadway, 4th, and 6th Streets, San Diego
Heilman Villas	Orange Avenue, Coronado
Kuchamaa	Southeast of San Diego at the U.S.-Mexico border
Marine Corps Recruit Depot Historic District	South of junction of Barnett Avenue and Pacific Highway, San Diego
Naval Air Station, San Diego, Historic District	Naval Air Station, North Island, North Shore, San Diego
Naval Training Station	Barnett Street and Rosecrans Boulevard, San Diego
Old Town San Diego Historic District	Junction of Interstate (I-) 5 and I-8, San Diego
Rancho De Los Kiotes	6200 Flying L.C. Lane, Carlsbad
Rockwell Field	North Island, San Diego
Rosicrucian Fellowship Temple	2222 Mission Avenue, Oceanside
San Diego Civic Center	1600 Pacific Highway, San Diego
San Diego State College	5300 Campanile Drive, San Diego
Table Mountain District	Jacumba, unincorporated county of San Diego
University Heights Water Storage and Pumping Station Historic District	4236 Idaho Street

Source: NRHP 2025a.

In addition to the NRHP historic districts, 156 individual historic architectural resources in the San Diego region are listed in the NRHP (NRHP 2025a). There are also 17 National Historic Landmarks (NRHP 2025b). Resources listed in the NRHP are automatically listed in the CRHR. Most of these resources in the San Diego region are buildings or structures, such as the Hotel Del Coronado and the Point Loma Lighthouse; however, some archaeological sites are on the list. There are also 74 registered California State Historical Landmarks in San Diego County (California State Parks n.d.-b).

At the local level, a number of jurisdictions inventory historic architectural resources and archaeological resources that are present in their territory to develop management plans and set standards for their protection. This has become more often the case as urban areas are limited in their choices of undeveloped land and instead move toward adaptive reuse of existing buildings and features of the built environment. In addition, the County of San Diego and the Cities of San Diego, Oceanside, Poway, Escondido, Carlsbad, Encinitas, National City, Chula Vista, La Mesa, and El Cajon maintain historic resource inventories.

Ethnographic Resources and Sacred Sites

Ethnographic resources include sites, areas, and materials important to Native Americans for religious, spiritual, or traditional uses. These can encompass the sacred character of physical locations (mountain peaks, springs, and burial sites) or particular native plants, animals, or minerals that are gathered for use in traditional ritual activities. Villages, burials, rock art, rock features, and traditional hunting, gathering, or fishing areas. Such resources are recognized under CEQA as "tribal cultural resources," defined in Public Resources Code 21074 to include "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" (Public Resources Code 21074[a]). They may be eligible for listing in the California Register of Historical Resources (CRHR) and may also be included in the California Sacred Lands File maintained by the California Native American Heritage Commission (NAHC). For specific development or transportation projects, the NAHC provides a list of tribes with traditional and cultural affiliations to the project area but does not disclose resource's locations (NAHC 2016). Tribal consultation under AB52 (PRC 21080.3.1) is typically initiated through these notifications; tribes have 30 days to request consultation, and agencies must begin discussions within 30 days of a tribe's request.

4.5.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

National Historic Preservation Act

The National Historic Preservation Act (NHPA) (54 U.S. Code [USC] 300101 et seq.), originally passed in 1966, established the national policy for preserving historic properties in the United States. It provides the foundation for more specific legislation and regulations guiding cultural resource protection across federal, state, and local levels. Section 106 of the NHPA requires federal agencies to consider the effects of their projects (known as "undertakings") on historic properties and to give the Advisory Council on Historic Preservation an opportunity to comment. The goal of the Section 106 process is to identify historic properties potentially affected; assess potential impacts; and seek ways to avoid, minimize, or mitigate any adverse effects related to historic properties.

National Register of Historic Places

The NRHP is the official list of historic properties, including historic sites, buildings, and structures, recognized by the federal government as worthy of preservation for their significance to the history of their community, state, or the nation. It was established in 1966 through the NHPA. The NRHP serves as a planning tool for federal, state, and local governments, as well as private organizations and individuals, to identify and protect historic resources. Properties listed in the NRHP must be considered during the planning of all federally funded, licensed, or assisted projects. Listing does not restrict the rights of private property owners unless a federal action is required.

Eligibility for the NRHP rests on two factors: significance and integrity (National Park Service 1997). In order to be eligible for inclusion in the NRHP, a property must meet one or more of the significance criteria listed below and retain integrity.

- **Criterion A**—Association with "events that have made a significant contribution to the broad patterns of our history."
- **Criterion B**—Association with "the lives of persons significant in our past."
- **Criterion C**—Resources "that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction."
- **Criterion D**—Resources "that have yielded, or may be likely to yield, information important to history or prehistory."

In addition to significance, the NRHP recognizes a property's integrity through seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.) was passed in 1990 and establishes the rights of Native American lineal descendants for ownership and control of Native American human remains and cultural objects. NAGPRA requires that an inventory of Native American human remains and funerary objects must be compiled by federal funded agencies and all museums and educational institutions receiving federal funds. Additionally, NAGPRA makes it illegal to traffic in Native American remains and cultural items without the right of possession, whether or not they derive from federal or Native American lands. The second major purpose of NAGPRA is to provide greater protection for Native American burial sites and more careful control over the removal of Native American human remains, funerary objects, sacred objects, and items of cultural patrimony on federal and tribal lands. All Indian tribes or Native Hawaiian organizations must be consulted whenever archaeological investigations encounter, or are expected to encounter, Native American cultural items or when such items are unexpectedly discovered on federal or tribal lands. Excavation or removal of any such items also must be done under procedures required by the Archaeological Resources Protection Act (Section 3 [c][1]).

Archaeological Resources Protection Act of 1979

The Archaeological Resources Protection Act (16 USC 470aa–47011) was passed in October of 1979 to increase the protection of unique archaeological resources on public and Indian lands. Section 9 of this act provides for the confidentiality of archaeological resource and their locations. This prevents looting and destruction of these resources.

The Department of Transportation Act

Section 4(f) of the Department of Transportation Act (49 USC 303, formerly 49 USC 1651[b][2] and 49 USC 1653f), applies specifically to projects receiving funding or approvals from the U.S. Department of Transportation. It prohibits the Federal Highway Administration and other US Department of Transportation agencies from approving projects that "use" land from publicly owned parks, recreation areas, wildlife and waterfowl refuges or public and private historic sites, unless specific conditions are met. These conditions include (1) that there is no feasible and prudent alternative to using that land and (2) that the proposed action includes all possible planning to minimize harm to the affected property. A project may also proceed if the Secretary of the Interior determines that the impact will be "de minimis."

The Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation

The Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation, issued in 1983, provide technical guidance for preserving historic and archaeological resources. Although not regulatory, these

guidelines help ensure consistency across federal, state, and local preservation efforts. They are also used to guide the identification, evaluation, documentation, registration, and treatment of historic properties and to promote best practices in preservation planning.

The Secretary of the Interior's Standards for Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation were established in 1986 to promote consistent approaches to the rehabilitation of historic properties and buildings. These standards are guidelines for returning a property to a state of utility through repair, alterations, or additions while preserving the building's historic character. The goal is to retain and protect the cultural and architectural values of a historic property, while accommodating efficient contemporary use (36 CFR 67).

The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings

The Secretary of the Interior's Standards for the Treatment of Historic Properties provide a set of 34 guidelines for preserving, rehabilitating, restoring, and reconstructing historic buildings and materials (36 CFR 68). The standards promote responsible, consistent practices in the treatment of historic resources but are not regulatory in nature. Instead, they offer technical guidance to assist federal, state, and local decision makers in achieving high-quality preservation outcomes across a range of project types.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California Historical Landmarks Program

The California Historical Landmarks Program was established to recognize and protect buildings, sites, and features of statewide historical, cultural, anthropological, or other significance. To be designated as a California Historical Landmark, a resource must meet established criteria, be nominated by the director of California State Parks and be approved by the State Historical Resources Commission with the consent of the property owner. The program supports the preservation and interpretation of designated landmarks, which often include mission sites, early settlements, battlefields, and gold rush-era locations (Public Resources Code [PRC] Sections 5020.4, 5021, 5022, 5022.5, 5031, and 5032).

California Points of Historical Interest Program

The California Points of Historical Interest Program identifies sites, buildings, and features that have historical, cultural, or anthropological importance at the local or regional level. This program allows for the recognition of historic properties that may not meet the more stringent criteria of the California Historical Landmarks Program but still merit consideration in local planning. While these designations offer limited protection, they raise awareness and can influence development decisions. The program requires coordination with local government officials as part of the designation process (PRC Sections 5020.4, 5021, 5022, 5022.5, 5031, and 5032).

California Register of Historical Resources

The CRHR is the state's official list of historically significant buildings, structures, sites, objects, and districts. It serves as a key reference in identifying and evaluating historical resources under CEQA. The CRHR includes resources that are historically or archaeologically significant at the local, state, or national level. Properties can be listed individually or as contributors to a historic district. The CRHR is maintained by the Office of Historic Preservation and provides guidance for preservation planning, permitting, and mitigation efforts. The list of these resources can be used for state and local planning purposes, the eligibility determinations can be used for state historic preservation grant funding, and listing in the CRHR provides a certain measure of protection under CEQA. This is because a historical resource must be considered "historically significant" under CEQA, as discussed below, if the resource meets CRHR criteria. (Section 15064.5[a]).

For a resource to be eligible for listing in the CRHR, it must have historical significance at the local, state, or national level based on one or more of the following criteria, as outlined in 14 CCR Section 4852:

- Criterion 1—It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Criterion 2—It is associated with the lives of persons important in our past.
- Criterion 3—It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
- Criterion 4—It has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting at least one of these criteria, a historical resource must also retain integrity, meaning the resource should preserve enough of its original physical characteristics to convey its significance. Integrity is assessed through seven aspects: location, design, setting, materials, workmanship, feeling, and association.

A resource's eligibility is ultimately judged in relation to the criterion or criteria under which is it nominated, as well as its ability to clearly reflect its historical importance during its period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource must also be judged with reference to the particular criteria under which it is eligible for listing in the CRHR per California Code of Regulations Title 14, Section 4852(c).

California Environmental Quality Act

CEQA requires that public agencies consider the potential impacts of discretionary projects on historical and archaeological resources. Under PRC 21001(b), it is the policy of the State of California to preserve historic environmental qualities and to protect examples of major periods of California's history for future generations. The CEQA Guidelines require that historical and archaeological resources be taken into account during environmental review (CEQA Guidelines 15064.5).

CEQA and Historical Resources

The CEQA Guidelines (Section 15064.5[a]) define a historical resource as including the following:

- A resource listed in, or eligible for listing in, the California Register of Historical Resources (CRHR);
- A resource listed in a local register of historical resources (as defined at PRC Section 5020.1[k]);
- A resource identified as significant in a historical resources survey meeting the requirements of PRC Section 5024.1(g); or
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. (Generally, a resource is considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the CRHR; see discussion of the CRHR above.)

A project that causes a "substantial adverse change" to a historical resource, such as demolition, relocation, or alteration, may be considered to have a significant environmental impact (CEQA Guidelines Section 15064.5[b]). Impacts can be considered less than significant if mitigation is implemented consistent with the Secretary of the Interior's Standards for Rehabilitation.

CEQA and Archaeological Resources

If the cultural resource in question is an archaeological site, the CEQA Guidelines (Section 15064.5[c][1]) require that agencies determine whether it meets the definition of a historical resource. If the archaeological site qualifies as a historical resource, potential adverse impacts must be considered and mitigated in the same manner as a historical resource (CEQA Guidelines Section 15064.5[c][2]). If it does not qualify, it must still be assessed under PRC Section 21083.2, which provides protections for unique archaeological resources.

CEQA (PRC Section 21083.2[g]) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

- contains important data for scientific research,
- offers valuable information for the public, or
- has a high potential to contribute to existing knowledge.

When a unique archaeological resource could be damaged or destroyed, feasible mitigation, including avoidance or data recovery, must be considered during project planning.

CEQA Guidelines Sections 15064.5(d) and (e)

CEQA Guidelines Sections 15064.5(d) and (e) require that if human remains are discovered during project activities, work must stop in the immediate area and procedures outlined in PRC Section 5097.98 and Health and Safety Code Section 7050.5 must be followed. These procedures ensure the respectful and legally compliant treatment of human remains, including consultation with Native American representatives if the remains are determined to be of Native American origin.

CEQA Guidelines Sections 15126.4(b)

Under CEQA Guidelines Sections 15126.4(b), when a project may cause a substantial adverse change to the significance of a historical resource, feasible mitigation measures must be identified that can avoid or reduce the impact. These include options such as preservation in place or documentation and recovery and may also involve consultation with appropriate California Native American representatives when tribal cultural resources may be affected. The County of San Diego and other lead agencies have adopted procedures for conducting surveys and engaging in early consultation to identify areas of cultural concern prior to project-level development.

Public Resources Code Sections 5097.5, 5097.98, and 622.5

PRC Section 5097.5 states that a person "shall not knowingly excavate, harm, or destroy any historic or prehistoric ruins or sites on public lands, unless granted permission by the public agency that has jurisdiction over those lands." It goes on to state that if this section is violated, the action is classified as a misdemeanor, punishable by fine or imprisonment. The section outlines the specific parameters of addressing the violation. PRC Section 622.5 further provides that any person who willfully injures, defaces, or destroys objects of archaeological or historical value—on either public or private property—without authorization is guilty of a misdemeanor.

PRC Section 5097.98 requires that if Native American human remains are discovered, the county coroner must notify the California NAHC. The NAHC will then identify the most likely descendant (MLD). Once identified, the landowner must work with the MLD(s) to determine appropriate treatment of the remains. This may include preservation in place, removal, or reburial. The law requires that landowners engage in good faith consultation with the MLDs and consider their recommendations for respectful treatment. The process must be "meaningful and timely," and decisions should account for the cultural values of the descendants, preservation, and take into account the view of all involved parties.

Health and Safety Code Section 7050.5: Human Remains

Health and Safety Code (HSC) Section 7050.5 requires that if human remains are discovered in any location other than a dedicated cemetery, all excavation or disturbance must stop. The county coroner must be contacted immediately and must inspect the site. If the coroner determines, or has reason to believe, the remains are of Native American origin, the coroner must notify the NAHC by telephone within 24 hours. It is a misdemeanor to knowingly remove, disturb, or disinter human remains from any location other than a dedicated cemetery without legal authorization.

Health and Safety Code Sections 18950–18961: State Historical Building Code

HSC Sections 18950–18961, known as the State Historical Building Code, provides alternative standards for the preservation, rehabilitation, restoration, and relocation of qualified historic buildings. These alternative building regulations allow for flexibility in meeting modern code requirements while retaining a building's historic character and features. The goal is to facilitate adaptive reuse and preservation while ensuring occupant safety and promoting energy efficiency.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

County of San Diego Code of Regulatory Ordinances Sections 86.601–86.608: Resource Protection Ordinance

The County of San Diego's Resource Protection Ordinance (RPO) (San Diego County Code of Regulatory Ordinances Sections 86.601–86.608) requires that cultural resources be evaluated during the county's discretionary environmental review process. If a resource is determined to be significant under the RPO, it must be protected. The RPO prohibits trenching, grading, clearing, grubbing, or any other development activity that could damage precontact or historic sites. Exceptions are allowed only for scientific research conducted under an approved research design prepared by a professional archaeologist certified by the Register of Professional Archaeologists. Sites identified as RPO significant must be avoided and preserved in place.

County of San Diego: Grading, Clearing, and Watercourses Ordinance

This ordinance requires that grading operations cease if human remains or materials of cultural significance to California Native American tribes are discovered during construction. (San Diego County Code of Regulatory Ordinances Section 87.429). Additionally, grading plans must be modified if unanticipated cultural resources are found, and appropriate mitigation measures must be implemented in coordination with the county and tribal representatives. (San Diego County Code of Regulatory Ordinances Section 87.216[a][7]).

San Diego County Local Register of Historical Resources (San Diego County Administrative Code Section 396.7)

The San Diego County Local Register of Historical Resources (San Diego County Administrative Code Section 396.7) serves as the county's official list of historic resources. Modeled after the CRHR, the Local Register of Historical Resources helps guide planning and preservation decisions at the county level. Properties listed in or eligible for the NRHP or the CRHR are automatically included in the Local Register of Historical Resources. Other properties may also qualify based on local criteria outlined in Section 396.7. The Local Register of Historical Resources is intended to help agencies, property owners, and the public identify and protect historic resources from substantial adverse change, whenever it is practical to do so.

County of San Diego General Plan Conservation and Open Space Element

The Conservation and Open Space Element of the County of San Diego's General Plan outlines goals and policies to preserve and protect the region's significant cultural resources (County of San Diego 2011). Under Goal COS-7, the Conservation and Open Space Element emphasizes the importance of identifying, evaluating, and preserving historic buildings, structures, objects, districts, and archaeological sites that reflect the county's diverse cultural history. The Conservation and Open Space Element promotes the integration of cultural resource considerations into the county's land use planning and environmental review processes. It also encourages coordination with local tribes, historical organizations, property owners, and professional consultants to ensure that important cultural resources are maintained for the benefit of current and future generations.

Local Jurisdictions' Preservation Policies and Regulations

Every local government in California can adopt their own ordinances to protect historic and archaeological resources. These ordinances typically include goals, policies, and actions that support the identification,

protection, and appreciation of a community's cultural heritage. The County of San Diego, along with many of its cities, has adopted local cultural resources preservation ordinances. These are listed below in Table 4.5-2.

Table 4.5-2 City and County Cultural Resources Preservation Ordinances

Historic District	Location
City of Carlsbad	Municipal Code, Title 22
City of Chula Vista	Municipal Code, Title 21
City of Coronado	Municipal Code, Title 84
City of Del Mar	Municipal Code, Chapter 30.58
City of El Cajon	Municipal Code, Chapter 17.55
City of Encinitas	Municipal Code, Chapter 30.34.050
City of Escondido	Municipal Code, Chapter 33, Article 40
City of Imperial Beach	None
City of La Mesa	Municipal Code, Title 25
City of Lemon Grove	None
City of National City	Code of Ordinances, Chapter 15.34, Chapter 18.12
City of Oceanside	Code of Ordinances, Chapter 14A
City of Poway	Municipal Code, Chapter 17.45
City of San Diego	Municipal Code, Chapter 14, Article 3, Division 2
City of San Marcos	None
City of Santee	Municipal Code, Chapter 15.60
City of Solana Beach	Municipal Code, Title 17.60.160
City of Vista	Municipal Development Code, Chapter 15.12
County of San Diego	County Administrative Code, Article XXII

Source: Compiled by Ascent in 2025.

4.5.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts, in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan.

Checklist questions for cultural resources are included in Section V of Appendix G. For purposes of this EIR, the Appendix G questions have been combined and modified. Specifically, Appendix G Section V question (a) regarding historical resources and question (b) regarding archaeological resources are addressed in CULT-1. Question (c) regarding disturbance of human remains is addressed in CULT-2.

The significance of a historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in or eligibility for (1) inclusion in the CRHR; (2) inclusion in a local register or its identification in a historical resources survey meeting the requirements of PRC Section 5024.1; or (3) as determined by a lead agency for purposes of CEQA (CEQA Guidelines Section 15064.5[b][2]).

For purposes of this EIR, implementation of the proposed Plan would have a significant cultural resources impact if it would:

CULT-1 Cause a substantial adverse change in the significance of a historical resource or unique archaeological resource.

CULT-2 Disturb any human remains, including those interred outside of formal cemeteries.

The analysis discloses impacts to cultural resources. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's cultural resources impacts would be worsened by climate change. Therefore, a climate change analysis for cultural resources impacts is not included in this section.

4.5.4 Environmental Impacts and Mitigation Measures

CULT-1 CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A HISTORICAL RESOURCE OR UNIQUE ARCHAEOLOGICAL RESOURCE

Analysis Methodology

This analysis examines the impacts on historical and unique archaeological resources that would result from implementation of the proposed Plan. The analysis identifies the general types of proposed Plan–related activities with the potential for impacting historical architectural resources and archaeological resources and then analyzes the impacts.

A substantial adverse change to the significance of a historical resource is defined as the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired (CEQA Guidelines Section 15064.5); this definition can also be applied to a substantial adverse change to a unique archaeological resource.

Construction activities are more likely to disturb archaeological resources than operational activities because such resources are most likely to be encountered during initial ground disturbance. Impacts of operational activities on archaeological resources are unlikely to be significant, unless there are potential vibration impacts from rail transit operations.

For forecasted regional growth and land use change projects, as well as planned transportation network improvements and programs, the likelihood of encountering archaeological resources is thus analyzed based on whether projects would require grading, excavation, or other ground-disturbing activities. Even minimal grading activities can encounter resources because they have been discovered only inches below the surface. Ground-disturbing activities associated with infill, redevelopment, and infrastructure expansion have the potential to unearth these resources.

This analysis clearly distinguishes impacts on archaeological resources from those on historic architectural structures. Construction activities are more likely than operational activities to affect historical resources of an architectural nature ("historic architectural resources") because such resources may be physically altered or demolished. Effects of operational activities on historic structures are generally unlikely to be significant, except in cases where rail transit or roadway improvement (such as interchange reconfiguration) could result in indirect impacts such as changes to setting, viewshed, or long-term vibration. Such impacts may affect the integrity of a historic architectural resource's setting, and by extension, its significance).

Impact Analysis

2035

Regional Growth and Land Use Change

As discussed in Section 4.5.1, "Existing Conditions," numerous historic architectural resources and archaeological resources have been documented throughout the San Diego region. These include historic architectural resources (e.g., historic buildings or structures) listed on federal, state, and local registers as well as unique archaeological resources, some of which include human remains. While many of these resources have been identified and documented within the San Diego region, there are likely many more resources that remain undiscovered.

As shown in Table 2-1, in Chapter 2, "Project Description," of this Draft EIR, from 2022 to 2035, the region is projected to gain 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93 percent of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Regional growth and land use change would result in a wide range of construction and ground-disturbing activities, such as excavation, grading, and clearing, which remove or disturb the upper layer of soils. Because archaeological resources have been found within inches of the ground surface in some areas of the San Diego region, like the downtown area, these resources can be encountered even during minor grading and ground-disturbing activities. In addition, redevelopment and intensification of land uses may result in the demolition or substantial alteration of historic architectural resources in or near established urban areas or town centers, where these built resources are typically located.

As Section 4.5.1 describes many areas throughout the San Diego region have a high potential to yield archaeological and historic architectural resources. While most growth from 2022 to 2035 would occur in established urban areas, such as Downtown San Diego, Chula Vista, and National City, new growth in the region may occur in areas such as the Otay and North County Metro communities where archaeological and historic architectural resources are present, and historically or archaeologically significant resources have been found throughout the county (County of San Diego 2011). Built historical resources tend to be concentrated in historical town centers along the urban costal region but are also located in unincorporated areas of the county, such as Lakeside, Otay, and North County Metro. Built historical resources are also generally located along major roadways, such as I-8 and SR 78. In addition, some built resources exist in the unincorporated county that are historically significant but have not yet been designated (County of San Diego 2011). Regional growth and land use change forecasted to occur throughout the region from 2022 to 2035 would result in additional construction and ground-disturbing activities, such as excavation, grading, clearing, demolition, alteration, and structural relocation.

Forecasted regional growth and land use change may also result in indirect impacts on cultural resources, particularly where development occurs adjacent to or within open space areas, parks, or culturally sensitive landscapes. These effects could include increased foot or vehicle traffic, changes in site visibility or access, or erosion, especially in areas already experiencing recreational pressure. In addition, indirect impacts may arise in cases where traditional cultural properties or cultural landscapes extend into areas targeted for infrastructure expansion or urban infill. These effects are typically site-specific and would require project level review and consultation with Native American tribes to assess significance and determine appropriate mitigation.

Encountering such resources does not necessarily result in impacts on those resources. For instance, a new development could be constructed near an old neighborhood that has significant resources but not result in direct impacts because no demolition or alteration would occur, nor would the development result in indirect impacts if no changes would occur to the setting or viewshed. An archaeological resource could be encountered by earth-moving activities, but laws and regulations are in place to protect archaeological resources by preservation in place and by requiring feasible mitigation if preservation in place is not possible.

As described in Section 4.5.2, "Regulatory Setting," numerous federal, state, and local laws, regulations, and programs are in place to protect cultural resources. For example, HSC Sections 18950–18961 and the Secretary of the Interior's Standards for Rehabilitation provide regulations for the restoration or rehabilitation of historic architectural resources to preserve their original or restored architectural elements and features, while providing a safe building for occupants. Additionally, the Secretary of the Interior's Standards for the Treatment of Historic Properties were developed to help protect historical architectural resources by promoting consistent preservation practices. Local policies and ordinances, including the County of San Diego's Resource Protection Ordinance (RPO), can provide historical resources with added protection by requiring cultural resource surveys during the discretionary project review process and allowing eligible resources to be locally designated as significant. This process helps avoid substantial adverse changes by ensuring that resources are identified early in project planning and that project designs are modified to avoid or minimize direct impacts to those resources. Where avoidance is not feasible, the RPO requires that mitigation measures be implemented, thereby preserving the context, integrity,

or contributing features that give a resource its significance. Also, local jurisdictions have responsibilities to identify and mitigate adverse effects on significant historical resources under CEQA.

While adherence to existing laws, regulations, and programs would reduce impacts on archaeological and historic architectural resources upon implementation of the proposed Plan, there is no assurance that they would reduce these impacts to a less-than-significant level for all projects. Given the potential for land use changes to cause substantial adverse changes in the significance of historical and unique archaeological resources coupled with the nonrenewable nature of these resources if disturbed or altered, implementation of the proposed Plan would result in ground-disturbing activities related to regional growth and land use change that would likely cause a substantial adverse change in the significance of a historical resource or unique archaeological resource. This is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Due to the rich historic and precontact background of the San Diego region, the potential for identified and unidentified historical resources to be found in transportation network improvement and program areas exists. Some of the improvements in the proposed Plan slated for completion between 2022 to 2035 would involve only operational changes that would not include construction of new transportation or transit facilities, such as increasing service frequencies or creating new transit routes, and therefore would have little impact on historic resources and unique archaeological resources. However, improvements that would involve construction of new infrastructure or facilities could encounter sensitive resources. Transportation construction projects would require grading, and potentially trenching, activities that remove or disturb the upper layer of soils and could unearth underlying archaeological resources and cause a direct disturbance to historical resources or unique archaeological resources.

In addition, construction of transportation network improvements may result in the demolition or substantial alteration of historical resources in or near established urban areas or town centers. Transportation network improvements would also introduce operational visual, audible, vibrational, and other effects that could indirectly affect historic architectural resources or alter the setting that contributes to the resources' historic value, as well as negatively affect the structures through increased levels of corrosive air contaminants (Inkpen 2004), which may damage the exterior of historic buildings. For example, the vibration analysis in Chapter 14.3 indicates that vibration during operation of proposed transportation network improvements could exceed levels of significance for structural damage, and that the vibration impact may not be mitigated to a less-than-significant level by the vibration-reducing measures included in NOI-2b. Therefore, operational effects could result in a substantial adverse change in the significance of historic architectural resources, which would be a significant impact.

Major rail-related transportation network improvements would include continued double-tracking at certain locations on the LOSSAN Rail Corridor and construction for the San Ysidro Mobility Hub. These improvements have the potential to affect archaeological resources that may be present along the shores, estuaries, lagoons, and bluffs of the San Diego coastline, as well as areas that have not been previously developed. If demolition of buildings is necessary for these projects and improvements, then historic architectural resources could also be disturbed. Various rail improvements to the Trolley and SPRINTER lines also have the potential to encounter historical resources because historic period archaeological materials are routinely identified during excavations and monitoring of construction activities in Downtown San Diego and the coastal region.

Additional major transportation network improvements that could affect archaeological and historic architectural resources include new Managed Lanes and Managed Lane Connectors on SR 52, SR 78, I-5, I-15, I-805; direct access ramps at I-15/Clairemont Mesa Boulevard, I-5/Voigt Drive, and I-15/San Diego State University West; shoulder widening and straightening improvements on SR 67 from Mapleview to Dye Road, and additional improvements to local arterial streets. These projects also have the potential to affect archaeological and historic architectural resources resulting from ground disturbance or demolition.

Given the magnitude and location of several of the transportation network improvements and programs occurring between 2022 and 2035 and the number of additional transportation network improvements, new ground disturbances are anticipated. As a result, additional archaeological and historic architectural resources would be encountered during construction activities between 2022 and 2035.

Upon implementation of the individual transportation network improvements and programs included as part of the proposed Plan, both known and unknown archaeological and historic architectural resources would be encountered. As discussed above, although adherence to existing laws, regulations, and programs would avoid or reduce impacts on cultural resources when they are encountered during the construction of transportation network improvements, there is a likelihood that they would not reduce all impacts to a less-than-significant level for all future projects. Implementation of the proposed Plan would likely result in ground-disturbing activities and operational effects related to transportation network improvements and programs that would cause a substantial adverse change in the significance of a historical resource or unique archaeological resource. This is a significant impact.

2035 Conclusion

Implementation of the proposed Plan would result in regional growth and land use change and transportation network improvements and programs that would likely cause a substantial adverse change in the significance of a historical resource or unique archaeological resource. Therefore, this impact (CULT-1) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the Cities of San Diego (51.6%), Chula Vista (17.1%), and the unincorporated jurisdictions.

As discussed in the 2035 analysis, many areas throughout the San Diego region have a high potential to contain precontact and historic-era resources. In addition to the resource-sensitive areas mentioned in the 2035 analysis, the additional growth forecasted in both the unincorporated county and western portion of the region between 2036 and 2050 would result in new development in established urban areas. Additional construction and ground-disturbing activities, such as excavation, grading, clearing, demolition, alteration, or structural relocation, would occur.

Forecasted growth and land use change would also result in indirect physical impacts on open space areas, , and thus increase the likelihood of physical impacts on historical resources located within those areas. For instance, increased recreational use of open space areas could promote erosion or increase the likelihood of damage to sensitive cultural or archaeological resources through increased traffic (foot or otherwise). These ground-disturbing activities, associated with infill, redevelopment, or expansion of infrastructure, have the potential to impact archaeological and historic architectural resources. With additional growth, increased development intensities, and increased use of open space areas, the extent of impacts on archaeological and historic architectural resources by 2050 would likely be greater than that experienced by 2035 because more resource-sensitive land would be disturbed over time.

As more land is disturbed and altered for new development and redevelopment between 2036 and 2050, the possibility of irreversible losses of significant archaeological and historic architectural resources becomes greater.

As discussed in the 2035 analysis, although adherence to the existing laws, regulations, and programs would reduce impacts on archaeological and historic architectural resources upon implementation of the proposed Plan, there is a likelihood that they would not reduce these impacts to a less-than-significant level. Given the potential for land use changes to cause substantial adverse changes in the significance of historical and unique archaeological resources, coupled with the nonrenewable nature of these resources if disturbed or altered, implementation of the proposed Plan would likely result in ground-disturbing activities related to regional growth and land use change that would cause a substantial adverse change in the significance of a historical or unique archaeological resource. This is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

As true in the 2035 analysis, potential exists for identified and unidentified archaeological and historic architectural resources to occur in transportation network improvement and program areas. Some of the improvements in the proposed Plan that would be implemented between 2036 and 2050 would include only operational changes that would not include construction of new transportation or transit facilities, such as increasing service frequencies or new transit routes in existing right-of-way. However, those that would involve construction of new infrastructure or facilities could result in impacts. Major rail projects and improvements, such as continued double-tracking along certain LOSSAN corridor locations and construction of the Purple Line, have the potential to impact archaeological and historic architectural resources resulting from ground disturbance or demolition. Highway improvements, such as Managed Lane construction along I-5, I-15, I-805, SR 52, and SR 56, would require grading and potentially trenching activities that remove or disturb the upper layer of soils and could encounter underlying archaeological resources. Shoulder widening and road straightening along rural highways, such as SR 76, SR 79, SR 94, and I-8, would occur in areas that have seen relatively little development would disturb new ground and could also demolish historic architectural resources.

Any ground disturbances associated with these transportation network improvements may unearth underlying archaeological resources, causing a direct disturbance to buried resources. Given the magnitude and location of several of the transportation network improvements occurring between 2036 and 2050, and the number of additional transportation network improvements over those previously implemented by 2035, additional significant ground disturbances are anticipated. It is possible that more archaeological and historic architectural resources would be disturbed between 2036 and 2050. Transportation network improvements would also introduce operational visual, audible, vibrational, and other effects that could indirectly affect historic architectural resources or alter the setting that contributes to the resources' historic value, as well as negatively affect the structures through increased levels of corrosive air contaminants (Inkpen 2004), which may damage the exterior of historic buildings. For example, the vibration analysis in Chapter 14.3 indicates that vibration during operation of proposed transportation network improvements could exceed levels of significance for structural damage, and that the vibration impact may not be mitigated to a less-than-significant level by the vibration-reducing measures included in NOI-2b. Therefore, operational effects could result in a substantial adverse change in the significance of historic architectural resources, which would be a significant impact.

As discussed in the 2035 analysis, although adherence to the existing laws, regulations, and programs would reduce impacts on archaeological and historic architectural resources upon implementation of the proposed Plan, there is no assurance that they would reduce these impacts to a less-than-significant level for all future projects. Implementation of the proposed Plan would likely result in ground-disturbing activities and operational effects related to transportation network improvements and programs that would cause a substantial adverse change in

the significance of the resource. Given the potential for transportation facilities to cause substantial adverse changes in the significance of archaeological and historic architectural resources coupled with the nonrenewable nature of these resources if disturbed or altered, this is a significant impact.

2050 Conclusion

Implementation of the proposed Plan would result in regional growth and land use change and transportation network improvements and programs that would cause a substantial adverse change in the significance of a historical resource or unique archaeological resource. Therefore, this impact (CULT-1) in the year 2050 is significant.

MITIGATION MEASURES

CULT-1 CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A HISTORICAL RESOURCE OR UNIQUE ARCHAEOLOGICAL RESOURCE

2035, 2050

CULT-1a Develop Project-Level Measures for Development Projects and Transportation Network Improvements. During project-level CEQA review of development projects or transportation network improvements that would cause a substantial adverse change in the significance of a CEQA-defined historical resource or significantly affect a unique archaeological resource, the County of San Diego, cities, and other local jurisdictions can and should, or SANDAG shall, and other transportation project sponsors can and should, develop project-level protocols and mitigation measures, consistent with CEQA Guidelines Section 15126.4(b), to avoid substantial adverse changes to CEQA-defined historical resources and unique archaeological resources. The local lead agency can and should, SANDAG shall, and other transportation project sponsors can and should allow for adequate resources to identify (through survey, consultation, or other means) resources to develop minimization and avoidance methods where possible, and will/can and should consult with appropriate Native American representatives to provide necessary input as to resources that are of concern. These may include natural areas that contain resources of importance to tribes if they are historical resources or unique archaeological resources. These identification efforts shall be conducted by qualified professionals, as defined by the Secretary of the Interior's professional standards. Project-level mitigation measures include, but are not limited to, the following:

Archaeological Resources

- Where feasible, avoid impacts on archaeological resources through preservation in place by:
  - avoiding archaeological sites entirely during project design and construction;
  - dedicating archaeological sites as permanent easements;
  - capping or covering archaeological sites with a layer of chemically stable soil prior to development of tennis courts, parking lots, or similar facilities
- If preservation in place is not feasible, reduce impacts on archaeological sites through a data recovery program consistent with CEQA Guidelines Section 15126.4(b). (A data recovery program for archaeological sites may include excavation of a representative portion of the site—determined in consultation with the lead agency—to collect information necessary to address significant research questions.)

Historic Architectural Resources

- Conduct maintenance, repair, stabilization, rehabilitation, restoration (including that which may be required to address operational impacts), preservation, conservation, relocation, or reconstruction to reduce impacts on historic architectural resources, and have a qualified architectural historian or historic architect review mitigation plans to review consistency with the Secretary of the Interior's Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.

- If avoidance of a built historic architectural resource is not feasible, apply additional mitigation options consisting of, but not limited to, specific design plans for historic districts, or plans for alteration or adaptive reuse of a historical resource that follow the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitation, Restoring, and Reconstructing Historic Buildings.
- If demolition of a historic structure must occur, apply mitigation options such as recordation including a building description, historical narrative, and photographic documentation of the building and appropriate as-built drawings similar to the Historic American Building Survey documentation outlined by the National Park Service (National Park Service 2023).

CULT-1b Implement Monitoring and Data Recovery Programs for Development Projects and Transportation Network Improvements.

During project-level CEQA review and during construction of development projects, the County of San Diego, cities, and other local jurisdictions can and should, or during construction of transportation network improvements, SANDAG shall, and other transportation project sponsors can and should, implement monitoring and data recovery measures to reduce impacts on both known and undiscovered CEQA-defined historical resources of an archaeological nature and unique archaeological resources, including but not limited to the following:

- Require areas identified in any required archaeological resource identification report or monitoring and mitigation plan to be monitored during the grading phase of individual projects by a qualified archaeologist and tribal monitor, consistent with CEQA and AB 52 requirements.
- Should an archaeological deposit or feature be encountered during construction activities that is determined to be a historical resource or unique archaeological resource by a qualified archaeologist, stop ground-disturbing activities and prepare or implement an Archaeological Data Recovery Program (ADRP) in consultation with, when applicable, qualified local agency staff with technical expertise in archaeological and cultural resources management and California Native American tribes, consistent with CEQA and AB 52 requirements.
- Integrate curation of archaeological materials and associated records in a regional center focused on the care, management, and use of archaeological collections if the artifact must be excavated; if the archaeological materials are Indigenous in nature, this must be approved by the regionally affiliated Native American tribe. This does not include Native American human remains and associated burial items, the disposition of which must be determined in consultation with the Most Likely Descendants, pursuant to PRC Section 5097.98 (see Impact CULT-2).

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant impacts on historical and unique archaeological resources through construction and ground-disturbing activities in 2035 and 2050. Implementation of mitigation measures CULT-1a and CULT-1b would reduce impacts through proper resource handling, surveys, regulatory compliance, and mitigation monitoring. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, this impact (CULT-1) would remain significant and unavoidable.

CULT-2 DISTURB ANY HUMAN REMAINS, INCLUDING THOSE INTERRED OUTSIDE OF DEDICATED CEMETERIES, IN VIOLATION OF EXISTING LAWS AND REGULATIONS PROTECTING HUMAN REMAINS

Analysis Methodology

Both forecasted regional growth and land use change and planned transportation network improvements and programs have the potential to encounter buried human remains during grading, excavation, and other ground-disturbing activities. Construction activities are more likely to disturb human remains than operational activities because human remains are most likely to be encountered with initial ground disturbance.

Impacts of the proposed Plan are analyzed in combination with existing laws and regulations, such as HSC Section 7050.5, PRC Section 5097.98, and local ordinances, to determine significance. For forecasted regional growth and land use change projects, as well as planned transportation network improvements, the likelihood of encountering human remains is analyzed based on whether projects would require grading, excavation, or other ground-disturbing activities. Even minimal grading activities can encounter remains because they have been discovered only inches below the surface. Ground-disturbing activities associated with infill, redevelopment, and infrastructure expansion have the potential to unearth remains.

PRC Sections 5097 through 5097.7 specify the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal public lands. HSC Section 7050.5 addresses the protection of human remains discovered in any location other than a dedicated cemetery. These, together with the provisions in the CEQA Guidelines, provide specific guidance and requirements for addressing such remains before resuming excavation or disturbance of the project site. The HSC and PRC sections provide consultation and treatment options as well as outline appropriate communication protocols and discuss the need to maintain respect for and dignity of the remains and associated materials.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-5. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). As discussed in more detail in Section 4.11, "Land Use," and Section 4.14, "Population and Housing," the land use pattern in the proposed Plan is based on adopted general plans of the local jurisdictions in the San Diego region. Overall, the proposed Plan accommodates anticipated growth consistent with local plans and would not induce unplanned growth. The likelihood of encountering human remains is greatest for projects that include grading or excavation of areas on which past ground disturbance has been minimal, because undisturbed soils are more likely to retain intact archaeological deposits or human burials that have not been previously exposed or removed during earlier activities. . Because human remains have been found within inches of the ground surface throughout the San Diego region, even minimal grading activities can impact these resources. Excavation and soil removal of any kind, irrespective of depth, have the potential to encounter human remains. This would include areas of expansion in unincorporated portions of the region where there has previously been less development.

Although the majority of regional growth and land use change will occur in the more densely populated coastal region, between 2022 and 2035 it is expected that some development will also increase in unincorporated portions of the region. While new development and redevelopment would mostly result in the intensification of previously developed areas, ground-disturbing activities associated with infill, redevelopment, or expansion of infrastructure have the potential to unearth buried human remains.

Given the regional growth and land use change forecasted by 2035, implementation of the proposed Plan would result in the intensification of land uses along established transportation corridors and waterways where human remains may be located. For instance, human remains have been found in the San Diego River valley. The types of activities that would result in significant impacts on human remains (i.e., excavation, grading, soil removal associated with infill, redevelopment, or expansion of infrastructure) would increase between 2022 and 2035 as development intensities to accommodate the forecasted growth. With more construction anticipated to occur within previously undisturbed areas, there is an increased potential to discover archaeological deposits or buried human remains. As discussed in Section 4.5.2, "Regulatory Setting," Native American human remains have specific provisions for treatment in PRC Section 5097.98 and HSC Section 7050.5, as well as other laws and regulations. By halting all construction activities if human remains are found, impacts on those remains or any other remains or associated burial items also in that area can be reduced.

Regional growth and land use change projects implementing the proposed Plan would be required to adhere to the laws and regulations discussed above and listed in Section 4.5.2. These laws outline appropriate treatments and the protocols for discussions regarding treatment options with MLDs; therefore, impacts associated with the disturbance of human remains would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

The transportation network improvements and programs in the proposed Plan that would be completed by 2035 would have varying degrees of impacts on human remains. Some of these improvements would involve only operational changes that would not include construction of new transportation or transit facilities, such as increasing service frequencies or new transit routes within existing rights-of-way. These changes would have minimal effects on human remains. However, transportation improvements that would involve construction of new infrastructure or facilities could result in impacts as the likelihood of encountering human remains is greatest for projects that include grading or excavation of areas on which past grading or excavation activities have been minimal.

Construction of transportation network improvements, such as Next Gen Rapid Transit and shoulder widening and road straightening along SR 67, would likely involve ground disturbance, including in areas of previously undisturbed land. Because human remains have been found within inches of the ground surface in some areas of the San Diego region, even minimal grading activities can impact these resources. Excavation and soil removal of any kind, irrespective of depth, have the potential to yield human remains. Given the magnitude and location of several of the transportation network improvements occurring by 2035, particularly in areas that have not previously been developed or extensively graded, it is possible that, as more land is disturbed, buried human remains may be unearthed, and the extent of these impacts would increase over time.

If human remains were encountered during construction, work would halt in that area, and the procedures set forth in PRC Section 5097.98 and HSC Section 7050.5 would be undertaken. Impacts associated with the disturbance of human remains would be less than significant because existing laws and regulations would ensure the appropriate handling of any human remains that are encountered.

2035 Conclusion

Implementation of the proposed Plan has the potential to uncover buried human remains through ground-disturbing activities in 2035. The requirement to follow existing laws and regulations ensures that any human remains encountered are treated appropriately. Therefore, this impact (CULT-2) is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the Cities of San Diego (51.6%), Chula Vista (17.1%), and the unincorporated jurisdictions. While regional population is expected to slightly decrease by 4,112 people (-0.1%), development under the proposed Plan would still result in significant new land disturbances and infrastructure expansion to accommodate job and housing growth. Much of this growth is anticipated in areas farther inland, such as Escondido and San Marcos, and in the unincorporated county, where historic ground disturbance has been less extensive than in coastal communities. As a result, construction and development in these areas may more frequently occur in previously undisturbed or lightly disturbed soils, increasing the potential to encounter intact cultural resources, including human remains.

While most new development and redevelopment associated with the proposed Plan would result in the intensification of previously developed areas, ground-disturbing activities associated with infill, redevelopment, or expansion of infrastructure have the potential to unearth human remains. By 2050 there would be increasing development under the proposed Plan in areas farther inland, for example, in Escondido and San Marcos. These areas have previously experienced less ground disturbance relative to the coastal region. As with the 2035 analysis, when more land is disturbed and altered for new development and redevelopment anticipated as part of the proposed Plan, the possibility for encountering human remains becomes greater.

As discussed in the 2035 analysis, if human remains were to be encountered during construction, work would halt in that area and the procedures set forth in PRC Section 5097.98 and HSC Section 7050.5 would be undertaken. Impacts associated with the disturbance of human remains would be less than significant because existing laws and regulations would ensure the appropriate handling of any human remains that are encountered.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

As with the 2035 analysis, due to the rich historic and precontact background of the San Diego region, the potential for human remains to occur within the transportation network improvement and program areas associated with the proposed Plan exists. Some of the improvements in the proposed Plan implemented by 2050 would involve only operational changes that would not include construction of new transportation or transit facilities, such as increasing service frequencies or new transit routes within existing rights-of-way. These improvements should have no impact on human remains because they would be in previously disturbed areas. However, transportation improvements that would involve construction of new infrastructure or facilities could result in impacts on buried human remains.

For example, widening of the highways or construction of new Managed Lanes and Next Gen Rapid Transit would require grading and possibly other ground-disturbing activities that remove or disturb the upper layer of soils, which could unearth underlying buried resources, including human remains.

Any ground disturbances associated with these transportation network improvements and programs may unearth underlying human remains. This includes improvements that would occur in previously undisturbed areas, which have a higher likelihood of containing intact buried resources. Given the magnitude and location of several of the transportation network improvements and programs occurring by 2050, and the number of additional transportation network improvements over those previously implemented by 2035, additional significant ground disturbances are anticipated. It is, therefore, possible that more buried human remains would be encountered by 2050.

As discussed in the 2035 analysis, if human remains are encountered during construction, work would halt in that area and the procedures set forth in PRC Section 5097.98 and HSC Section 7050.5 would be undertaken. Impacts associated with the disturbance of human remains would be less than significant because existing laws and regulations would ensure the appropriate handling of any human remains that are encountered.

2050 Conclusion

Implementation of the proposed Plan has the potential to uncover buried human remains through ground-disturbing activities in 2050. The requirement to follow existing laws and regulations ensures that any human remains encountered are treated appropriately. Therefore, this impact (CULT-2) is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

4.5.5 Cumulative Impacts Analysis

C-CULT-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON CULTURAL RESOURCES

The area of geographic consideration for cumulative impacts on cultural resources is the Southern California and Northern Baja California region. Because local and regional settlement patterns are closely linked, it is important to evaluate the loss of cultural resources across this entire geographic area to adequately consider how the loss of resources would impact the understanding of the closely interrelated prehistory and history of the peoples who have inhabited the Plan area. Historical resources should be considered based on their importance both within their local setting and in the regional framework. A projection approach for cumulative analysis of cultural resources allows for an overarching discussion of regional loss of interrelated cultural resources associated with general patterns of regional urbanization, growth, and land use changes. A significant cumulative impact on cultural resources would occur if the proposed Plan would result in incremental effects that are considered cumulatively significant when considered in combination with the impact projections in adopted plans, and impacts on cultural resources resulting from existing and probable future projects. Significant cumulative impacts related to cultural resources would occur if cumulatively there would be a substantial increase in impacts with regard to the significance of historic or unique archaeological resources, or disturbance of human remains in a manner inconsistent with applicable laws.

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan, San Diego Associate of Government's Connect SoCal 2024-2050 RTP/SCS EIR (SCAG 2024) for the Southern California region, the County of San Diego General Plan Update EIR (County of San Diego 2011), and the California-Baja California 2021 Border Master Plan (Caltrans 2021). Many local jurisdictions provide guidance and protective measures for cultural resources in their general plans and other local planning documents. There are generally no regional plans pertaining to such resources for the Northern Baja California region. The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land port of entries (POEs) and transportation infrastructure serving those POEs in the California-Baja

California region. The Master Plan does not have an associated environmental analysis document, and no detailed analysis of cultural resource impacts was conducted for this Master Plan (Caltrans 2021).

Impacts of the Proposed Plan

Areas in the San Diego region are known to have a high potential for prehistoric, historic, and cultural resources. Implementation of the proposed Plan would result in the construction of development projects and transportation network improvements that would result in a wide range of construction and ground-disturbing activities, such as excavation, grading, and clearing, which remove or disturb the upper layer of soils. Because cultural resources have been found within inches of the ground surface in some areas of the San Diego region, in some locations these ground-disturbing activities would cause a substantial adverse change in the significance of a historical or unique archaeological resource (Impact CULT-1).

Implementation of the proposed Plan would necessitate construction activities that in some locations would cause a substantial adverse change in the significance of a historical or unique archaeological resource through the physical demolition, destruction, relocation, or alteration of a resource or its immediate surroundings such that the significance of a historical or unique archaeological resource would be materially impaired. Operational improvements, such as increased service frequencies and expanded transit routes, are anticipated to occur within existing disturbed rights-of-way and would not involve ground disturbance. Therefore, operational impacts are not expected to result in significant impacts on archaeological resources. However, operational impacts such as long-term vibration may still affect historic architectural resources through indirect physical stress or damage. These effects may be significant, and additional mitigation may be required depending on site-specific conditions and proximity to vibration-sensitive structures. This would occur within each horizon year analyzed (2035 and 2050). Therefore, impacts related to a substantial adverse change in the significance of a historical or unique archaeological resource would be significant.

As described in Section 4.5.4, "Environmental Impacts and Mitigation Measures," the proposed Plan would result in ground-disturbing activities associated with regional growth and land use change and planned transportation network improvements that in some locations would unearth and impact buried human remains in 2035 and 2050. Impacts would be less than significant because adherence to existing laws and regulations associated with the disturbance of human remains as detailed in Section 4.5.2, "Regulatory Setting," ensures the appropriate handling of any human remains that are encountered (Impact CULT-2).

Impacts of Related Projects

Land development and infrastructure projects throughout the region and state, such as transportation infrastructure, energy generation and transmission corridors, and commercial and residential land development, would likely result in impacts if these projects occur in areas containing significant cultural resources. For example, projects planned in the Southern California region, such as the Navy OTC Revitalization Project, San Diego International Airport (SDIA) Airport Development Plan, High-Speed Train (HST), and City of San Diego Pure Water North City, would result in impacts related to destruction or alteration of historical resources (U.S. Department of the Navy 2020; SDCRAA 2020; HSRA 2005; City of San Diego n.d.). The HST project in the San Diego region would result in construction of track, bridges and elevated guideways, stations, and other features that may result in destruction or alteration of cultural resources (HSRA 2005). The EIR/EIS prepared for the HST project determined that the project would result in significant cumulative impacts on cultural resources. The EIR for the SDIA Airport Development Plan also identified significant and unavoidable impacts to historical resources (SDCRAA 2020). Both the Navy Old Town Campus Revitalization and City of San Diego Pure Water North City Project would result in impacts; impacts associated with historical resources would be significant and mitigated to a level of less than significant respectively (U.S. Department of the Navy 2020; City of San Diego n.d.).

Impact Projections in Adopted Plans

Implementation of SCAG's 2024-2050 RTP/SCS would result in significant and unavoidable impacts related to adverse changes in the significance of archaeological and historic architectural resources and disturbance of human remains. In addition, the SCAG 2024-2050 RTP/SCS's influence on growth would contribute to regionally

significant impacts on cultural resources and be cumulatively considerable (SCAG 2024). The EIR prepared for the County of San Diego General Plan Update found that, with mitigation, implementation of the updated General Plan would result in less-than-significant direct or cumulative impacts on historical, archaeological, or disturbance of human remains (County of San Diego 2011). The California-Baja California Border Master Plan does not provide analysis of impacts on cultural resources; however, projects included in the Master Plan could have adverse impacts on cultural resources due to ground disturbance necessary for construction of infrastructure.

Cumulative Impacts and Impact Conclusions

2035

A significant cumulative impact on cultural resources is expected to occur in 2035 due to the incremental effects of the proposed Plan when viewed in combination with impacts of cumulative projects and the impact projections in adopted plans within the Southern California and Northern Baja region. Regional growth, infill development, and infrastructure projects would continue to result in ground-disturbing activities that could affect the significance of historical or unique archaeological resources, even with applicable regulatory protections in place. The proposed Plan would contribute to this cumulative impact through increased development in areas with known and potential cultural resources. Because its contribution would add to a regional pattern of resource loss and disturbance, particularly from ground-disturbing activities, it would be considered cumulatively considerable under CEQA. While the Plan requires compliance with applicable laws and policies for cultural resource protection, these measures would not fully avoid the potential for adverse effects. Therefore, the proposed Plan would contribute to a significant cumulative impact on historical and unique archaeological resources. Because the proposed Plan's impacts on historical and unique archaeological resources are significant, they are also cumulatively considerable in 2035 (Impact C-CULT-1).

In addition, implementation of the proposed Plan combined with development associated with other regional plans and related projects would result in adverse impacts on human remains from development activities. Development associated with the proposed Plan, as well as in the SCAG region, would be required to comply with federal, state, and local regulations, as described in Section 4.5.2, "Regulatory Setting," if human remains are encountered. Cumulative projects located in Mexico would not be subject to compliance with such regulations. However, the proposed Plan's contribution to these cumulative impacts would be less than cumulatively considerable, because required compliance with federal, state, and local regulations would ensure the appropriate handling of any human remains that are encountered (Impact C-CULT-1).

2050

The cumulative analysis presented above for 2035 is also applicable to year 2050. By that time, continued regional growth, expanded land use, and additional transportation improvements would result in a significant cumulative impact on cultural resources across the Southern California and Northern Baja California region. By 2050, there would be increased development and infrastructure activities in areas farther inland that have previously experienced less ground disturbance relative to the coastal region, increasing the likelihood of substantial adverse changes in the significance of historical or unique archaeological resources. Because the proposed Plan contributes to this regional pattern of development, including in areas known to contain sensitive cultural resources, its incremental effects would be cumulatively considerable. Although the Plan includes compliance with applicable cultural resource protection regulations, these measures may not fully avoid or mitigate its contribution. Therefore, the proposed Plan would contribute to a significant cumulative impact on historical and unique archaeological resources. Because the proposed Plan's impacts on historical and unique archaeological resources are significant, they are also cumulatively considerable in 2050 (Impact C-CULT-1).

By 2050, implementation of the proposed Plan combined with development associated with other regional plans and related projects would result in adverse impacts on human remains from development activities. Development associated with the proposed Plan, as well as in the SCAG region, would be required to comply with federal, state, and local regulations, as described in Section 4.5.2, "Regulatory Setting," if human remains are encountered. Cumulative projects located in Mexico would not be subject to compliance with such regulations. However, the proposed Plan's contribution to these cumulative impacts would be less than cumulatively

considerable, because required compliance with federal, state, and local regulations would ensure the appropriate handling of any human remains that are encountered (Impact C-CULT-1).

MITIGATION MEASURES

C-CULT-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON CULTURAL RESOURCES

2035, 2050

Mitigation measures CULT-1a and CULT-1b call for measures to avoid or substantially reduce adverse changes in the significance of a cultural resource and protect cultural resources listed on or eligible for listing on the CRHR. These measures also require the implementation of monitoring and data recovery programs during construction. The mitigation measures would be included in project-level planning, design, and CEQA reviews. The measures would be required as part of transportation projects under the proposed Plan for which SANDAG is the lead agency, and would be recommendations when other local jurisdictions act as lead agency. However, their implementation would not reduce impacts to less than significant because it cannot be guaranteed that all future project-level impacts under the proposed Plan can be mitigated to a less-than-significant level. Because mitigation measures CULT-1a and CULT-1b would not reduce the proposed Plan's incremental impacts to less than significant, the proposed Plan's incremental contributions to cumulative cultural resources impacts in years 2035 and 2050 would remain cumulatively considerable post mitigation.

4.6 ENERGY

This section evaluates energy impacts that would result from implementing the proposed Plan.

4.6.1 Existing Conditions

This section provides an overview of existing energy conditions applicable to the proposed Plan in the San Diego region.

STATE ENERGY RESOURCES AND USE

California maintains an energy system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. According to the US Energy Information Administration (USEIA), California consumed approximately 6,882 trillion British thermal units (BTUs) of energy in 2022 (USEIA 2025a). Per capita energy consumption, which is the total energy consumption of the state divided by the total population, is the second lowest in the country, with 176 million BTUs in 2022 (USEIA 2025a). Although California consumes more electricity than all other states except Texas and Florida, it uses less electricity per capita than any other state but Hawaii (USEIA 2025b). California imports more electricity than any other state and has historically received between one-fifth and one-third of its electricity supply from outside of the state; however, in 2023, in-state utility-scale electricity generation equaled about 90 percent of California's electricity sales, and the rest of the state's power supply came from out of state (USEIA 2025b).

California is second in the nation, after Texas, in total electricity generation from renewable resources (USEIA 2025b). Renewable resources, including eligible hydropower and small-scale (less than 1 megawatt) customer-sited solar photovoltaic (PV) systems, supplied 54 percent of California's total in-state electricity generation in 2023 (USEIA 2025b). Natural gas-fired power plants provided 39 percent of the state's total net generation, and nuclear power's share of California's total electricity generation was about 7 percent (USEIA 2025b). According to the California Energy Commission (CEC), per capita energy consumption, in general, is declining due to improvements in energy efficiency and design (CEC 2024a). However, despite this reduction in per capita energy use, the state's total overall energy consumption (i.e., non-per-capita energy consumption) is expected to increase over the next several decades due to growth in population, jobs, and vehicle travel (CEC 2024a).

REGIONAL ENERGY RESOURCES AND USE

In 2022, the San Diego region consumed 20,243 million kilowatt hours (kWh) of electricity, which is approximately 7 percent of the total electricity consumed in California, and 522 million therms of gas, or 4 percent of the state's total (CEC 2025a; CEC 2025b). The San Diego region is served by San Diego Gas and Electric (SDG&E), which provides energy service to 3.7 million customers (1.5 million accounts) in the region and portions of southern Orange County (SDG&E 2025). The utility has a diverse power production portfolio, composed of a variety of renewable and nonrenewable sources, and energy production typically varies by season and by year, with regional electricity loads tending to be higher in the summer because the higher summer temperatures drive increased demand for air-conditioning (OPR et al. 2018). In contrast, natural gas loads are higher in the winter because the colder temperatures drive increased demand for natural gas heating. In 2022, approximately 44.8 percent of the electricity SDG&E supplied was from eligible renewable sources (CEC 2024b). However, through SDG&E's EcoChoice mix, customers in SDG&E's service area may voluntarily choose to receive their electricity from 100 percent eligible renewable sources.

The cities of Chula Vista, Encinitas, Imperial Beach, La Mesa, and San Diego have formed the San Diego Community Power (SDCP) Community Choice Energy (CCE) Program. Additionally, the cities of Carlsbad, Del Mar, and Solana Beach have formed the Clean Energy Alliance (CEA), another CCE Program. SDCP and CEA work in partnership with SDG&E to deliver greenhouse gas (GHG) efficient electricity to customers within its member jurisdictions.

SDCP started providing service to commercial customers in June 2021, and service to residential customers began in 2022. In 2023, SDCP fully enrolled the City of National City and the unincorporated communities of San Diego County, and in 2024 SDCP began offering customer programs to nearly one million customers. SDCP plans to supply 100 percent renewable electricity by 2030 or 2035 (SDCP 2025). SDCP offers four plan options. PowerBase provides 45 percent renewable energy. This is typically the lowest-cost option. PowerOn provides at least 50 percent renewable energy and is the standard service for most consumers (with exceptions). Power100 provides 100 percent renewable and carbon-free energy. Power100 Green+ provides 100 percent renewable, carbon-free, Green-e® certified energy for businesses seeking LEED certification or require Green-e® certification to meet their corporate social responsibility goals (SDCP 2025).

The CEA (formed by Carlsbad, Del Mar, and Solana Beach) started delivering power to customers in May 2021. CEA offers four plan options. Clean Impact is CEA's minimum 50 percent renewable energy option, increasing annually to achieve 100 percent renewable energy by 2035. Clean Impact Plus is the default option, and offers 50 percent renewable/75 percent carbon-free energy content. Green Impact is CEA's 100 percent renewable energy option. CEA also offers an option for homes with eligible renewable energy systems (e.g., rooftop solar). Under this plan, customers are charged the applicable rate for the energy they use and receive credit for the energy they send to the grid (CEA 2025).

According to CEC's 2023 California Annual Retail Fuel Outlet Report Results (CEC-A15) in 2023, on-road motor vehicles in the county consumed approximately 1.1 billion gallons of gasoline and 107 million gallons of diesel fuel (CEC 2024c).

ANTICIPATED EFFECTS OF CLIMATE CHANGE

Climate change could lead to an increase in energy usage and energy instability due to outages and wildfires in California. As temperatures increase, electricity demand will increase to air condition buildings and transportation (e.g., personal vehicles, public transit), becoming more pronounced during peak hourly demand in the hottest months as compared to annual demand (Bedsworth et al. 2018). SDG&E's energy supply is growing to include renewable energy sources, increasing by more than 30% between 2010 and 2017; however, energy generation does not necessarily align with energy use, resulting in a "duck curve" that causes stress to the grid. Peak solar generation occurs midday whereas peak electricity demand occurs in the evening (Kalansky et al. 2018; Kennedy 2023). Additionally, the days with greatest electricity demand are humid, cloud covered days, which require higher air conditioning usage but also reduce solar electrical generation (Kalansky et al. 2018).

The SDG&E service area's primary climate change vulnerabilities come from sea level rise and wildfire, which are expected to be exacerbated by climate change. In San Diego Bay, a moderate sea level rise scenario (i.e., 1.6 feet; 0.5 meters) and a 100-year storm event could result in four substations being out of service for up to two weeks. Sea level rise is also expected to damage distribution lines from corrosion from more frequent fooding (Kalansky et al. 2018). In addition to sea level rise, installation of aboveground electrical distribution infrastructure to support development in the High and Very High FHSZs and WUIs, as the proposed Plan identifies, increases the risk of wildfire ignition, such as from downed lines, direct contact with vegetation, and line faults and equipment failures (WFCA 2024), especially in rural and high fire-risk areas. SDG&E has a fire prevention plan which accounts for the increased length of fire season and has installed a high-density weather station network that provides real time data on weather conditions that could result in unusual energy demand, put the power system at risk, or increase wildfire threats (Kalansky et al. 2018)

Energy use will be exacerbated by new residential development and expanded use of air conditioning, should the growth of energy demand from new housing stock outpace energy efficiency gains in the existing housing stock. By 2050, the San Diego region is expected to use at least 60 percent more electricity, with peak demand growing by over 70 percent (Young et al. 2024). Growing demand will likely not be offset by the decreased heating needs in winter, particularly because California's residential sector uses relatively little electricity for heating (Moser et al. 2012). Climate impacts on other sectors may also increase energy demand; for example, drought conditions may cause more pumping, conveyance, or treatment of water, which all require energy (EPA 2017).

4.6.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

There is no overarching federal law specifically related to energy conservation. Additionally, in March 2025, the current administration announced that EPA will undertake 31 actions, focusing primarily on reconsidering actions adopted by previous administrations, including numerous actions and regulations related to the reduction of GHG emissions that could also affect energy consumption. These include, but are not limited to, reconsideration of regulations on power plants, the Endangerment Finding, and fuel economy standards, among others. As of the writing of this Draft EIR, none of these regulations have been repealed or replaced with newly adopted regulations. Therefore, these regulations are discussed below.

Federal Clean Air Act

The federal Clean Air Act (CAA), as amended, is the primary federal law that governs air quality nationwide. The CAA was enacted in 1963 and has been amended numerous times in subsequent years (1967, 1970, 1977, and 1990). On April 2, 2007, in *Massachusetts v. EPA*, 549 US 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the CAA. The court held that the administrator of the US Environmental Protection Agency (EPA) must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA administrator is required to follow Section 202(a) of the CAA (EPA 2025). Section 202(a) of the CAA requires the EPA administrator to set standards for air pollutant emissions from new motor vehicles or engines that, in the administrator's judgment, cause or contribute to air pollution that may endanger public health or welfare (42 US Code [USC] Section 7521). On December 7, 2009, the administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA (40 Code of Federal Regulations [CFR] 1):

- **Endangerment Finding:** The administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

These findings are not intended to act as requirements on industry or other entities. However, this action was a prerequisite for implementing GHG emissions standards for vehicles and other sectors.

National Energy Act of 1978

The National Energy Act of 1978 included the Public Utility Regulatory Policies Act (Public Law 95-617), Energy Tax Act (Public Law 95-318), National Energy Conservation Policy Act (Public Law 95-619), Power Plant and Industrial Fuel Use Act (Public Law 95-620), and the Natural Gas Policy Act (Public Law 95-621).

The intent of the National Energy Act was to promote greater use of renewable energy, provide residential consumers with energy conservation audits to encourage slower growth of electricity demand, and promote fuel efficiency. The Public Utility Regulatory Policies Act created a market for nonutility electric power producers to permit independent power producers to connect to their lines and to pay for the electricity that was delivered.

The Energy Tax Act promoted fuel efficiency and renewable energy through taxes and tax credits. The National Energy Conservation Policy Act required utilities to provide residential consumers with energy conservation audits and other services to encourage slower growth of electricity demand.

Energy Policy Act of 1992

The Energy Policy Act of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. The act includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. The act requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in the act. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The act also defines alternative fuels, which include ethanol, natural gas, propane, hydrogen, electricity, and biodiesel.

Energy Policy Act of 2005

The Energy Policy Act of 2005, implemented by the U.S. Department of Energy, was intended to establish a comprehensive, long-term energy policy. The Energy Policy Act addresses energy production in the United States, including oil, gas, coal, and renewable forms of energy, and energy efficiency and tax incentives. Energy efficiency and tax incentive programs consist of credits for the construction of new energy-efficient homes and the production or purchase of energy-efficient appliances, and loan guarantees for entities that develop or use innovative technologies that avoid the production of GHGs.

Energy Independence and Security Act of 2007

Signed into law in December 2007, the Energy Independence and Security Act was passed to increase the production of clean renewable fuels; increase the efficiency of products, buildings, and vehicles; improve the energy performance of the federal government; and increase US energy security, develop renewable fuel production, and improve vehicle fuel economy. The Energy Independence and Security Act included the first increase in fuel economy standards for passenger cars since 1975. The act also included a new energy grant program for use by local governments in implementing energy efficiency initiatives, as well as a variety of green building incentives and programs.

Executive Orders

There are several federal executive orders (EOs) related to energy production, renewable energy, and energy reduction.

- **EO 13834: Efficient Federal Operations.** EO 13834 designates a federal chief sustainability officer to head an Office of Federal Sustainability along with chief sustainability officers to head each agency and report to the chair of the Council on Environmental Quality regarding implementation of sustainability goals.
- **EO 14154: Unleashing American Energy.** EO 14154 declares a national energy emergency per the National Emergencies Act. Under this pretense, EO 14154 directs agencies to use their statutory emergency powers to expedite development and authorization of energy projects, defined in the order as "crude oil, natural gas, lease condensates, natural gas liquids, refined petroleum products, uranium, coal, biofuels, geothermal heat, the kinetic movement of flowing water, and critical minerals." EO 14154 does not apply to solar, wind, battery electric, or other energy sources not contained in the definition of "energy."
- **EO 14156: Declaring a National Energy Emergency.** EO 14156 directs the heads of executive departments and agencies to identify and exercise any lawful emergency authorities available to them, as well as all other lawful authorities they may possess, to facilitate the identification, leasing, siting, production, transportation, refining, and generation of domestic energy resources, on, but not limited to, federal lands. If an agency determines that use of either federal eminent domain authorities or authorities afforded under the Defense Production Act (Public Law 81-774, 50 USC Section 4501 et seq.) are necessary to achieve this objective, the agency is directed to submit recommendations for a course of action to the President through the Assistant to the President for National Security Affairs.
- **EO 14260: Protecting American Energy from State Overreach.** EO 14260 aims to remove what the administration characterizes as "illegitimate impediments to the identification, development, siting,

production, investment in, or use of domestic energy resources—particularly oil, natural gas, coal, hydropower, geothermal, biofuel, critical mineral, and nuclear energy resources." EO 14260 directs "[t]he Attorney General, in consultation with the heads of appropriate executive departments and agencies, [to] identify all state and local laws, regulations, causes of action, policies, and practices…burdening the identification, development, siting, production or use of domestic energy resources," prioritizing state laws "purporting to address 'climate change' or involving 'environmental, social, and governance' initiatives, 'environmental justice,' carbon or 'greenhouse gas' emissions, and funds to collect carbon penalties or carbon taxes" (White House 2025).

- **EO 14261: Reinvigorating America's Beautiful Clean Coal Industry and Amending Executive Order 14241.** EO 14261 mandates the chair of the National Energy Dominance Council to entitle coal to the same benefits as other minerals (including the newly added uranium, copper, potash, and gold) designated in EO 14241, and calls upon multiple agencies (including the Department of State, Treasury, Interior, Energy, Agriculture, Labor, and Commerce, EPA, the Office of the US Trade Representative, the United States International Development Finance Corporation, and Export-Import Bank, among others) to support domestic coal production.
- **EO 14262: Strengthening the Reliability and Security of the United States Electric Grid**. During periods when the relevant grid operator forecasts that a temporary interruption of electricity supply is necessary to prevent a complete grid failure, EO 14262 directs the secretary of energy, in consultation with executive department and agency heads as the secretary of energy deems appropriate, to the maximum extent permitted by law, to streamline, systemize, and expedite the Department of Energy's processes for issuing orders under Section 202(c) of the Federal Power Act during the periods of grid operations described above, including the review and approval of applications by electric generation resources seeking to operate at maximum capacity.

Fuel Economy Standards

The National Highway Traffic Safety Administration (NHTSA) and EPA set the Corporate Average Fuel Economy Standards (CAFE) standards to improve the average fuel economy and reduce GHGs generated by cars and light-duty trucks. The most recent update was in 2024, and the CAFE standards were finalized for model years (MYs) 2027 through 2031. The final rule establishes standards that require an industry-wide fleet average of approximately 49 miles per gallon (mpg) for passenger cars and light trucks. The final rule establishes standards that would require an industry-wide fleet average of approximately 50.4 mpg in MY 2031 for passenger cars and light trucks and an industry fleet-wide average for heavy-duty pickup trucks and vans (HDPUVs) of roughly 2.851 gallons per 100 miles in MY 2035. The final CAFE standards increase at a rate of 2 percent per year for passenger cars in MYs 2027–2031 and 2 percent per year for light trucks in model years 2029–2031. The final HDPUV fuel efficiency standards increase at a rate of 10 percent per year in MYs 2030–2032 and 8 percent per year in MYs 2033–2035 (NHTSA 2024).

For further information on CAFE standards refer to Section 4.3, "Air Quality."

Medium- and Heavy-Duty Vehicle Program

EPA and NHTSA set fuel efficiency and GHG standards for medium- and heavy-duty trucks. In 2011, EPA and NHTSA finalized a joint rule that established a national program to reduce GHG emissions and improve fuel economy for new medium- and heavy-duty engines and vehicles. This rule—called the Phase 1 standards—requires fuel efficiency standards for engines in model years 2014 through 2018 (40 CFR Parts 85, 86, 1036, 1037, 1065, 1066, and 1068). In 2016, EPA and NHTSA adopted the Phase 2 standards, which require fuel efficiency standards for engines in model years 2018 through 2027 (40 CFR Parts 9, 22, 85, 86, 600, 1033, 1036, 1037, 1039, 1042, 1043, 1065, 1066, and 1068) (EPA 2016).

Construction Equipment Emission Standards

The Code of Federal Regulations established tiered emissions standards for construction equipment (i.e., nonroad diesel engines) to phase in cleaner-burning equipment that will reduce nitrogen oxides (NO_X) and particulate

matter emissions from exhaust. After 2014, all construction equipment manufactured in the United States is required to meet the highest tier of emission standards, Tier 4. EPA oversees implementation of these regulations (CFR Chapter 40, Parts 1039, 1065, and 1068).

Public Law No. 119-15

On June 12, 2025, Public Law 119-15, enacting House Joint Resolution 87, was signed into law. The law utilized the Congressional Review Act to nullify EPA's rule that had granted California a waiver to enforce stricter emissions standards for heavy-duty vehicles under the CAA. The disapproved rule included programs such as the Advanced Clean Trucks regulation and zero-emission requirements for airport shuttles. Passed under the Congressional Review Act, the law prevents EPA from implementing or reissuing the same or similar rules without new congressional authorization. This effectively blocks California, and other states that follow its standards, from enforcing these specific vehicle emission and warranty regulations. Impact EN-1 uses EMFAC2017 to calculate mobile source energy estimates in alignment with the approach taken in Section 4.8, "Greenhouse Gas Emissions and Climate Change." These analyses do not account for the Advanced Clean Trucks regulation had not yet been adopted at the time the EMFAC2017 methodologies were last updated, and thus were not factored into the modeling.

Public Law No. 119-16

Similarly on June 12, 2025, Public Law No. 119-16, enacting House Joint Resolution 88, became law. The law also relied on the Congressional Review Act to void the EPA's December 2024 waiver under the CAA that allowed California to implement and enforce the Advanced Clean Cars II (ACC II) regulation. ACC II included a zero-emission vehicle (ZEV) mandate targeting 100% new light-duty ZEV sales by 2035. P.L. No. 119-16 marks the first ever occurrence that waivers under the CAA have been revoked under the Congressional Review Act. The implications of this law on the State's capability to enforce its independent fuel economy standards are uncertain at this time, as the California Attorney General is pursuing legal action challenging P.L. No. 119-16. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the ACC II regulation during the legal process. Notably, as discussed under the analysis of Project impacts in Section 4.6.4, "Environmental Impacts and Mitigation Measures," Impact EN-1 uses EMFAC2017 to calculate mobile source energy estimates in alignment with the approach taken in Section 4.8, "Greenhouse Gas Emissions and Climate Change." These analyses do not account for ACC II because ACC II had not yet been adopted at the time the EMFAC2017 methodologies were last updated, and thus were not factored into the modeling.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

The State of California has adopted several laws addressing various aspects of energy production, energy conservation, energy efficiency, and renewable energy. Much of this establishes a broad framework for the state's long-term GHG and energy reduction goals and climate change adaptation program. A summary of the key laws, regulations, plans, and policies that are relevant to the proposed Plan is provided below, organized by general categories. Additional air quality and climate change laws, regulations, plans, and policies affecting the energy sector are reviewed in Section 4.3, "Air Quality," and Section 4.8, "Greenhouse Gas Emissions."

Legislative GHG Reduction Targets

The State has passed legislation that establishes a broad framework for the long-term GHG reduction and climate change adaptation programs. The following bills are the primary laws related to GHG reduction targets that are also relevant to California's energy goals.

- **Assembly Bill (AB) 32, Health and Safety Code Section 38500 et seq.** AB 32 codified the 2020 reduction target of EO S-03-05 (i.e., by 2020, reach the GHG emissions levels of 1990). AB 32 also gave CARB authority to develop a scoping plan that describes the approach California will take to achieve GHG reduction targets.
- **Senate Bill (SB) 32, Health and Safety Code Section 38566.** SB 32 codified the 2030 reduction target of EO B-30-15 (i.e., by 2030, reach statewide GHG emission levels of 40 percent below 1990 levels). As part of SB 32, AB 197 of 2016 (Chapter 250, Statutes of 2016) required CARB, in implementing SB 32's 2030 GHG

reduction target, to (1) prioritize emissions reductions to consider the "social costs" of GHG emissions and (2) prioritize "direct emission reductions" at large stationary sources and at mobile sources. In 2017, CARB updated the Scoping Plan to achieve the 2030 reduction target.

- **AB 1279, The California Climate Crisis Act, Health and Safety Code Section 38562.2.** On September 16, 2022, the State legislature passed AB 1279, which codified stringent emissions targets for the state of achieving carbon neutrality and an 85 percent reduction in anthropogenic emissions level by 2045 relative to 1990 levels.

State Agency GHG Reduction Plans

CARB and other state agencies have adopted various GHG reduction plans. A description of these plans follows. These plans are discussed in further detail in Section 4.8, "Greenhouse Gas Emissions."

- **AB 32 Scoping Plan.** The AB 32 Scoping Plan identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires CARB and other state agencies to develop and enforce regulations and other initiatives to reduce GHG emissions. The AB 32 Scoping Plan, adopted in 2008, comprises the state's roadmap for meeting AB 32's reduction target. Specifically, the scoping plan articulates a key role for local governments by recommending that they establish GHG emissions-reduction goals for both their municipal operations and the community that are consistent with those of the state (i.e., approximately 15 percent below current levels) (CARB 2008). The AB 32 Scoping Plan was updated in 2014.
- **2017 Scoping Plan.** The 2017 Scoping Plan represents the state's roadmap to achieving long-term GHG reduction target of SB 32. Because energy is one of the state's largest contributors to GHG emissions, efforts to reduce energy-related emissions are a key component of the 2017 Scoping Plan. The actions outlined in the Scoping Plan Update also support California's efforts to build a state-of-the-art energy generation, supply, and distribution system that is clean, affordable, and reliable.
- **2022 Scoping Plan for Achieving Carbon Neutrality.** CARB adopted the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 16, 2022. The 2022 Scoping Plan traces the state's pathway to achieve its goals of carbon neutrality and an 85 percent reduction in 1990 emissions by 2045, as codified by AB 1279 in September 2022 (CARB 2022a). These targets are in line with scientifically established levels to limit the rise in global temperature to no more than 2 degrees Celsius (°C), the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5°C (United Nations 2015). The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile-source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals. The 2022 Scoping Plan details a multitude of strategies for reducing GHG emissions in each of these sectors. Examples of strategies include achieving a per capita vehicle miles traveled (VMT) reduction of at least 25 percent below 2019 levels by 2030 and 30 percent below 2019 levels by 2045 to reduce GHGs from the transportation sector, achieving three million all-electric and electric-ready homes by 2030 and seven million by 2035 with six million heat pumps installed statewide by 2030 to reduce GHG emissions in the commercial and residential building sector, and using long-term planning processes to support grid reliability and expansion of renewable and zero-carbon resource and infrastructure deployment to reduce energy sector GHG emissions. The 2022 Scoping Plan is the current scoping plan.
- **California State Priority Climate Action Plan.** California's State Priority Climate Action Plan (PCAP) was developed to achieve GHG reductions across the geographic extent of California from nearly every economic sector. The PCAP includes several elements: a 2021 statewide GHG emissions inventory, the state's overarching GHG targets codified by AB 32 and AB 1279, an overview of the state's approach to low-income and disadvantaged community benefits analysis, workforce considerations, and GHG reduction measures that target reduction in the transportation, industrial, energy, high global warming potential, agriculture, natural and working lands, and waste sectors. The PCAP supports statewide GHG reduction targets through implementation of the following reduction measures:

- **Transportation measures:**
  - Create a holistic, heavy-duty zero-emissions vehicle buydown program.
  - Install truck charging to support zero-emissions goods movement at California ports and warehouse districts.
  - Advance the deployment of clean off-road equipment.
  - Bolster investments in the state's sustainable port and freight infrastructure.
  - Support mobility projects uplifted by communities.
  - Allow for local deployment of ZEV infrastructure and low-income ZEV support.
- **Industrial measure:**
  - Accelerate industrial decarbonization by expanding the existing Industrial Decarbonization and Improvement to Grid Operations Program.
- **Energy measures:**
  - Expand decarbonization through the Energy Conservation Assistance Act.
  - Create a funding program to upgrade the capacity of distribution systems.
  - Expand the success of California's Self-Generation Incentive Program for behind the meter energy storage.
  - Bolster healthy landscapes and resilient communities through expanding the Biomass to Carbon Negative Biofuels Program.
  - Deploy equitable building decarbonization.
  - Implement bioenergy projects.
  - Enable renewable microgrids for rural communities and tribes.
- **High global warming potential gases measure:**
  - Expand F-gas Reduction Incentive Program.
- **Agriculture measures:**
  - Expand California's healthy soils practices.
  - Reduce methane emissions by expanding California's existing Dairy Digester Research and Development Program.
- **Natural and working lands measures:**
  - Bolster California's Forest Health Program.
  - Expand urban and community forest projects.
  - Expand the state's Wetland Restoration Program.
- **Waste measures:**
  - Food Waste Prevention and Edible Food Recovery Program.
  - Bolster organics recycling infrastructure.

Transportation Planning

- **SB 375, Chapter 728, Statutes of 2008.** SB 375 provides for a new planning process that integrates regional transportation, land use, GHG reduction, and housing planning. SB 375 requires regional transportation plans

(RTPs) to incorporate a sustainable communities strategy (SCS) that demonstrates how the region would achieve regional GHG emission reduction targets for passenger vehicles set by CARB. CARB revised SANDAG's GHG targets in 2018 to 15 percent reduction in passenger vehicle emissions per capita by 2020 and 19 percent by 2035 using a 2005 baseline.

In the *2022 Progress Report California's Sustainable Communities and Climate Protection Act*, CARB states that an RTP/SCS that meets the applicable SB 375 targets alone will not result in the GHG emission reductions necessary to meet state climate goals in 2030 nor in 2050 (CARB 2022b). CARB has also noted that greater reductions in VMT will be required to make up the 6 percent gap in GHG. Further, CARB states that California is still not reducing GHG emissions from personal vehicle travel as needed to meet climate commitments and as targeted under SB 375 (CARB 2022b).

Fuel Economy Standards and Electric Vehicles

- **EO N-79-20.** Signed by Governor Newsom on September 23, 2020, EO N-79-20 requires 100 percent of in-state sales of passenger cars and trucks are ZEVs by 2035; 100 percent of operating medium- and heavy-duty vehicles are ZEVs by 2045; and 100 percent of drayage trucks and off-road vehicles and equipment are ZEVs by 2035. The order also tasks CEC with providing an updated assessment of the infrastructure needed to support this level of ZEV adoption (CARB 2021). The Governor's Interagency Working Group on ZEVs developed the ZEV Action Plan, issued in 2013 and subsequently updated in 2016 and 2018, to identify actions that support the State's ZEV goals. Some actions in the ZEV Action Plan that are particularly relevant to the Clean Transportation Program include ensuring ZEVs are accessible to a broad range of Californians and making ZEV technologies commercially viable in the medium- and heavy-duty and freight sectors. Many recommendations in the ZEV Action Plan have been captured in the Clean Transportation Program since the inception of the program and continue to be program priorities (CARB 2021).
- **Advanced Clean Cars Program (passenger vehicles)**. AB 1493 of 2002 (known as Pavley I, Chapter 200, Statutes of 2002) provided the nation's first GHG standards for automobiles. AB 1493 required CARB to adopt vehicle standards that lowered GHG emissions from new light-duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards referred to as the Advanced Clean Cars (ACC) Program's Low Emission Vehicle III Regulation was adopted for vehicle model years 2017–2025 in 2012 (13 California Code of Regulations [CCR] Section 1900 et seq.).

  The ACC Program also includes the Zero Emission Vehicle Program and the Clean Fuels Outlet Regulation. The Zero Emission Vehicle Program is designed to achieve California's long-term emission reduction goals by requiring manufacturers to offer for sale specific numbers of ZEVs, which include battery electric, fuel cell, and plug-in hybrid electric vehicles. The Clean Fuels Outlet regulation is intended to ensure that fuels, such as electricity and hydrogen, are available to meet the fueling needs of new advanced technology vehicles as they come to market. The ACC II Program was adopted by CARB in August 2022, and provides the regulatory framework for ensuring the sales requirement goal of EO N-79-20 to ultimately reach 100 percent ZEV sales in the state by 2035. EPA granted CARB its California's CAA waiver request on December 18, 2024.
- **Low Carbon Fuel Standard.** The Low Carbon Fuel Standard (LCFS) originally mandated that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 (17 CCR Section 95480 et seq.). In September 2018, to help achieve SB 32's emission reduction target, the LCFS regulation was amended to increase the statewide goal to a 20 percent reduction in carbon intensity of California's transportation fuels by 2030. The majority of the emissions benefits due to the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe). On November 8, 2024, CARB approved amendments to the LCFS regulation to maintain momentum for global, national, and local private sector investment toward increasing cleaner fuel and transportation options for consumers, accelerating the deployment of zero-emission infrastructure and clean fuel production to support clean vehicle regulations, and keeping the state on track to meet statutorily mandated air quality and climate targets (CARB 2025a). On January 3, 2025, CARB submitted the final proposed amendments to the LCFS regulation to the Office of Administrative Law (OAL) for review in accordance with Government Code Section

11349.1 (CARB 2025a). On February 18, 2025, OAL issued a routine disapproval of amendments to the LCFS regulation on technical grounds, not on the merits of the regulation. CARB staff have 120 days to make necessary revisions and resubmit the regulation for OAL approval (CARB 2025a). CARB staff made necessary revisions and resubmitted the regulation for OAL approval on May 16, 2025. On June 27, 2025, OAL approved this rulemaking and filed it with the Secretary of State with an effective date of July 1, 2025.

- **Medium- and heavy-duty vehicles.** In 2008, CARB approved the Phase 1 Tractor-Trailer Greenhouse Gas Regulation to reduce GHG emissions by requiring the use of aerodynamic tractors and trailers that are also equipped with low-rolling-resistance tires (13 CCR Section 2020 et seq.). The regulation applies to certain Class 8 tractors manufactured for use in California and is harmonized with the parallel EPA and NHTSA Phase 1 heavy-duty truck standards. CARB amended the Tractor-Trailer Greenhouse Gas Regulation in 2019 (Phase 2 standards) to align with EPA and NHTSA Phase 2 heavy-duty truck standards.
- **Advanced Clean Trucks**. The Advanced Clean Trucks regulation was adopted by CARB on April 28, 2023. The Advanced Clean Trucks regulation sets requirements for the transition of diesel trucks and vans to zero-emission trucks, which began in 2024. Per the Advanced Clean Trucks Regulation, manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines are required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales are required to be 55 percent of Class 2b–3 truck sales, 75 percent of Class 4–8 straight truck sales, and 40 percent of truck tractor sales (EPA 2024). CARB estimates that the regulation will lower related premature deaths (CARB 2020). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, CARB expects that risks associated with exposure to the emissions will also be reduced. EPA granted the waiver request for the Advanced Clean Trucks Regulation on April 6, 2023 (EPA 2023).
- **Advanced Clean Fleets.** CARB's 2022 Advanced Clean Fleets regulation was developed to reduce diesel particulate matter through the transition of medium- and heavy-duty trucks to become fully electric by 2045. In January 2025, California withdrew its request for a waiver and authorization for the addition of the Advanced Clean Fleets regulation to its emissions control program (CARB 2025b). CARB is not enforcing the existing portions of the Advanced Clean Fleets regulation that require a federal waiver or authorization, such as the portions of the Advanced Clean Fleet regulation that apply to high-priority and drayage fleets. However, not all elements of the Advanced Clean Fleets regulation require a federal waiver or authorization (CARB 2025c). State and local government fleets will still be required to be fully electric by 2045.
- **Innovative Clean Transit.** The Innovative Clean Transit (ICT) regulation was adopted in 2018 and requires all public transit agencies to incrementally reduce fleet vehicle tailpipe emissions and prioritizes innovative first- and last-mile connectivity and improved mobility for transit riders. Additionally, the ICT regulation provides various exemptions and compliance options to provide safeguards and flexibility for transit agencies through this emission reduction schedule. The ICT regulation was developed to align with other State policies, including the Sustainable Communities and Climate Protection Program (SB 375) and SB 350. SB 375 creates initiatives for increased development of transit-oriented communities, better-connected transportation, and active transportation. SB 350 provides an opportunity for transportation electrification including wide use of zero-emission buses. Under SB 350 the California Public Utilities Commission (CPUC) is collaborating with CARB and CEC to implement requirements set forth by SB 350 to support widespread transportation electrification. Through the deployment of zero-emission technologies, the ICT regulation will provide significant benefits across the state, including:
  - reducing NO_x and GHG emissions for all Californians, especially transit-dependent and disadvantaged communities; the majority of these benefits will be in the state's most populated and impacted areas where transit buses are most prevalent
  - increasing the penetration of the first wave of zero-emission heavy-duty technologies into applications that are well suited to their use to further achieve emission reduction benefits
  - saving energy and reduce dependency on petroleum and other fossil fuels

- expanding ZEV industry to bring high quality green jobs to local communities and trained workforce to California
- providing other societal benefits by encouraging improved mobility and connectivity with zero-emission transportation modes and reduced growth in light-duty VMT.

The goal of this regulation is to continue CARB, CEC, and CPUC's partnership with transit agencies to maximize these benefits, while providing flexibility and sufficient time for transit agencies to address potential challenges and utilize available funds. This regulation strives to not just maintain but enhance transit service through increased mobility options and has built in technological and financial safeguards to ensure transit service or fares are not adversely impacted by the regulation (13 CCR 2023).

- **AB 126:** Approved by the Governor on October 7, 2023, AB 126 includes provisions to provide, upon appropriation by the legislature, funding in the form of grants, revolving loans, loan guarantees, loans, or other appropriate funding measures to various private and public entities to help attain the State's climate change policies. AB 126 is intended to facilitate the development and deployment of zero-emission technology and fuels in the marketplace where feasible and near-zero-emission technology and fuels elsewhere. Provisions related to electric vehicles (EVs) and EV infrastructure include: creation of the Air Quality Improvement Program (Health and Safety Code [HSC] Section 44274 [a]) to provide funding for zero-emission fuel projects where feasible and near-zero-emission fuel projects elsewhere to develop and improve zero-emission and near-zero-emission fuels (HSC Section 44272 [h][1]); and a program to provide funding for homeowners who purchase a plug-in EV to offset costs associated with modifying electrical sources to include a residential plug-in EV charging station (HSC Section 44272 [h][13]). Awardees of funding for EV charging infrastructure are required to report to the CEC "the source and greenhouse gas emissions intensity, on an annual basis, of the electricity used and dispensed by electric vehicle charging stations at the meter (HSC Section 44272[m]). Funding is also authorized to be provided toward incentives for medium- and heavy-duty vehicles and equipment mitigation, including electric, hybrid, and plug-in hybrid on-road and off-road medium- and heavy-duty equipment (HSC Section 44274[c][4]).

Renewable Energy

- **Renewables Portfolio Standard**. SB 1078 (Sher 2002) established California's Renewables Portfolio Standard (RPS). The program sets continuously escalating renewable energy procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities. SB 2 (1X) of 2011 obligated all California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020. CPUC and CEC are jointly responsible for implementing the program. All electricity retail sellers had an interim target between compliance periods to serve at least 38.5 percent of their load with RPS-eligible resources by December 31, 2022. In general, retail sellers either met or exceeded the interim 38.5 percent target and are on track to achieve their compliance requirements. In 2018, SB 100 (Public Utilities Code Sections 399.11, 399.15, 399.30 and, Section 454.53) was signed into law, which again increases the RPS to 60 percent by 2030 and requires all the state's electricity to come from carbon-free resources by 2045.
- **SB 350 (Chapter 547, Statutes of 2015)**. SB 350 established the 2030 targets for the RPS: (1) an RPS of 50 percent and (2) a doubling of efficiency for existing buildings. In addition, SB 350 requires CPUC to establish an integrated resource planning (IRP) process to require that load-serving entities in the state develop their future energy portfolios to align with California's clean energy goals.
- **SB 100 (Chapter 312, Statutes of 2018)**. This bill establishes a new RPS target of 50 percent by 2026, increases the RPS target in 2030 from 50 to 60 percent, and establishes a goal of 100 percent zero-carbon energy sources by 2045.
- **SB 1020 (Chapter 361, Statutes of 2022)**. This bill superseded the goals of SB 100 by requiring that 90 percent of all retail sales of electricity to California end-use customers are procured from renewable energy and zero-carbon resources by December 31, 2035. The requirement increases to 95 percent by December 31,

2040, and to 100 percent by December 31, 2045. Under SB 1020, state agency facilities must use 100 percent renewable and zero-carbon energy resources by December 31, 2035.

- **Integrated Energy Policy Report.** SB 1389 (Chapter 568, Statutes of 2002) required CEC to "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety" (PRC Section 25301[a]). This work culminated in the Integrated Energy Policy Report (IEPR). CEC adopts an IEPR every 2 years and an update every other year. The 2023 IEPR is the most recent IEPR, including the 2024 Draft Update to the 2023 IEPR. The 2023 IEPR provides a summary of priority energy issues currently facing the state, outlining strategies and recommendations to further the State's goal of ensuring reliable, affordable, and environmentally responsible energy sources. The report contains an assessment of major energy trends and issues in California's electricity, natural gas, and transportation fuel sectors. The report provides policy recommendations to conserve resources, protect the environment, ensure reliable, secure, and diverse energy supplies, enhance the state's economy, and protect public health and safety. Topics covered in the 2023 IEPR include the accelerated connection of clean energy, the California Energy Demand Forecast, the potential growth of hydrogen in the state, and updates to issues such as energy efficiency, gas utility decarbonization, and the Clean Transportation Program (CEC 2024d).

Building Efficiency

- **California Building Energy Efficiency Standards.** The energy consumption of new residential and nonresidential buildings in California is regulated by the California Energy Code's Building Energy Efficiency Standards (California Energy Code) (24 CCR Part 6). CEC updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption. The 2022 California Energy Code went into effect on January 1, 2023. The 2022 California Energy Code advances the on-site energy generation progress started in the 2019 California Energy Code by encouraging electric heat pump technology and use, establishing electric-ready requirements when natural gas is installed, expanding solar photovoltaic (PV) system and battery storage standards, and strengthening ventilation standards to improve indoor air quality. CEC estimates that the 2022 California Energy Code will save consumers $1.5 billion and reduce GHGs by 10 $MMTCO_2e$ over the next 30 years (CEC 2021). The 2025 Building Energy Efficiency Standards (2025 California Energy Code) were adopted on September 11, 2024, and will go into effect on January 1, 2026, for nonresidential development. According to CEC, the 2025 California Energy Code puts particular emphasis on replacing end-of-life rooftop heating, ventilation, and air-conditioning units of a certain size with high efficiency systems; establishing electric-ready requirements for commercial kitchens; and updating solar and storage standards for assembly buildings to make clean energy available for on-site use while minimizing exports to the electrical grid (CEC 2024b). On June 30, 2025, the Governor signed AB 130, which institutes a six-year freeze on updates to state and local residential building standards, running from October 1, 2025, through June 1, 2031, with exceptions only for emergency measures, energy/fire safety, accessibility, and wildland-urban code updates. During this period, local jurisdictions may not adopt new residential building code amendments unless they are confirmed by the Building Standards Commission as emergency or health-and-safety necessities. The law also guarantees that model-home building standards remain locked in for up to 10 years or until the design significantly changes, ensuring long-term planning stability and guarding builders against sudden code shifts.

- **California Green Building Standards Code.** California has adopted the Green Building Standards Code (CALGreen) (24 CCR Part 11), which identifies both mandatory and voluntary aggressive energy efficiency standards for new residential and nonresidential buildings. The standards are updated every 3 years. The current version is the 2022 CALGreen Code. The 2022 CALGreen Code advances the on-site energy generation progress started in the 2019 California Energy Code by encouraging electric heat pump technology and use, establishing electric-ready requirements when natural gas is installed, expanding solar PV system and battery storage standards, and strengthening ventilation standards to improve indoor air quality. The 2025 CALGreen Code was adopted on September 11, 2024, and will go into effect on January 1, 2026 for nonresidential

development. The 2025 version proposes increased requirements for EV charging infrastructure (i.e., a higher percentage of parking spaces that must be equipped with EV chargers and more stringent requirements for the types of chargers that must be installed) in both residential and nonresidential buildings. The 2025 CALGreen Code also includes required analysis of embodied carbon in building materials, which was not required under the 2022 CALGreen Code. Lastly, the 2025 CALGreen Code includes updates to energy efficiency standards aimed at further reducing energy consumption in buildings and promoting the use of renewable energy sources (CEC 2024e). CALGreen requirements are complementary with the California Energy Code discussed above. Discussed above, AB 130 freezes the 2022 residential building code, including the CALGreen Code, until 2031; however, the requirements of the 2025 nonresidential CALGreen Code will be applied to new nonresidential development effective January 1, 2026.

- **AB 130:** AB 130 of 2025 imposes a moratorium on changes to California building codes affecting residential units, including both state and local amendments, through 2031, with limited exemptions. Essentially, AB 130 would prohibit CEC or any other adopting agency from considering, approving, or adopting any proposed building standards affecting residential units, unless a certain condition is met, including that the CEC deems those changes necessary as emergency standards to protect health and safety. The 2025 California Building Code will proceed as planned with an effective date of January 1, 2026 for nonresidential development, and the 2031 California Building Code cycle is anticipated to be unaffected.

California Energy Commission

- **Warren-Alquist Act**. The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as CEC. The act established a statewide policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. CEC is responsible for the certification of electrical generation facilities as eligible renewable energy resources and adopting regulations for the enforcement of RPS procurement requirements of public owned utilities, while CPUC implements and administers RPS compliance rules for California's retail sellers of electricity, which include large and small investor-owned utilities electric service providers, and community choice aggregators.
- **State of California Energy Action Plan**. CEC is responsible for preparing the state energy plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 2003 California Energy Action Plan (2008 update). The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, and encouragement of urban design that reduces VMT and accommodates pedestrian and bicycle access.
- **California Energy Efficiency Action Plan** The CEC updates its plan to increase energy efficiency in existing buildings every three years. The most recent update is the 2021 Energy Efficiency Action Plan, which is covered in two documents: the 2021 California Building Decarbonization Assessment and the 2021 Integrated Energy Policy Report. The 2021 California Building Decarbonization Assessment is the initial report addressing the mandates codified in AB 3232 (Friedman, Chapter 373, Statutes of 2018). The report analyzes scenarios to reduce GHG emissions by at least 40 percent by 2030 and identifies several strategies that will lead to significant emission reductions related to electricity and natural gas use in buildings, as well as from refrigerants. The strategies include electrification, electricity generation decarbonization, energy efficiency, refrigerant leakage reduction, distributed energy resources, decarbonizing the gas system, and demand flexibility. The assessment shows that California can achieve significantly more than a 40 percent reduction by 2030 through these strategies. The Final 2021 Integrated Energy Policy Report covers a broad range of topics, including building decarbonization, energy efficiency, challenges with decarbonizing California's gas system, quantifying the benefits of the Clean Transportation Program, and the California Energy Demand Forecast. Development of the 2025 Building Energy Action Plan is underway, and will be published in late 2025.

LOCAL

SANDAG Regional Energy Strategy

The SANDAG Regional Energy Strategy (RES) serves as the energy policy blueprint for the San Diego region through 2050 to support decision-making as the region strives to meet the energy needs of the growing population (SANDAG 2014). It establishes long-term goals in topic areas such as energy efficiency, renewable energy, distributed generation, transportation fuels, land use and transportation planning, border energy issues, and the green economy. SANDAG and local governments identified six early actions to focus on in the near term:

- Pursue a comprehensive building retrofit program to improve efficiency and install renewable energy systems.
- Create financing programs to pay for projects and improvements that save energy.
- Use the SANDAG-SDG&E Local Government Partnership to implement the RES at the local level. SANDAG will work with local governments to identify opportunities and implement energy savings at government facilities and throughout their communities.
- Support land use and transportation planning strategies that reduce energy use and GHGs.
- Support use of existing unused reclaimed water to decrease the amount of energy needed to meet the water needs of the San Diego region.

In 2014, a technical update of the RES was completed to inform the development of the 2021 Regional Plan. This technical update demonstrates progress toward attaining the RES goals, updates existing conditions and future projections data, and recommends priorities for moving forward.

Local General Plans

Many of the local agencies in the San Diego region have general plan goals, objectives, and policies that specifically address energy use and conservation. The policies set forth in local general plans would have an effect on energy conservation and renewable energy use in for new development within the region.

These goals and policies include improvements in energy efficiency for new residential and commercial land uses and measures to reduce VMT through land use and transportation planning. Measures included in the general plans would improve energy efficiency, promote renewable energy use, and minimize wasteful, inefficient energy consumption in the region. As a result of requirements, incentive programs, and educational and outreach programs, general plans would build on federal and state efforts to improve energy efficiency associated with future land uses and transportation projects.

Climate Action Plans

As discussed in more detail in Section 4.8, "Greenhouse Gas Emissions," climate action plans (CAPs), GHG reduction plans, and sustainability plans are developed to identify the nature of GHG emissions and to implement policies, actions, and measures to reduce existing and future GHG emissions. Measures included in CAPs would improve energy efficiency, promote renewable energy use, and minimize wasteful, inefficient energy consumption in the region.

Many jurisdictions have already adopted GHG reduction plans: City of Carlsbad (2024), City of Chula Vista (2017), City of Coronado (2022), City of Del Mar (2016), City of El Cajon (2020), City of Encinitas (2020), City of Escondido (2021), City of Imperial Beach (2019), City of La Mesa (2024), City of Lemon Grove (2020), National City (2011), City of Oceanside (2019), Port of San Diego (2013). City of San Diego (2022), San Diego Regional Airport Authority (2020), City of San Marcos (2020), City of Santee (2019), City of Solana Beach (2024), and City of Vista (2021). The City of Poway is the only jurisdiction in the San Diego region that has not developed and has not committed to developing a CAP or GHG reduction plan. Table 4.8-5 in Section 4.8, "Greenhouse Gas Emissions," summarizes GHG reduction planning efforts in the San Diego region. In addition to the efforts of the 18 cities and the County of San Diego, the San Diego Unified Port District and the San Diego County Water Authority have developed GHG inventories and CAPs.

Community Choice Energy

AB 117 enacted Community Choice Aggregation (CCA) in 2002. Under AB 117, all electrical corporations must cooperate fully with community choice aggregators investigating, pursuing, or implementing community choice aggregator programs. The San Diego region has two CCAs: CEA and SDCP. See Section 4.6.1, "Existing Conditions," for further details regarding the region's two CCAs. CCAs are required to meet the compliance requirements, including those established for regulations, such as the RPS and IRP, which guide California's energy utilities toward meeting the state's renewable energy goals (e.g., SB 1020 and AB 179).

4.6.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the Appendix G checklist questions.

Checklist questions for energy are provided in Section VI of Appendix G of the CEQA Guidelines. Checklist items were not modified for this analysis. Therefore, implementation of the proposed Plan would have a significant energy impact if it would:

EN-1 Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy during project construction or operations.

EN-2 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

4.6.4 Environmental Impacts and Mitigation Measures

EN-1 RESULT IN A POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY DURING PROJECT CONSTRUCTION OR OPERATIONS

Analysis Methodology

This section discusses the construction and operational impacts related to energy from regional growth and land use change(s), and planned transportation network improvements.

Construction

Construction activities would occur through 2050 at various locations throughout the region. While the regional GHG inventory and projections (see Appendix E to this EIR) did not provide a direct estimate of construction energy consumption, typical construction energy were captured from GHG emission estimates for the construction and mining subcategory of the off-road transportation sector:

Energy consumption from other categories, such as energy consumption associated with on-road construction trucks as well as worker commute vehicles, are not explicitly presented in the regional GHG inventory and projections. Instead, construction truck activity is included in the On-Road Transportation – Heavy-Duty Trucks and Other Vehicles section of Appendix E, and construction worker trips are embedded within the On-Road-Transportation – Passenger Car and Light-Duty Vehicles section of Appendix E. The location, size, magnitude, and duration of construction activities within the region due to proposed Plan implementation are unknown at this time. However, construction activities, as compared to operational energy demand, would be inherently short term. Construction energy use related to on-road vehicles and electricity are calculated as part of the operational analysis, as further discussed below. Construction energy use related to off-road equipment is combined with operational energy consumption to calculate total and per capita annual energy use to inform this analysis.

Operations

Estimates of baseline and projected operational energy consumption developed as part of the regional GHG inventory and projections were used for the analysis of regional growth and land use change(s) (see Appendix E to

this EIR). The following operational energy sources related to regional growth and land use change were quantified as part of this analysis.

- **Electricity and Natural Gas.** Electricity (in gigawatt-hours [GWh]) and natural gas (million therms) used by regional land uses (commercial, residential, industrial) for heating, cooling, lighting, and other end uses.
- **Water-related Electricity.** Water-related electricity (GWh) refers to energy associated with upstream supply, conveyance, and treatment of water. Electricity used for local water distribution and water end use is captured by the building electricity and natural gas sources.

Operational energy use for baseline and projected transportation network improvements and programs was estimated as part of the regional GHG inventory and projections, as well as separate calculations prepared based on the regional GHG inventory (i.e., electricity from EV usage) (see Appendices E and F to this EIR). The following operational energy sources related to transportation network improvements and programs were quantified as part of this analysis.

- **On-Road Vehicle Gasoline and Diesel.** Gasoline and diesel fuel consumption (million gallons) associated with operation of the transportation network, including passenger cars, light-duty trucks, medium- and heavy-duty trucks, and buses.
- **Rail Diesel.** Includes combustion of diesel fuels in internal combustion engines from both passenger and freight rail.

There were several GHG emission sources included in the regional GHG inventory and projections (see Appendix E to this EIR) that have energy consumption associated with them. However, activity data for these sources were not separately provided in the inventory and projections. Therefore, energy consumption values could not be estimated for this analysis.

- **Other fuels.** Includes distillate (other than in power production), coal, kerosene, gasoline (other than in transportation), liquefied petroleum gas (LPG), residual fuel oil (other than in power production), and wood (wet). Cement manufacturing is estimated to contribute 26% of the Other Fuels category, primarily from coal and petroleum coke use.
- **Off-road transportation.** Includes fuel consumption in cargo handling equipment, industrial equipment, large spark ignition fleets (forklifts), airport ground support equipment, recreational vehicles, lawn and garden equipment, transport refrigeration units, military tactical support equipment, and other portable equipment. Note that the construction/mining subcategory was used as a proxy for energy use in construction equipment.
- **Aviation.** Includes jet fuel and aviation gasoline consumption from commercial operations at the San Diego International Airport and McClellan-Palomar Airport, as well as San Diego County municipal and Private airfields.
- **Marine vessels.** Includes fuel consumption by ocean-going vessels, pleasure craft, recreational vessels, and commercial harbor craft, largely attributed to the Port of San Diego.

These sources would result in additional baseline and horizon year energy consumption not captured by the quantified energy consumption provided in this analysis. According to the regional GHG inventory and projections, these sources account for approximately 12% of the proposed Plan's total GHG emissions in 2035 and approximately 14% in 2050 (see Appendix E to this EIR). Assuming the emission ratios between sectors are similar to the energy ratios between sectors (e.g., vehicles and building energy account for the majority of activity), these sources would only account for a minor fraction of the proposed Plan's energy use. This small additional energy consumption is therefore not discussed further in the impact analysis.

The determination of whether implementing transportation projects and land use changes reflected in the proposed Plan would result in wasteful, inefficient, or unnecessary energy consumption is based on whether the proposed Plan would result in a decrease in per capita energy consumption. Consistent with Appendix F and Appendix G to the CEQA Guidelines, a per capita analysis is appropriate for the proposed Plan, as that analysis would determine whether the energy use under the proposed Plan is more efficient relative to the 2022 baseline year. The analysis

combines electricity (GWh), natural gas (million therms), on-road vehicle fuel consumption (million gallons), and construction equipment diesel consumption (million gallons) into a common unit of energy usage (trillion BTU). Energy consumption from all operational sources was quantified using industry standard emission and conversion factors. A full list of assumptions and energy calculations can be found in Appendix F to this EIR.

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Construction

Construction activities related to growth and land use changes and planned transportation improvements would require the use of energy-consuming equipment for site preparation, grading, building assembly, and equipment installation. The transportation of workers and materials to and from project sites would require the consumption of diesel and gasoline fuels. Medium- and heavy-duty trucks and vans with Gross Vehicle Weight Ratings between 8,500 and 33,000 pounds would typically be used. Energy consumption estimates for on-road construction vehicles and worker commute vehicles are included in operational estimates for transportation network improvements and programs. Also, the use of electricity during construction for temporary buildings, lighting, and other sources is estimated as part of operational energy consumption for regional growth and land use change.

A wide variety of equipment powered through the combustion of liquid fuels may be used. Typical construction equipment would include pavers, trenchers, mixers, cranes, dumpers/tenders, excavators, graders, tractors, trucks, forklifts, dozers, loaders, and scrapers. Internal combustion engines that consume diesel and gasoline typically power these types of equipment and can have outputs ranging from 5 to 750 horsepower. Off-road equipment with diesel engines of 25 horsepower or larger is regulated by CARB for purposes of emissions reductions (13 CCR Section 2449). These regulations require operators to limit idling during operation and to upgrade older equipment with modern engines, which additionally provides benefits for the reduction of fuel consumption.

Construction activities would occur over the duration of the proposed Plan at various locations throughout the proposed Plan Area. The location, size, magnitude, and duration of individual construction activities is unknown at this time. However, construction activities, as compared to operational energy demand, would be short term in nature. The significance determination regarding construction energy is covered under *Operations* because both construction and operational energy are summed to a total and per capita annual energy consumption.

Operations

With respect to operations of the land use changes and planned transportation improvements, baseline energy consumption was calculated for 2022 and compared to years 2035 and 2050.

As shown in Table 4.6-1, total energy use would decrease under the proposed Plan for 2035 compared to the 2022 baseline year. During the same time, the regional population would increase. As a result of the total energy increase and population increase, per capita energy use would decrease from 2022 to 2035.

The decrease in total and per capita energy use is due in part to regulations and programs implemented on the state and regional levels to reduce energy use and emissions of GHGs. These programs include the ACC II regulation, energy efficiency standards for buildings, and water conservation measures. Notably, as stated in Section 4.6.2, House Joint Resolution 88 was signed by the President on June 12, 2025, to formally rescind the

State's ability to enforce the ACC II regulation. Notwithstanding legal uncertainties discussed in Section 4.6.2, for the purpose of this analysis, it is assumed that California will continue to implement the ACC II regulation. Regardless, the proposed Plan's focus on directing future residential and employment growth in areas with a high concentration of transportation options, including fast and frequent transit, Complete Corridors, Flexible Fleets, bikeways and walkways, and shared mobility strategies (i.e., carpool and vanpool), have an important role in reducing per capita energy use because implementation of these strategies would collectively decrease per capita vehicle miles traveled and associated fossil fuel use.

Lastly, as stated in Chapter 2, "Sustainable Community Strategy," of the proposed Plan, the land use pattern incorporated in the proposed Plan results in nearly 80% of future residential development and employment growth occurring in areas with a high concentration of transportation options. Thus, The land use pattern included in the proposed Plan focuses on smart growth and transit-oriented strategies that would, in tandem with the transportation improvement projects of the proposed Plan, result in a reduction in transportation fuel usage.

2035 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs would not result in an increase in overall per capita energy consumption, or otherwise use energy in an inefficient, wasteful, or unnecessary manner, because per capita energy use would decrease from 2022 to 2035. The decrease in total and per capita energy use is due to a combination of proposal Plan attributes and regulations and programs implemented on the state and regional levels to reduce energy use and emissions of GHGs. Therefore, this impact (EN-1) in the year 2035 would be less than significant.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

As shown in Table 4.6-1, total energy use would increase under the proposed Plan from 2036 to 2050 (using the estimates for 2035 as a representative for 2036) by 2 trillion BTU. This is attributable to the transition of housing development to electricity with a decreased reliance on natural gas. During the same time, the regional population would decrease by 4,112 people (-0.1%), while housing units are projected to increase by 65,577 (4.8%) and jobs (wage and salary) by 103,460 (6.2%). As a result of the total energy increase and shifts in population and jobs, per capita energy use would increase from 2036 to 2050 by 1 million BTU/person (2% greater). The increase in total and per capita energy use is due in part to decreased population by 2050 from 2036. Nevertheless, total per capita energy use would decrease between 2022 and 2050 by 11.8%. This could occur due to the increase in multi-family development under the proposed Plan, as multi-family units are more energy efficient than single-family housing on a per unit basis in terms of electricity and natural gas consumption (Pesantez et al. 2023).

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs would not result in an increase in overall per capita energy consumption, or otherwise use energy in an inefficient, wasteful, or unnecessary manner. Although between 2036 and 2050, per capita energy would increase by 2% or 1 million BTU/person, because per capita energy use would decrease from 2022 to 2050. Therefore, this impact (EN-1) in the year 2050 would be less than significant.

Table 4.6-1 Total and per Capita Energy Use Under the Proposed Plan: 2022, 2035, 2050

Category	2022 (Baseline) Energy Use	2022 (Baseline) Trillion BTU	2035[1] Energy Use	2035[1] Trillion BTU	2050 Energy Use	2050 Trillion BTU
Regional Growth and Land Use Change						
Electricity (GWh)	17,471	60	21,742	74	23,732	81
Natural Gas (million therms)	622	62	537	54	534	53
Total Regional Growth and Land Use Change	--	**122**	--	**128**	--	**134**
Transportation Network Improvements and Programs						
Vehicles, Gasoline (million gallons)	874	105	645	78	602	72
Vehicles, Diesel (million gallons)	116	16	103	14	106	15
Vehicles, Compressed Natural Gas (million gallons)	10	<1	14	<1	15	<1
Rail, Diesel (million gallons)	3	<1	1	<1	<1	<1
Construction Equipment, Diesel (million gallons)	15	2	15	2	15	2
Total Transportation Network Improvements and Programs	--	**124**	--	**94**	--	**89**
Total Energy Use	--	**245**	--	**222**	--	**224**
Per Capita Energy Use (metric million BTU/person)	75		65		66	
Total Population	3,287,306		3,404,362		3,400,250	
Total Energy Use, Percent Change 2022 to Plan Year	--		-9.5%		-8.8%	
Per Capita Energy Use, Percent Change 2022 to Plan Year	--		-12.6%		-11.8%	

Notes:

GWh = gigawatt-hours, BTU = British thermal units.

Totals may not equal the sum of the numbers because of independent rounding.

1 kWh = 3,412 BTU; 1 therm = 99,976 BTU; 1 gallon, gasoline = 120,286 BTU; 1 gallon, diesel = 137,381 BTU.

[1] Energy consumption in 2035 is also utilized as a representative for 2036, as energy consumption and related emissions between the two years are highly similar.

Source: Calculations prepared by Ascent in 2025 (included as Appendix F to the EIR).

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements could potentially result in increased inefficient energy use. The proposed Plan will increase energy efficiency through land use planning strategies and transportation network improvements, achieving a decrease in per capita energy use even as population, employment, and housing units are projected to grow under the proposed Plan. However, climate change may result in increased demand for energy on a per capita basis; for example, projected hotter temperatures in the San Diego region may result in people using air conditioning more often.

The proposed Plan's impacts would be worsened by climate change. The proposed Plan would increase energy demand by stimulating population and housing growth, exacerbated by climate change.

MITIGATION MEASURES

No mitigation measures are required for this impact.

EN-2 CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY

Analysis Methodology

This analysis evaluates whether implementation of the proposed Plan would obstruct State and local renewable energy and energy efficiency plans, and policies, discussed above in Section 4.6.2, "Regulatory Setting." The applicable State and local plans that address renewable energy and energy efficiency are the SANDAG's Regional Energy Strategy, SANDAG's Priority Climate Action Plan, local CAPs, the 2022 Scoping Plan, and applicable sections of general plans The discussion below examines proposed Plan consistency with adopted plans and policies related to renewable energy and energy efficiency.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

A major objective of the proposed Plan is to reduce GHG emissions from passenger cars and light-duty trucks. Therefore, many transportation network improvements and programs that would be implemented under the proposed Plan would complement these existing and future local efforts to reduce GHG emissions and underlying energy consumption from the on-road transportation sector. The proposed Plan would improve overall regional energy efficiency by complying with all California Energy Code and CALGreen requirements for new construction, as well as by decreasing transportation-related fossil fuel consumption through methods such as facilitating additional active transportation projects and developing complete corridors, as detailed in Chapter 2, "Sustainable Communities Strategy," of the Regional Plan. By facilitating more compact land use development patterns to reduce energy consumption and prioritizing energy efficiency in new structures, the proposed Plan would specifically align with the overarching goals of improved energy efficiency and reduced reliance on fossil fuels.

The proposed Plan would not conflict with the goals of the 2022 Scoping Plan as the land use development pattern would, in conjunction with the transportation improvement projects, result in a regional reduction in per capita VMT for passenger and light-duty vehicles, as discussed in Impact TRA-2 in Section 4.16, "Transportation." In the 2022 Scoping Plan, CARB calls for a statewide VMT reduction, which would directly result in a decrease in

gasoline and diesel fuel usage, which the proposed Plan would achieve in alignment with the targets of SB 375. Therefore, because the proposed Plan would reduce per capita fossil fuel usage, it would not conflict with the energy goals of the 2022 Scoping Plan as it pertains to on-road vehicle energy.

The RES establishes long-term energy-focused goals through 2050 in topic areas such as energy efficiency, renewable energy, distributed generation, transportation fuels, land use and transportation planning, border energy issues, and the green economy. As identified in Section 4.6.2, SANDAG and local governments identified early actions to focus on in the near term which include pursuing a comprehensive building retrofit program to improve efficiency and install renewable energy systems and supporting land use and transportation planning strategies that reduce energy use and GHGs. As described above, the proposed Plan would decrease transportation-related fossil fuel consumption through methods such as developing a SCS land use pattern that includes mixed-use development and transit-oriented development served by complete corridors. By facilitating more compact land use development patterns to reduce per-capita energy consumption by reducing per-capita VMT and prioritizing energy efficiency in new and existing structures, the proposed Plan would align with the overarching goals of improved energy efficiency and reduced reliance on fossil fuels identified in the RES.

The land uses constructed under the proposed Plan would also be subject to the energy and GHG reduction policies of general plans and CAPs, if applicable. Many local general plans and CAPs include policies that encourage energy conservation and energy efficiency in new buildings. Typically, CAPs include various measures and actions to reduce GHG emissions by sector including, but not limited to, transportation, energy, solid waste, water and wastewater, and carbon sequestration. Common measures to reduce emissions from the transportation sector include the promotion of near-zero and zero emission vehicles and associated infrastructure, the deployment of TDM strategies such as iCommute and commuter benefits programs, and the development of Complete Streets that include pedestrian and bicycle programs, among others.

Other examples of local CAP measures that reduce GHG emissions include renovations to existing buildings to be more energy efficient, deployment of solar PV to existing and new residential and nonresidential buildings, additional waste diversion goals exceeding statewide requirements, capture and control of landfill gas emissions, improved water efficiency in existing and new residential and nonresidential development, and tree planting to increase carbon sequestration. These implementing actions would be outside of the scope of the proposed Plan, and therefore their implementation would not be impeded or obstructed by implementation of the regional growth and land use changes and programs included in the proposed Plan. SANDAG has historically supported development of local CAPs and expects to continue with this support, therefore, the proposed Plan would not conflict with a local CAP (see Appendix G for a more detailed analysis). The projected land use pattern included in the proposed Plan would not conflict with the applicability of those local plans and policies to future development within the region.

Implementation of the proposed Plan's regional growth and land use changes would not conflict with or obstruct State and local plans related to energy efficiency or renewable energy, including the PCAP2022 Scoping Plan, RES, local CAPs, and applicable sections of local general plans. The land uses constructed under the proposed Plan would also be subject to the renewable energy policies of a general plan and CAP, if applicable. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those policies to future development within the proposed Plan Area. Thus, the proposed Plan's regional growth and land use changes would not conflict with or obstruct a State or local plan for increasing renewable energy or energy efficiency.

Transportation Network Improvements and Programs

As discussed above, the Warren-Alquist Act established a State policy to reduce wasteful, uneconomical and unnecessary uses of energy. As shown in Table 4.6-1, total gasoline consumption, the primary on-road vehicle fuel in the region, would decrease between 2022 and 2035. As explained in the impact analysis of Impact EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan's transportation network improvements and programs are consistent with the Warren-Alquist Act policies.

The proposed Plan's transportation network improvements and programs would not conflict with the goals of the 2022 Scoping Plan as the transportation network improvements and programs would, in conjunction with the land

use development pattern, result in a regional reduction in per capita VMT for passenger and light-duty vehicles. In the 2022 Scoping Plan, CARB calls for a statewide VMT reduction, which would directly result in a decrease in gasoline and diesel fuel usage, which the proposed Plan would achieve in alignment with the targets of SB 375. Therefore, because the proposed Plan would reduce per capita fossil fuel usage, Plan's transportation network improvements and programs would not conflict with the energy goals of the 2022 Scoping Plan as it pertains to on-road vehicle energy.

Implementation of the proposed Plan's transportation network improvements and programs would also not conflict with or obstruct state and local plans for increasing renewable energy, including and local general plans and CAPs (see Appendix G of the EIR for an evaluation of the proposed Plan's consistency with local CAPs). City and County policies included in their general plans and CAPs to improve the region's EV infrastructure would continue to apply with implementation of the proposed Plan.

Thus, the planned transportation network improvements in the proposed Plan would not conflict with a State or regional plan related to the increased use of renewable energy or energy efficiency. These improvements would also align with the goals of the RES which includes supporting land use and transportation planning strategies that reduce energy use and GHGs

2035 Conclusion

Regional growth and land use change and transportation network improvements and programs would not conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency. Therefore, this impact (EN-2) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

The proposed Plan is specifically designed to reduce regional VMT and use of fossil fuel consumption in the transportation and building sectors. As GHG emissions are an inherent result of the generation and consumption of fossil-fuel related energy, plans that reduce fossil-fuel related energy consumption, require all-electric development, increase renewable energy generation, and improve energy efficiency are considered an energy-related plans in addition to a GHG-related plan.

A major objective of the proposed Plan is to reduce GHG emissions from passenger cars and light-duty trucks. Therefore, many transportation network improvements and programs that would be implemented under the proposed Plan would complement these existing and future local efforts to reduce GHG emissions from the on-road transportation sector. The proposed Plan would improve overall regional energy efficiency by decreasing transportation-related fossil fuel consumption and would specifically align with the overarching goals of improved energy efficiency and reliance on renewable energy systems.

The proposed Plan would not conflict with the goals of the 2022 Scoping Plan as the land use development pattern would, in conjunction with the transportation improvement projects, result in a regional reduction in per capita VMT for passenger and light-duty vehicles, as discussed in Impact TRA-2 in Section 4.16, "Transportation." In the 2022 Scoping Plan, CARB calls for a statewide VMT reduction, which would directly result in a decrease in gasoline and diesel fuel usage, which the proposed Plan would achieve in alignment with the targets of SB 375. Therefore, because the proposed Plan would reduce per capita fossil fuel usage, it would not conflict with the energy goals of the 2022 Scoping Plan as it pertains to on-road vehicle energy.

The RES establishes long-term energy-focused goals through 2050 in topic areas such as energy efficiency, renewable energy, distributed generation, transportation fuels, land use and transportation planning, border energy issues, and the green economy. As described above, the proposed Plan would decrease transportation-related fossil fuel consumption through methods such as developing a SCS land use pattern that includes mixed-use development and transit-oriented development served by complete corridors. By facilitating more compact land use development patterns to reduce per-capita energy consumption by reducing per-capita VMT and prioritizing energy efficiency in new and existing structures, the proposed Plan would align with the overarching goals of improved energy efficiency and reduced reliance on fossil fuels identified in the RES.

The land uses constructed under the proposed Plan would also be subject to the energy and GHG reduction policies of a general plan and CAP, if applicable. Many local general plans and CAPs include policies that encourage the energy conservation and energy efficiency in new buildings. Typically, CAPs include various measures and actions to reduce GHG emissions by sector including, but not limited to, transportation, energy, solid waste, water and wastewater, and carbon sequestration. Common measures to reduce emissions from the transportation sector include the promotion of near-zero and zero-emission vehicles and associated infrastructure, the deployment of TDM strategies such as iCommute and commuter benefits programs, and the development of Complete Streets that include pedestrian and bicycle programs, among others.

Other examples of local CAP measures that reduce GHG emissions include renovations to existing buildings to be more energy efficient, deployment of solar PV to existing and new residential and nonresidential buildings, additional waste diversion goals exceeding statewide requirements, capture and control of landfill emissions, improved water efficiency in existing and new residential and nonresidential development, and tree planting to increase carbon sequestration. These implementing actions would be outside of the scope of the proposed Plan and SANDAG's direct authority and therefore, their implementation would not be impeded or obstructed by implementation of the regional growth and land use changes and programs included in the proposed Plan. SANDAG has historically invested in the development of local CAPs and expects to continue with this support, therefore, the proposed Plan would not conflict with a local CAP (see Appendix G for a more detailed analysis).The projected land use pattern included in the proposed Plan would not conflict with the applicability of those plans and policies to future development within the proposed Plan Area.

Implementation of the proposed Plan's regional growth and land use changes would not conflict with or obstruct State and local plans for increasing renewable energy, including the PCAP, 2022 Scoping Plan, RES, local CAPs, and applicable sections of local general plans. The land uses constructed under the proposed Plan would also be subject to the renewable energy policies of a general plan and CAP, if applicable. existing CAPS currently do not extend to 2050, but renewable energy measures in these CAPs would likely continue beyond the CAP horizon years. The projected land use pattern included in the proposed Plan would not conflict with the applicability of those policies to future development within the proposed Plan Area. Thus, the proposed Plan's regional growth and land use changes would not conflict with or obstruct a State or local plan for increasing renewable energy or energy efficiency.

Transportation Network Improvements and Programs

Similar to the analysis of Impact EN-2 for the year 2035, implementation of the proposed Plan's transportation network improvements and programs through 2050 would not conflict with or obstruct State and local plans for increasing energy efficiency, including the Warren-Alquist Act, the Requirements for In-Use Off-Road Diesel-Fueled Fleets, and ACC II regulation. As discussed above, the Warren-Alquist Act established a statewide policy to reduce wasteful, uneconomical and unnecessary uses of energy. As shown in Table 4.6-1, total gasoline consumption, the primary on-road vehicle fuel in the region, would decrease between 2022 and 2050. As explained in the impact analysis of EN-1, the proposed Plan would not result in wasteful, inefficient, or unnecessary use of energy. Therefore, the proposed Plan's transportation network improvements and programs are consistent with the Warren-Alquist Act policies.

The proposed Plan's transportation network improvements and programs would not conflict with the goals of the 2022 Scoping Plan as the transportation network improvements and programs would, in conjunction with the land

use development pattern, result in a regional reduction in per capita VMT for passenger and light-duty vehicles. In the 2022 Scoping Plan, CARB calls for a statewide VMT reduction, which would directly result in a decrease in gasoline and diesel fuel usage, which the proposed Plan would achieve in alignment with the targets of SB 375. Therefore, because the proposed Plan would reduce per capita fossil fuel usage, the proposed Plan's transportation network improvements and programs would not conflict with the energy goals of the 2022 Scoping Plan as it pertains to on-road vehicle energy.

Implementation of the proposed Plan's transportation network improvements and programs would also not conflict with or obstruct State and local plan for increasing renewable energy, including the LCFS and local general plans and CAPs (see Appendix G of the EIR for an evaluation of the proposed Plan's consistency with local CAPs). City and County policies included in their general plans and CAPs to improve the region's EV infrastructure would continue to apply with implementation of the proposed Plan.

Thus, the planned transportation network improvements in the proposed Plan would not conflict with a State or regional plan related to the increased use of renewable energy or energy efficiency. These improvements would also align with the goals of the RES which includes supporting land use and transportation planning strategies that reduce energy use and GHGs

2050 Conclusion

Regional growth and land use change and transportation network improvements and programs would not conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency. Therefore, this impact (EN-2) in the year 2050 is less than significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would cause similar impacts to State or regional plan related to the increased use of renewable energy or energy efficiency.

MITIGATION MEASURES

No mitigation measures are required.

4.6.5 Cumulative Impacts Analysis

C-EN-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON ENERGY

The area of geographic consideration for cumulative energy impacts is the Southern California and northern Baja region. Land use changes and the transportation system would influence the demand for future energy development or the location and need for new or additional energy infrastructure across the Southern California and northern Baja region. The provision of energy can be linked to jurisdictions, but often service providers and their infrastructure cover large areas. Thus, it is necessary to consider the Southern California and northern Baja region as a whole and the overall amount of development that would generate additional pressure and demand on energy use and generation facilities.

A hybrid approach to the cumulative energy analysis allows for an overarching discussion of regional impacts associated with general patterns of regional urbanization, growth, and land use changes that would create new or additional energy use, modify demand for the provision of energy, or dictate where new or expanded energy infrastructure is located. Discussion of specific projects also allows for consideration of individual large-scale existing and probable future projects with known impacts on energy resources.

Growth, land use change, and transportation system improvements occurring throughout the Southern California and northern Baja regions would impact energy demand, development, and supply. Cumulative energy impacts would result if there were an increase in overall per capita energy consumption or inefficient, wasteful, or unnecessary energy use; or obstruction of State or local renewable energy and energy efficiency plans, regulations, and policies.

Utilities that operate in Southern California and the Northern Baja region have adopted long-term plans that forecast the demand for services and identify specific facilities projects required to meet projected demand and needs, such as the San Diego Gas & Electric Company (SDG&E) *Final 2024 Renewables Portfolio Standard Procurement Plan* (SDG&E 2025). Additionally, the SANDAG Regional Energy Strategy (RES) serves as the energy policy blueprint for the San Diego region through 2050 to support decision-making as the region strives to meet the energy needs of the growing population (SANDAG 2014). In 2014, a technical update of the RES was completed to inform the development of the 2021 Regional Plan. The SCAG 2024-2050 RTP/SCS (Connect SoCal 2024) serves as the long-range transportation plan for the Southern California region which include the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. CEC developed the California Energy Demand 2024-2040 Revised Forecast in accordance with SB 1389 (Bowen and Sher, Chapter 568, Statutes of 2002), which requires CEC to assess and forecast of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices with the purpose of developing energy policies to conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety (PRC Section 25301(a)). These plans are considered and relied on for this cumulative analysis.

Impacts of the Proposed Plan

As detailed above in Impact EN-1, total energy use and per capita energy use in 2035 and 2050 would be less than total energy use and per capita energy use in 2022. Therefore, the proposed Plan would not result in an increase in overall per capita energy consumption or otherwise use energy in an inefficient, wasteful, or unnecessary manner in 2035 or 2050, and the impact would be less than significant (Impact EN-1).

As detailed in Impact EN-2, the proposed Plan would comply with the State and local plans aimed at reducing energy consumption and promoting renewable energy. Thus, this impact would be less than significant in 2035 and 2050 (Impact EN-2).

Impacts of Related Projects

Multiple energy projects in various stages of planning, permitting, and construction are ongoing in the Southern California and northern Baja region. Some of these include the Cobalt Solar Project (Phase 2 of the Crimson Solar Project), California (CDFW 2025); Palen Solar (DOI 2024), Victory Pass Solar in Riverside County (BLM 2025); Pio Pico Energy Center in San Diego County (CEC 2018); Comino Solar project in Kern County (BLM 2024); and Black Rock 5 & 6 Geothermal Power Project in Imperial County (CEC 2024f). Additionally, a multitude of current and ongoing electric system and natural gas infrastructure upgrade projects are planned throughout the region. All energy projects requiring CEC approval or licensing must go through the CEC permitting process, which is a certified regulatory program under CEQA. The CEC license/certification subsumes all requirements of State, local, or regional agencies otherwise required before new infrastructure is constructed.

Other projects that would result in energy consumption during construction and operation in the region include the California High-Speed Rail Train (HST) Los Angeles–San Diego Segment, Navy Old Town Revitalization Project, Midway Rising Specific Plan, San Diego International Airport Development Plan, City of San Diego Pure Water North City Project, and San Diego Unified Port District Port Master Plan Update.

The HST environmental document states that, while the project would have a potentially significant effect related to long-term electric power consumption when viewed on a system-wide basis, it represents a more energy-efficient mode of transportation than travel by aircraft or car, such that the HST system would result in an overall reduction in total energy consumption. The EIR/EIS states that the HST system would reduce energy consumption overall and any localized energy impacts would be avoided through proper planning and design of power distribution systems and their relationship with the overall power grid (HSRA 2005). Energy impacts were found to be less than significant for the City of San Diego Pure Water North City Project (City of San Diego 2018), and were not addressed in the Navy Old Town Revitalization Draft EIS (Navy 2021).

Impacts of Projections in Adopted Plans

The Connect SoCal 2024 EIR identified that implementation of Connect SoCal 2024 would contribute to a cumulatively considerable increase in impacts related to wasteful, inefficient, or unnecessary consumption of energy resources conflicts with or obstruction of plans for renewable energy or energy efficiency (SCAG 2024).

The CEC California Energy Demand 2024-2040 Revised Forecast report updates forecasts for electricity and end-user natural gas in California and for major utility planning areas within the state. The forecast includes estimates of additional achievable energy efficiency, electricity consumption, peak demand, and natural gas consumption savings. While there is no associated environmental analysis, the forecast does show the continued increase in demand for energy supplies in the state through 2040 (CEC 2024a).

The PCAP identifies measures that could be carried out by 2030 to reduce GHGs and improve air quality in the region. While stakeholders in the region are working to reduce GHG emissions from all sectors, the PCAP focuses on specific measures where stakeholders and partners have the authority and jurisdiction for implementation. The focus of GHG reduction strategies in the PCAP is in the transportation, building energy, energy supply, and water sectors.

Cumulative Impacts and Impact Conclusions

2035

The proposed Plan would not result in an increase in overall per capita energy consumption or otherwise use energy in an inefficient, wasteful, or unnecessary manner in 2035. Additionally, the proposed Plan would result in a decrease in total and per capita energy use, including a decrease in fossil fuel energy. In addition, regional growth and land use change and transportation network improvements and programs would not conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency in 2035. Because the proposed Plan does not make a significant incremental contribution to these cumulative energy impacts, and because related projects and adopted plans are expected to efficiently use energy and be consistent with State and local renewable energy and energy efficiency plans, cumulative energy impacts would not be significant, and the proposed Plan would not result in cumulatively considerable impacts in 2035. Impacts would be less than significant.

2050

The proposed Plan would not result in an increase in overall per capita energy consumption or otherwise use energy in an inefficient, wasteful, or unnecessary manner in 2050 because the proposed Plan would result in a decrease of total and per capita energy use, including a decrease in fossil fuel energy. In addition, regional growth and land use change and transportation network improvements and programs would not conflict with or obstruct a State or regional plan related to the increased use of renewable energy or energy efficiency in 2050. Because the proposed Plan does not make a significant incremental contribution to these cumulative energy impacts, and because related projects and adopted plans are expected to efficiently use energy and be consistent with State and local renewable energy and energy efficiency plans, cumulative energy impacts would not be significant, and the proposed Plan would not result in cumulatively considerable impacts in 2050. Impacts would be less than significant.

MITIGATION MEASURES

No mitigation measures are required.

4.7 GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

This section evaluates the geology, soils, and paleontological resources impacts of the proposed Plan.

4.7.1 Existing Conditions

GEOLOGY AND SOILS

Geologic Conditions

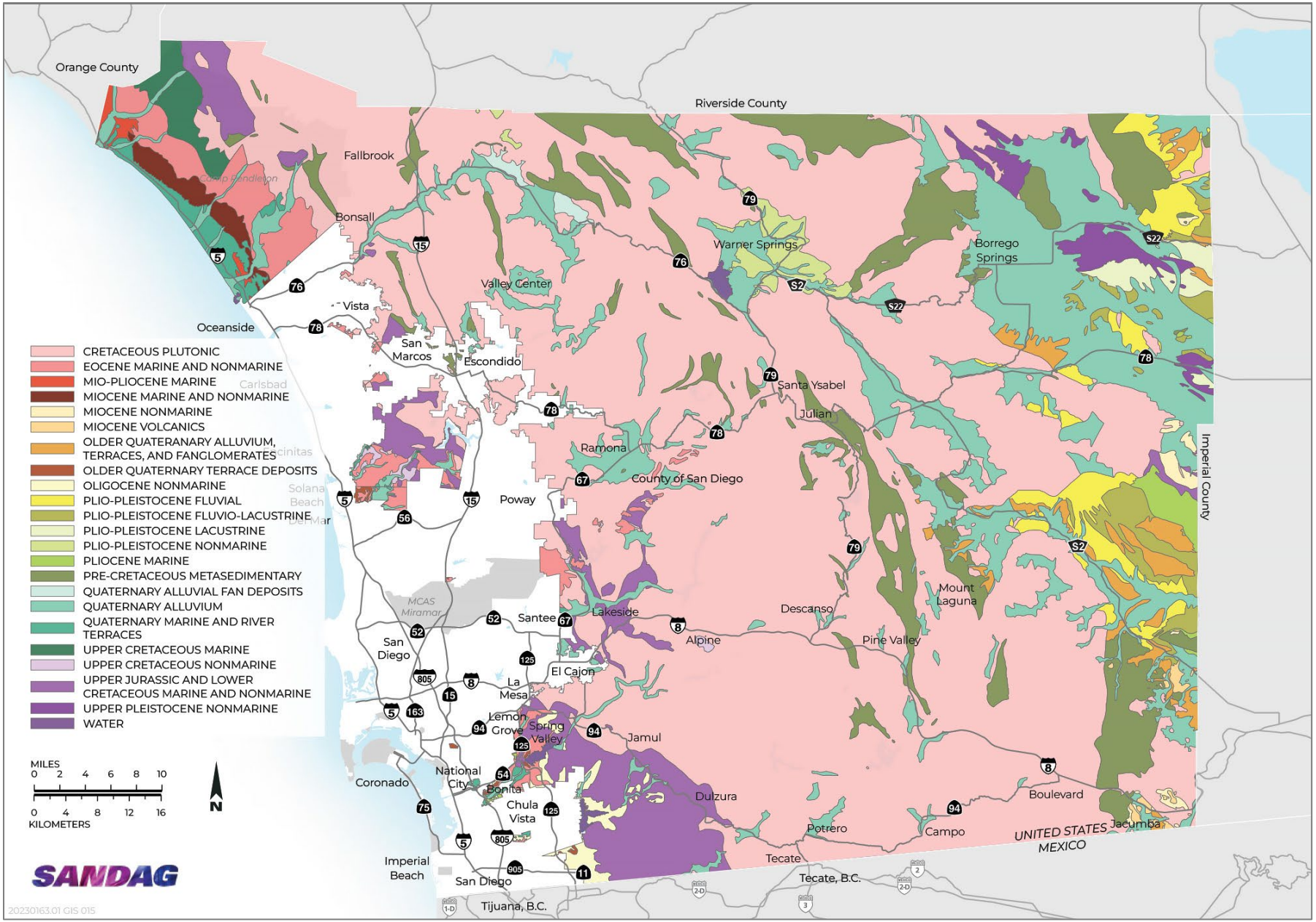
The San Diego region lies across two California geomorphic provinces: (1) the Peninsular Ranges and (2) the Colorado Desert, which contains the Salton Trough. The majority of the region is in the Peninsular Ranges. The Peninsular Ranges encompass an area that roughly extends from the Transverse Ranges and the Los Angeles Basin, south to the Mexico border, and another approximately 775 miles into Mexico forming the Baja California peninsula (Jones et al. 2025). Extending east of Julian and Jacumba, the Peninsular Ranges province abruptly ends along a series of faults. The geomorphic province varies in width from approximately 30 to 100 miles in the San Diego region, most of which is characterized by northwest-trending mountain ranges separated by subparallel fault zones. In general, the Peninsular Ranges are underlain by Jurassic-age metavolcanic and metasedimentary rocks and by Cretaceous-age igneous rocks of the southern California batholith. Geologic cover over the basement rocks in the westernmost portion of the province in the San Diego region generally consists of Upper Cretaceous-, Tertiary-, and Quaternary-age sedimentary rocks (Figure 4.7-1).

Structurally, the Peninsular Ranges are traversed by several major active faults. The Elsinore, San Jacinto, and San Andreas Faults are major active fault systems located northeast of metropolitan San Diego, and the Rose Canyon, San Diego Trough, Coronado Bank, and San Clemente Faults are major active faults located within or west-southwest of metropolitan San Diego. Major tectonic activity associated with these and other faults within this regional tectonic framework is generally right-lateral strike-slip movement. The area to the east of the faults is known as the Salton Trough–Gulf of California depression, which formed during the separation of Baja California from the Mexico mainland. The Salton Trough, being lower than the surrounding landscape, became an area of deposition with sediments being carried to the depressed area by drainages of the Peninsular Ranges and the Colorado River. Occasionally, the Salton Trough was inundated with marine waters from the Gulf of California, adding marine deposits to the sediment (Peterson 1977), and has been repeatedly filled by floods from the Colorado River.

The coastal plain province extends from the western edge of the Peninsular Ranges to the coastline. The coastal plain ranges in elevation from sea level to approximately 600 feet above mean sea level. Most of the incorporated cities in the San Diego region are in the coastal plain. The province is composed of dissected, mesa-like terraces that graduate inland into rolling hills. The terrain is underlain by sedimentary rocks composed mainly of Late Mesozoic, Tertiary, and Quaternary sandstone, shale, and conglomerate beds, reflecting the erosion mountain ranges to the east prior to the uplift of the Peninsular Ranges (Figure 4.7-1) (Peterson 1977).

Seismic Setting

Primarily northwest-to-southeast trending faults traverse Southern California and mark the boundary between the North American and Pacific tectonic plates. The majority of the plate motion is taken up on the San Andreas Fault Zone. The remaining plate motion is taken up by subsidiary faults, many of which are located across the San Diego region and the nearshore Pacific Ocean. These faults have the potential for generating strong ground motions in the San Diego region. Most recorded earthquakes and fault ruptures in Southern California have occurred along faults associated with the San Andreas Fault Zone. The San Andreas Fault Zone and the associated faults that define the plate boundary are called the San Andreas Fault System.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.7-1 Generalized Geologic Map of the Region

The entire San Andreas Fault Zone is more than 800 miles long. In detail, the fault is a complex zone of crushed and broken rock from a few hundred feet to a mile wide (USGS 2016). It is located to the east of the San Diego region, along the east side of the Coachella and Imperial valleys. Since high-magnitude shocks transmit energy over large areas, faults located outside of the San Diego region (such as the San Andreas) can cause ground shaking inside the region during earthquakes. The nearest inhabited sections of the San Diego region are approximately 30 miles from the San Andreas fault.

Known active faults and Alquist-Priolo Fault Zones in the San Diego region are shown on Figure 4.7-2. Earthquakes in the San Diego region occur when the plate motion causes the ground to move in opposite directions on either side of a fault deep in the earth. Most earthquakes in the San Diego region originate at least 10 miles below the ground surface. That movement creates shock waves that move through the ground, causing it to shake. In general, the larger the earthquake, the more intense the ground shaking and the more potential for damage. Because earthquake shaking decreases in intensity with distance from the epicenter of the earthquake, knowing the locations and seismic history of individual faults is important for designing earthquake-resistant structures.

The San Jacinto Fault is the largest of the active faults in the San Diego region. The fault extends 125 miles from the Imperial Valley to San Bernardino. The Elsinore Fault represents a serious earthquake hazard for most of the populated areas of the San Diego region. This fault is approximately 135 miles long and is located approximately 40 miles north and east from Downtown San Diego. The Rose Canyon Fault Zone is an active offshore/onshore fault located partially offshore as part of the Newport/Inglewood Fault Zone and parallels the San Diego north county coastline within approximately 2 to 6 miles until coming ashore near La Jolla Shores. In addition, the La Nacion Fault Zone runs parallel to the Rose Canyon Fault Zone and San Diego Bay, approximately 5 miles inland from the bay (City of San Diego 2024a). Modeling results suggested that rupture along the entire the Newport-Inglewood/Rose Canyon Fault system is possible and would produce a magnitude 7.3 earthquake for rupture of the offshore segments or a magnitude 7.4 if it included the northern onshore segment, which extends to Culver City. The results suggested an even larger magnitude earthquake would result if the southern onshore Rose Canyon Fault Zone, which extends through the San Diego metropolitan area, ruptured as well (DeFrisco 2021).

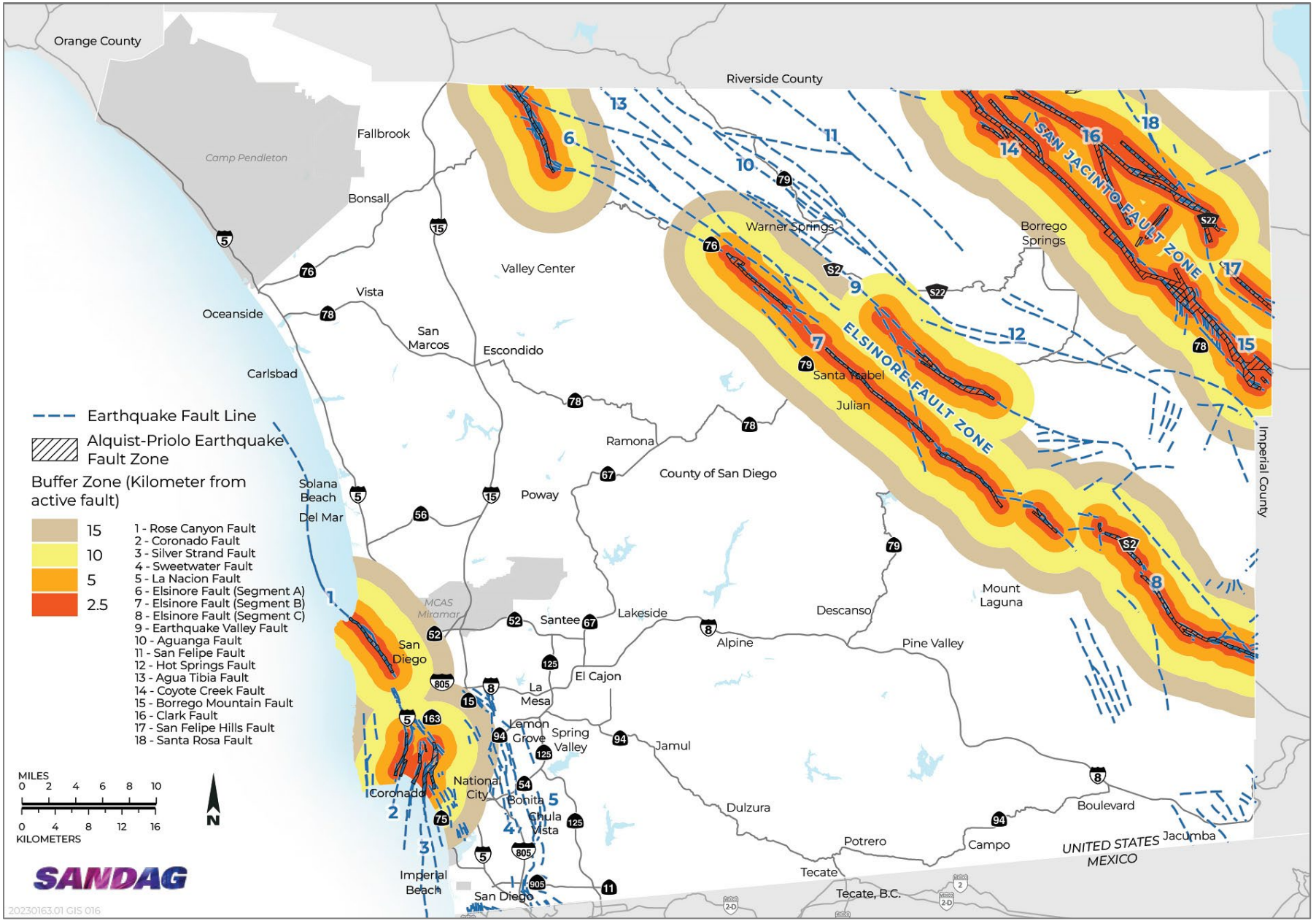
The major offshore fault zones are the San Clemente, San Diego Trough, and Coronado Bank. The San Clemente Fault Zone, located approximately 40 miles off La Jolla, is the largest offshore fault. Tsunamis are a potential hazard associated with seismic setting and fault zones and are described in Section 4.10, "Hydrology and Water Quality."

Fault Rupture

If an earthquake is large enough, the motion on the fault can propagate up to the ground surface. Fault rupture is defined as the breakage of ground along the fault at the intersection of the fault with the earth's surface. Earthquakes can cause large vertical or horizontal displacement of the ground along the fault. Ground rupture can severely damage structures straddling active faults by rupturing foundations or by tilting foundation slabs and walls, as well as damage buried and aboveground utilities. Drinking water can be lost, and the loss of water lines or water pressure can affect emergency services, including firefighting ability. Research of historical earthquakes has shown that, although only a few structures have been ripped apart by fault rupture, this hazard can produce severe damage to structures built across active fault lines (Figure 4.7-2) (California Geological Survey 2018).

Ground Shaking

Ground shaking produces the vast majority of damage in an earthquake. Several factors control how ground motion interacts with structures, making the hazard of ground shaking difficult to predict. Seismic waves propagating through the earth's crust are responsible for the ground vibrations normally felt during an earthquake. Seismic waves can vibrate in any direction and at different frequencies, depending on the content of the earthquake rupture mechanism and the path and material through which the waves are propagating. The earthquake rupture mechanism is the distance from the earthquake source, or epicenter, to an affected site. The potential damage to public and private buildings and infrastructure from seismic ground shaking can threaten public safety and result in significant economic loss.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.7-2 Earthquake Fault Zones and Seismic Conditions

Slope Failure/Landslides

Slope failure, also referred to as mass wasting, is the downslope movement of soil and rock material in response to gravitational stresses. Landslides are the most common naturally occurring type of slope failure in the San Diego region (City of San Diego 2007). The term landslide describes a wide variety of processes that result in the downward and outward movement of slope-forming materials. Landslides are categorized by the type of material (rock or soil), and landslide movement is categorized by the type of movement (falls, topples, slides, or flows). Earthquakes can intensify or activate an unstable slope. Loosely and weakly consolidated soils, steepened slopes caused by either human activities or natural causes, and saturated earth materials create a fragile situation easily affected by an earthquake. Landslides in the San Diego region generally occur in sedimentary rocks, such as sandstone, siltstone, mudstone, and claystone. Heavy rainfall can exacerbate conditions for landsliding. The most common landslides triggered by winter storms are debris flows (popularly called mudslides), which are shallow landslides of water-saturated soil and rock fragments that travel downslope rapidly as muddy slurries. The flowing mud carries rocks, vegetation, and other natural and human-made debris as it rushes down the slopes (USGS 2005).

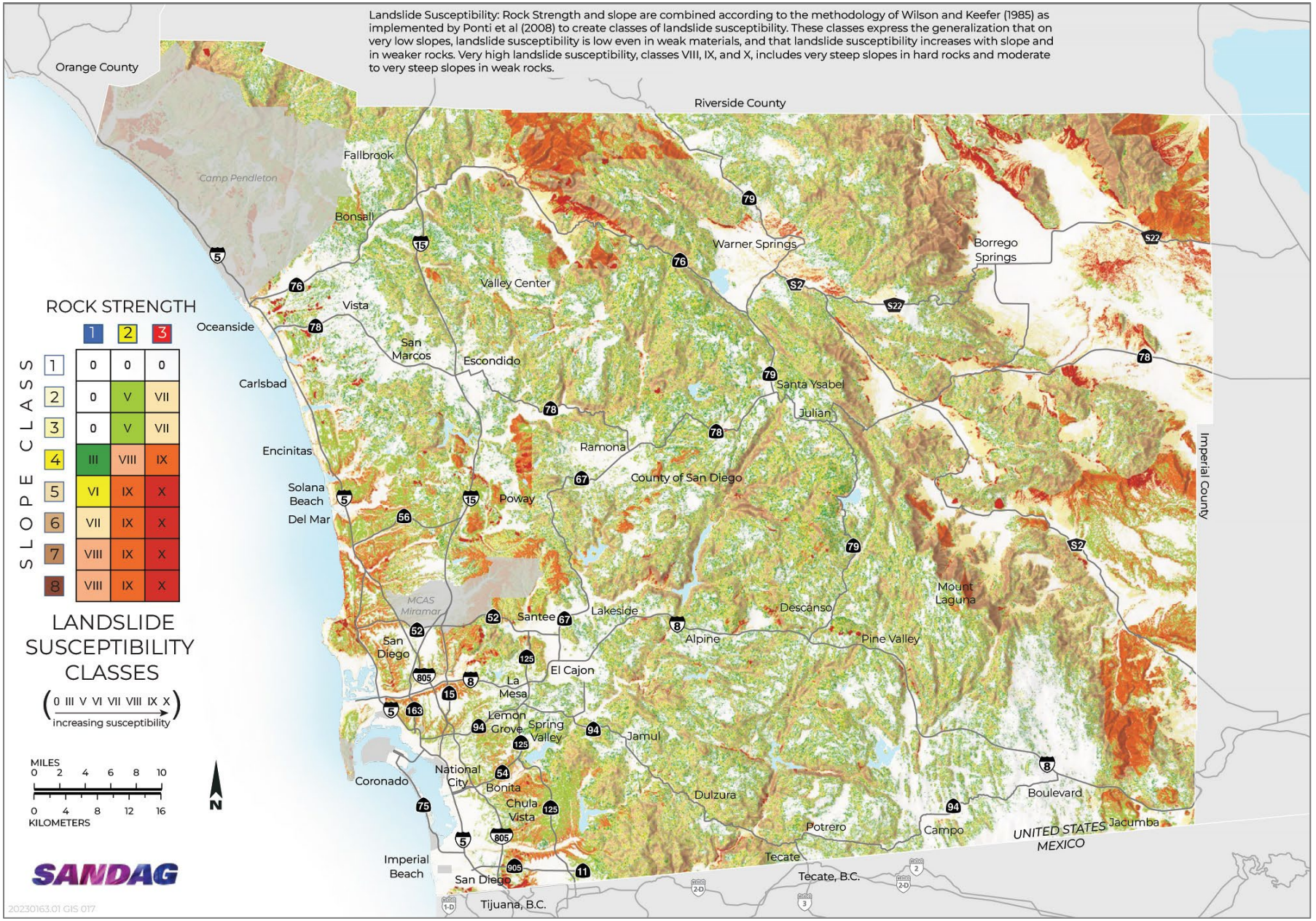
Major landslides have occurred within the incorporated cities of the region that are located on hillside terrain or on coastal bluffs. Previous landslides and landslide-prone sedimentary formations are mostly located in the western portion of the region. Landslides have also occurred in the granitic terrain in the eastern portion of the San Diego region. Reactivations of existing landslides can be triggered by a variety of factors, such as heavy rainfall or irrigation, seismic shaking, and grading (Peterson 1977).

Landslide-susceptible areas are characterized by steep slopes and downslope creep of surface materials. Debris flows consist of a loose mass of rocks and other granular material that, if saturated and present on a steep slope, can move downslope. The rate of rock and soil movement can vary from a slow creep over many years to a sudden mass movement. Landslides occur throughout California, but the density of incidents increases in active fault zones. Slope stability can depend on a number of complex variables. The geology, structure, and amount of groundwater in the slope affects slope failure potential, as do external processes (i.e., climate, topography, slope geometry, and human activity). The factors that contribute to slope movements include those that decrease the resistance in the slope materials and those that increase the stresses on the slope. Slope failure under static forces occurs when the forces initiating failure overcome the forces resisting slope movement. For example, a soil slope may be considered stable until it becomes saturated with water (e.g., during heavy rains or because of a broken pipe or sewer line). Under saturated conditions, the water pressure in the individual pores within the soil increases, reducing the strength of the soil.

Figure 4.7-3 shows the relative likelihood of deep landsliding based on regional estimate of rock strength and steepness of slopes.

Liquefaction

Liquefaction is a phenomenon whereby unconsolidated or near-saturated soils lose cohesion as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary, fluid-like behavior of the soil. Soil liquefaction causes ground failure that can damage roads, pipelines, underground cables, and buildings with shallow foundations. Research and historical data indicate that loose granular soils and nonplastic silts that are saturated by a relatively shallow groundwater table are susceptible to liquefaction. Sites underlain by relatively loose sandy soils and saturated deposits of fill combined with a shallow groundwater table, which typically are located in alluvial river valleys/basins, floodplains, beach and bay shorelines, and hydraulic fills, are susceptible to liquefaction. Due to the active faults in the region, and the presence of geologically young, unconsolidated sediments, and hydraulic fills, there is the potential for liquefaction to occur in the San Diego area. The regions of San Diego Bay and vicinity are thought to be especially vulnerable. The potential exists in areas of loose soils and shallow groundwater in earthquake fault zones throughout the San Diego County (County of San Diego 2023). Potential liquefaction areas in the region are shown in Figure 4.7-4. Large areas within the region known to be subject to liquefaction are, for the most part, found in the eastern parts of the region. However, liquefaction-prone areas are also associated with hydraulic fills along the shorelines of San Diego Bay, Mission Bay, and the estuaries along the San Diego coastline.



Source: Data downloaded from SanGIS in 2025 and California Geologic Survey in 2020; adapted by Ascent in 2025.

Figure 4.7-3 Landslide Susceptibility

Expansive Soils

Expansive soils contain minerals such as smectite clays that are capable of absorbing water. When they absorb water, they increase in volume. The more water they absorb, the more their volume increases. Soil volume may expand 10% or more as the clay becomes wet. This change in volume can exert enough force (e.g., 20,000 pounds per square foot or greater) on a building or other structure to cause damage (Colorado Geological Survey 2025).

Expansive soils also shrink when they lose moisture or dry out. This shrinkage can remove support from structures and result in damage when structures are not designed to withstand changing soil pressures. Fissures in the soil can also develop. These fissures can facilitate dispersion of water when moist conditions or runoff occurs. This produces a cycle of shrinkage and swelling that places repetitive stress on structures. Expansive soils occur throughout the San Diego region. Areas with potential to have expansive soils within the region occur predominately in the coastal plains, an area of dissected marine terraces and uplands. They can also be found in valleys and on slopes in the foothills and mountains of the Peninsular Ranges province and, to a lesser extent, in the desert portions of the San Diego region (Peterson 1977).

Expansive soils primarily consist of clay soils that have a potential for significant volume changes (shrinking and swelling) with moisture fluctuations. According to the National Geologic Map Database's Swelling Clays Map of the conterminous United States, coastal San Diego lies in an area described as "part of the unit, generally less than 50%, consists of clays of slight to moderate swelling potential." The remaining areas of the San Diego region are typically underlain by soils with little or no clays with swelling potential (Olive et al. 1989).

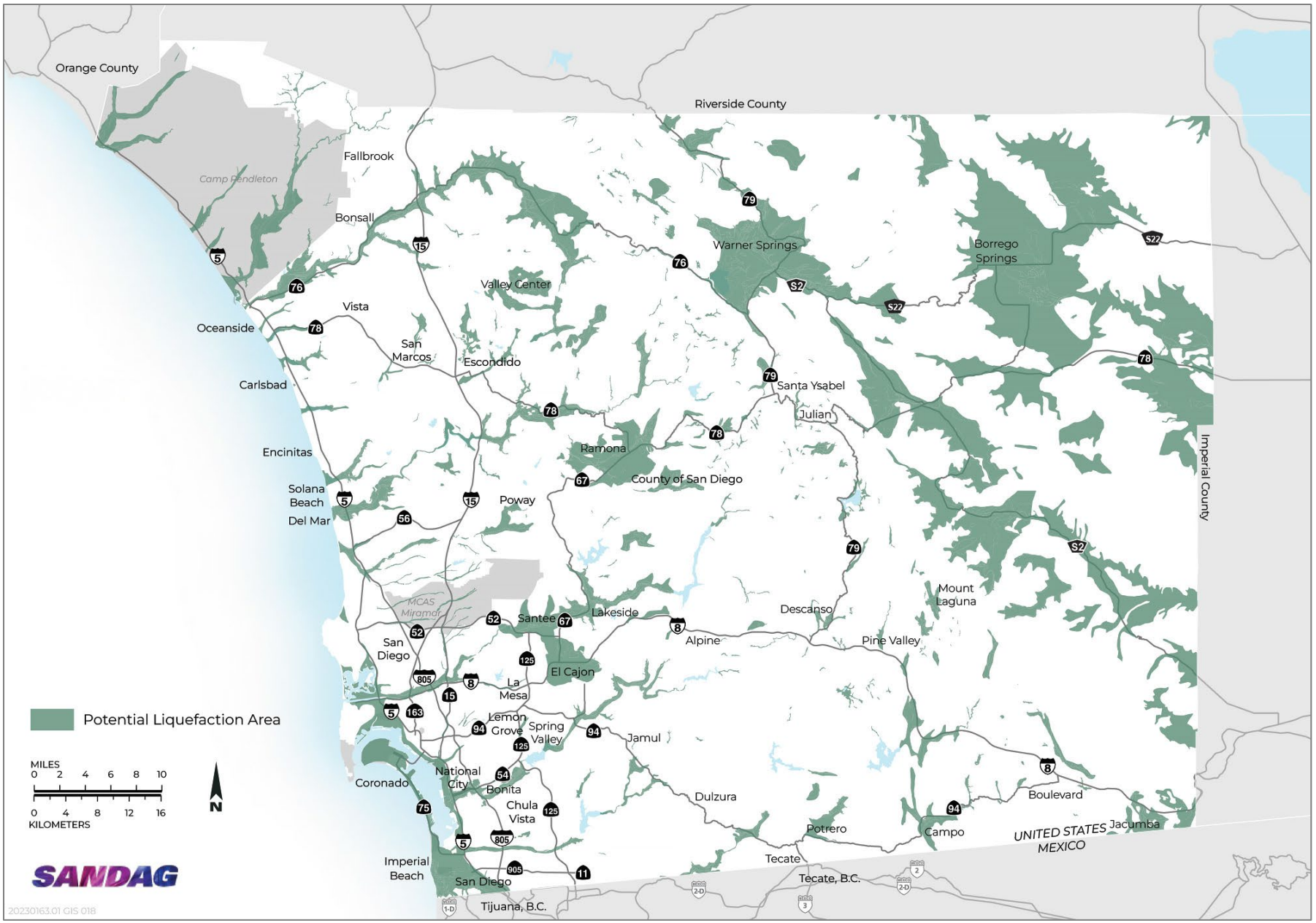
Erosion and Loss of Topsoil

Erosion is defined as a combination of processes in which the materials of the earth's surface are loosened, dissolved, or worn away, and transported from one place to another by natural agents. Erosion potential in soils is influenced primarily by loose soil texture and steep slopes. Steep slopes and bluffs resulting from beachside erosion and wave action are found along the coastal cities in the northern part of the San Diego region, particularly in and near La Jolla Del Mar, Solana Beach, and Encinitas (Kuhn and Shepard 1984). Areas of potential slope failure or high erodibility are potentially hazardous. Loose soils and topsoil can be eroded by water or wind forces, whereas soils with high clay content are generally susceptible only to water erosion. The potential for erosion and loss of topsoil generally increases due to human activity, primarily through construction activities, the development of structures and impervious surfaces, and the removal of vegetative cover (NRCS 2000).

Soil with high amounts of silt can be easily eroded, while sandy soils are less susceptible to erosion. Excessive soil erosion can eventually damage building foundations, roadways, and dam embankments. Erosion is most likely to occur on sloped areas with exposed soil, especially where unnatural slopes are created by cut-and-fill activities. Soil erosion rates can, therefore, be higher during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with vegetation, concrete, structures, or asphalt.

Septic Systems

Areas not serviced by wastewater districts typically have septic systems, also referred to as on site wastewater treatment systems (OWTS), for wastewater disposal. The most common type of septic system found in the San Diego region consists of a septic tank connected to leach lines (County of San Diego 2025). Areas with OWTS, rather than sewer connections, include the unincorporated county communities of North Mountain, Ramona, Rainbow, San Dieguito, Spring Valley, Sweetwater, Valley Center, Alpine, Bonsall, Fallbrook, Central Mountain, North County Metro, Mountain Empire, Julian, Desert, and Crest/Dehesa.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.7-4 Potential Liquefaction Areas

PALEONTOLOGICAL RESOURCES

Paleontological resources represent a limited, nonrenewable, and impact-sensitive scientific and educational resource. Paleontological resources (i.e., fossils) are defined herein as the remains or traces of prehistoric plant and animal life. Fossils, such as bones, teeth, shells, and leaves, are found in geologic deposits (rock formations) within which they were originally buried. Paleontological resources include not only fossils themselves, but also the associated rocks or organic matter.

Paleontological resources vary widely in their relative abundance and distribution, and not all are regarded as significant. One of the questions listed in the CEQA Environmental Checklist is: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" However, CEQA does not include a definition for "unique paleontological resource." Absent specific agency guidelines, most professional paleontologists in California adhere to guidelines set forth by the Society of Vertebrate Paleontology (SVP), which defines a significant paleontological resources as "fossils and fossiliferous deposits…consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information" (SVP 2010).

Known paleontological resources found in regions of moderate to high paleontological sensitivity throughout the San Diego region are presented in Table 4.7-1. San Diego County assigns a high paleontological sensitivity to geologic units known to contain paleontological localities with rare, well-preserved, critical fossil materials for stratigraphic or paleoenvironmental interpretation, and fossils providing information about the paleoclimatic, paleobiological, or evolutionary history (phylogeny) of animal and plant groups (County of San Diego 2009). A moderate paleontological sensitivity is assigned to geologic units known to contain paleontological localities and that have been judged to have a strong, but often unproven, potential for producing unique fossil remains (County of San Diego 2009).

Table 4.7-1 Geologic Units with Moderate or High Potential for Paleontological Resources

Geomorphic Region	Geologic Unit Name	Age	Examples of Previously Documented Paleontological Resources
Coastal Plain Region	Unnamed River Terrace Deposits	Pleistocene	▶ Terrestrial vertebrates (e.g., mammoths, mastodons, deer, bison, camels, tapirs, horses, ground sloths, rodents, birds, lizards, turtles, frogs)
	Unnamed Marine Terrace Deposits	Pleistocene	▶ Marine and estuarine invertebrates ▶ Marine vertebrates
	Bay Point Formation	Pleistocene	▶ Marine invertebrates (e.g., snails, bivalves, crustaceans, echinoderms) ▶ Marine vertebrates (e.g., sharks, rays, bony fish) ▶ Terrestrial vertebrates (e.g., horses, rodents, rabbits, moles, birds, reptiles)
	Lindavista Formation	Pleistocene	▶ Marine invertebrates (e.g., snails, bivalves, echinoderms) ▶ Marine vertebrates (e.g., rays, sharks, dolphins) ▶ Terrestrial vertebrates (e.g., horses, deer, antelopes)
	San Diego Formation	Pliocene	▶ Marine invertebrates (e.g., snails, bivalves, echinoderms) ▶ Marine vertebrates (e.g., whales, dolphins, seals, walruses, sea turtles, rays, sharks, bony fish) ▶ Terrestrial vertebrates (e.g., horses, camels, bovids, rabbits, rodents, skunks, birds, tortoises, snakes, lizards) ▶ Plants (e.g., wood, leaf impressions)

Geomorphic Region	Geologic Unit Name	Age	Examples of Previously Documented Paleontological Resources
	San Mateo Formation	Pliocene to Miocene	▶ Marine invertebrates (e.g., snails, bivalves, shrimp) ▶ Marine vertebrates (e.g., whales, sea cows, dolphins, sharks, rays, bony fish) ▶ Terrestrial vertebrates (e.g., camels, deer, rabbits, birds)
	Capistrano Formation	Pliocene to Miocene	▶ Marine invertebrates (e.g., mollusks, shrimp) ▶ Marine vertebrates (e.g., whales, sea lions, sharks, eels, bony fish) ▶ Terrestrial vertebrates (e.g., camels)
	San Onofre Breccia	Miocene	▶ Marine invertebrates ▶ Terrestrial vertebrates (e.g., tortoises)
	Monterey Formation	Miocene	▶ Marine invertebrates (e.g., bivalves) ▶ Marine vertebrates (e.g., bony fish)
	Otay Formation	Oligocene	▶ Terrestrial vertebrates (e.g., canids, rhinoceroses, camels, rodents, birds, lizards, snakes, tortoises)
	Sweetwater Formation	Eocene	▶ Invertebrates (e.g., snails) ▶ Terrestrial vertebrates (e.g., primates, marsupials, rodents, reptiles, artiodactyls)
	Pomerado Conglomerate	Eocene	▶ Marine invertebrates (e.g., bivalves, snails) ▶ Marine vertebrates (e.g., sharks) ▶ Terrestrial vertebrates (e.g., primates, artiodactyls, tapirs, horses, false saber-toothed cats, marsupials, rodents, birds, crocodiles, tortoises)
	Mission Valley Formation	Eocene	▶ Marine invertebrates (e.g., bivalves, snails, sea urchins) ▶ Marine vertebrates (e.g., sharks, bony fish, sea turtles) ▶ Terrestrial vertebrates (e.g., artiodactyls, camels, primates, marsupials, shrews, rodents, bats, birds, lizards, snakes, crocodiles, tortoises) ▶ Plants (e.g., wood)
	Stadium Conglomerate	Eocene	▶ Terrestrial invertebrates (e.g., snails, bivalves, beetles) ▶ Terrestrial vertebrates (e.g., rodents, marsupials, primates, perissodactyls, artiodactyls, bats, lizards) ▶ Plant (e.g., wood, leaf impressions)
	Friars Formation	Eocene	▶ Marine and estuarine invertebrates ▶ Terrestrial and estuarine vertebrates (e.g., perissodactyls, artiodactyls, rodents, shrews, insectivores, lizards, crocodiles, birds, snakes, turtles, frogs) ▶ Plants (e.g., leaf impressions)
	Scripps Formation	Eocene	▶ Marine and estuarine invertebrates ▶ Marine and estuarine vertebrates (e.g., sharks, rays, bony fish, crocodiles) ▶ Terrestrial vertebrates (e.g., brontotheres, rhinoceros, extinct hyenas, rodents, snakes, lizards, turtles) ▶ Plants (e.g., wood)

Geomorphic Region	Geologic Unit Name	Age	Examples of Previously Documented Paleontological Resources
	Santiago Formation	Eocene	▶ Marine invertebrates (e.g., bivalves, snails, crustaceans, echinoderms) ▶ Terrestrial vertebrates (e.g., opossums, insectivores, bats, prosimian primates, miacid and creodont carnivores, tapirs, brontotheres, amynodonts, protoreodonts, leptoreodonts, birds, snakes, lizards, turtles, crocodiles) ▶ Plants (e.g., leaf impressions)
	Ardath Shale	Eocene	▶ Marine invertebrates (e.g., bivalves, snails) ▶ Marine vertebrates (e.g., sharks, rays, bony fish)
	Torrey Sandstone	Eocene	▶ Marine invertebrates ▶ Marine and estuarine vertebrates (e.g., sharks, rays, bony fish, crocodiles) ▶ Terrestrial vertebrates (e.g., rodents, birds, lizards) ▶ Plants
	Delmar Formation	Eocene	▶ Marine vertebrates (e.g., sharks, rays, bony fish) ▶ Terrestrial vertebrates (e.g., tillodonts, rhinoceroses, rodents, turtles)
	Mount Soledad Formation	Eocene	▶ Marine invertebrates (e.g., bivalves, snails, echinoderms) ▶ Plants (e.g., pollen)
	Unnamed Formation	Eocene	▶ Terrestrial vertebrates (e.g., teeth) ▶ Plants (e.g., leaf impressions)
	Cabrillo Formation	Cretaceous	▶ Marine invertebrates (e.g., bivalves, snails, ammonites) ▶ Marine vertebrates (e.g., sharks, turtles)
	Point Loma Formation	Cretaceous	▶ Marine invertebrates (e.g., bivalves, gastropods, ammonites, crabs, sea urchins) ▶ Marine vertebrates (e.g., mosasaurs, sharks, fish, sea turtles, eels) ▶ Terrestrial vertebrates (e.g., ankylosaurs and hadrosaurs) ▶ Plants (e.g., leaf impressions)
	Lusardi Formation	Cretaceous	▶ No identifiable fossils have been previously recovered; however, significant terrestrial vertebrate fossils may be present based on the age and depositional setting.
	Santiago Peak Volcanics*	Jurassic	▶ Marine invertebrates (e.g., belemnites, ammonites, bivalves) ▶ Plant (e.g., permineralized wood)
Peninsular Ranges Region	Older Quaternary Alluvial and Alluvial Fan Deposits	Pleistocene	▶ Terrestrial vertebrates (e.g., horses)
	Pauba Formation	Pleistocene	▶ Terrestrial vertebrates (e.g., mammoths, camels, horses, rodents, shrews, birds, reptiles)
	Temecula Arkose	Pleistocene to Pliocene	▶ Terrestrial vertebrates
	Jacumba Volcanics*	Miocene	▶ Terrestrial vertebrates (e.g., rodents)
	Table Mountain Gravels	Miocene	▶ Terrestrial vertebrates (e.g., pigs, camels, deer)
	Santiago Peak Volcanics*	Jurassic	▶ Marine invertebrates (e.g., belemnites, ammonites, bivalves) ▶ Plants (e.g., permineralized wood)

Geomorphic Region	Geologic Unit Name	Age	Examples of Previously Documented Paleontological Resources
Salton Trough Region	Later Quaternary Alluvium	Holocene	▶ Subfossils from the Lake Cahuilla beds (e.g., freshwater invertebrates, bony fish)
	Older Terrace, Fanglomerates, and Valley Fill Alluvium	Holocene to Pleistocene	▶ Terrestrial vertebrates (e.g., horse)
	Brawley Formation	Pleistocene	▶ Freshwater invertebrates (e.g., bivalves) ▶ Freshwater vertebrates (e.g., bony fish)
	Ocotillo Conglomerate	Pleistocene	▶ Freshwater invertebrates (e.g., mollusks) ▶ Terrestrial vertebrates ▶ Plants
	Borrego Formation	Pleistocene	▶ Freshwater invertebrates (e.g., bivalves, ostracod) ▶ Freshwater vertebrates (e.g., bony fish)
	Canebrake Conglomerate	Pleistocene to Pliocene	▶ No identifiable fossils have been previously recovered; however, significant terrestrial vertebrate fossils may be present based on the age and depositional setting.
	Palm Springs Formation	Pleistocene to Pliocene	▶ Terrestrial vertebrates (e.g., ground sloths, camels, llamas, horses, tapirs, jaguars, wolves, bears, rodents, rabbits, shrews, bats, birds, snakes, lizards, tortoises, frogs)
	Imperial Formation	Pliocene to Miocene	▶ Marine invertebrates (e.g., corals, bivalves, gastropods, crabs, sea urchins) ▶ Marine vertebrates (e.g., whales, dolphins, walruses, sea cows, sharks, rays, bony fish)
	Split Mountain Formation	Pliocene to Miocene	▶ Marine invertebrates
	Alverson Volcanics	Miocene	▶ Terrestrial vertebrates (e.g., rodents, unknown mammal and vertebrate bone fragments)

Source: County of San Diego 2009, 2011a; City of San Diego 2007, 2024a; San Diego Natural History Museum 2025; University of California Museum of Paleontology 2025.

*Only the metasedimentary portions of the Santiago Peak Volcanics and volcaniclastic/sedimentary portions of the Jacumba Volcanics have a moderate or high potential for paleontological resources.

UNIQUE GEOLOGIC FEATURES

A unique geologic feature may be the best example of its kind locally or regionally; it may illustrate a geologic principle, it may provide a key piece of geologic information, it may be the "type locality" of a fossil or formation, or it may have high aesthetic appeal. Unique geologic features may be exposed or created from natural weathering and erosion processes or from human-made excavations. These unique geological features provide aesthetic, scientific, educational, and recreational value. Unique geological features throughout the San Diego region were documented in the 1975 San Diego County General Plan. This inventory from the 1975 General Plan is listed in Table 4.7-2 and provides more detailed information than the more recent General Plan Update adopted in 2011.

Table 4.7-2 Unique Geologic Features

Unique Geological Features	Location
Indian Mountain Leucogranodiorite	Banks of San Luis Rey River, a few miles southwest of Pala
Pliocene San Mateo Formation	Along San Mateo Creek
San Onofre Breccia	San Onofre Hills
Monterey Shale	Along sea cliffs southeast of San Onofre
Bonsall Tonalite	Bonsall, west central San Luis Rey Quad
Petrified forest with logs in exposures of the prebatholithic volcanics and sedimentary rocks containing leaf imprints	Lusardi Canyon near Rancho Santa Fe near junction with San Dieguito River
Prebatholithic folded slates	Lusardi Canyon near Rancho Santa Fe near junction with San Dieguito River
The Lusardi Formation consisting of a conglomerate unit	Lusardi Canyon near Rancho Santa Fe near junction with San Dieguito River
Lake Wohlford Leucogranodiorite	Lake Wohlford, between Escondido and Lake Wohlford
San Marcos Gabbro	San Marcos Mountains, San Luis Rey Quad
Woodson Mountain Granodiorite	Woodson Mountain, a few miles southwest of Ramona
Swarm of distinctly oriented inclusion in Lakewood Mountain Tonalite composing outer ring dike; core is Green Valley Tonalite	East of Ramona
Area of prebatholic metamorphics, quartzite exhibiting swirls of magnitite and biotite, which may represent relic crossbedding	Vicinity Highway 78 and San Pasqual
Green Valley Tonalite	Southeast San Luis Rey Quad; Green Valley between State Route (SR) 395 and Ramona
Elsinore Fault, canyon eroded along fault, and tributaries offset in a right-lateral sense; typical exposure of Julian Schist	Julian, Santa Ysabel Quadrangle
Split Mountain Formation	Split Mountain Gorge, south of Ocotillo, west side of Imperial Valley
Localities indicating age of peak volcanics: at (a) Buchia piochii belemnoids, and ammonite were found; at (b) there are belemnoids, flame structures, flute castes, and graded bedding	(a) Los Peñasquitos; (b) San Santiago Dieguito, vicinity of San Dieguito River
Eocene vertebrate fossil locality	Bank of San Diego River near Grantville
Eocene vertebrate fossil locality	Bank of San Diego River near Friars Road and Ulric Street
Exposures of fossiliferous Eocene and Pliocene strata; the Pliocene rocks are preserved by down faulting and contain sharks teeth, whale bones, and delicate *Glottidia albida*	Tecolote Creek
Bay Point Formation	West shore of Bay Point Mission Bay
Type area of the Rose Canyon	Shale Rose Canyon
Eocene foraminifera area	Old Murray Canyon Quarry
Green Eocene mudstones, containing large leaf imprints, petrified logs, and pelecypod molds	Black Mountain
Black Mountain Volcanics, greenstones with primary structures; quartzose pseudomorphs of gastropods	Black Mountain
Exposure of San Diego Formation containing whole bones and sharks teeth	Vicinity of Miramar Reservoir
Type locality of Spatangus rarus Israelsky; known only from type locality	Pacific Beach
Type localities of Pecten (patinopecten) healeyi, Pecten (Pecten) stearsi, Pecten (argopecten) subdolus, and Pecten (Pecten) bellus hemphilli	Pacific Beach

Unique Geological Features	Location
Delmar Formation	Sea cliff and short canyon in Del Mar
Mount Soledad Formation	West of intersection of Ardath Road and I-5
Mission Valley Formation	South wall of Mission Valley on west side of SR 163 at the junction of I-8
Stadium Conglomerate	North wall of Mission Valley west of Murphy Canyon Road from Friars Road
Scripps Formation	Torrey Pines Grade
Friars Formation	North wall of Mission Valley along Friars Road
Torrey Sandstone	Torrey Pines Grade
Ardath Shale	East side of Rose Canyon south of intersection of Ardath Road and I-5
Exposures of Santiago Peak Volcanics showing unique stratigraphic and structural relationships between many units typical of formation; also, type locality when first named Black Mountain Volcanics	North of Black Mountain, La Jolla Quadrangle
Exposure of an old "unnamed" fanglomerate composed of metamorphic rocks, one of the highest surfaces of the "high terrace" cut into Stadium Conglomerate, and a "contact breccia" migmatite zone	Vicinity of I-8, west of San Vicente Reservoir
Basal contact of Ballena Gravels eastward; mechanically just folded border of Woodson Mountain Granodiorite against narrow screen of metamorphic rocks and banded structures in gabbro on other side	Vicinity of Wildcat Canyon Road sloping just east of San Vicente Creek
An unusual occurrence of dumortierite, similanite, and associated minerals	Dehesa Toad and Tavern Road, Alpine
An unusual occurrence of orbicular gabbro	Dehesa Road west of the Harbison Canyon Road intersection Alpine
Prebatholithic metavolcanics, in selected places coarse pyroclastic and blastoporphyritic fabrics as well as original bedding are visible; often very gneissic	Vicinity of I-8 south of Lake Jennings
Mixed and roof pendants in the prebatholithic metavolcanics	Vicinity of La Cresta Road, El Cajon
Contact of Woodson Mountain Granodiorite and Green Valley Tonalite	Vicinity of La Cresta Road, El Cajon
Roof pendant of metavolcanics in the Green Valley Tonalite	Vicinity of San Diego River west of El Capitan Reservoir
Stonewall Quartz Diorite	Stonewall Peak in Cuyamaca Region
Exposure of Bay Point Formation fauna	Vicinity of the U.S./Mexico border, 1/4 mile from the coast
Pliocene San Diego Formation fossils	Vicinity of the U.S./Mexico border, 2 miles from the coast
Cabrillo Formation	Sea cliff in Point Loma
Point Loma Formation	Along Point Loma Peninsula at southern end
La Posta Quartz Diorite	La Posta Valley
Stratigraphic relationship between Jacumba volcanic rock (Alverson Andesite) and "Table Mountain Gravels" and reworked younger gravels	West of Jacumba

Note: I = Interstate; SR = State Route.

Source: County of San Diego 1975.

4.7.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Earthquake Hazards Reduction Act

In 1977, Congress passed the Earthquake Hazards Reduction Act (EHRA, amended 2004) (Public Law 95-124) establishing the National Earthquake Hazards Reduction Program as a long-term earthquake risk reduction program for the United States. The program initially focused on research, led by the USGS and National Science Foundation, toward understanding and ultimately predicting earthquakes. The current program activities are focused on four broad areas:

- Developing effective measures to reduce earthquake hazards.
- Promoting the adoption of earthquake hazard reduction activities by federal, state, and local governments; national building standards and model building code organizations; and engineers, architects, building owners, and others who play a role in planning and constructing buildings, bridges, structures, and critical infrastructure or "lifelines."
- Improving the basic understanding of earthquakes and their effects on communities, buildings, structures and lifelines through interdisciplinary research involving engineering; natural sciences; and social, economic, and decision sciences.
- Developing, operating, and maintaining the Advanced National Seismic Research and Monitoring System, established under section 13 of EHRA of 1977 (42 U.S. Code [USC] 7707), the George E. Brown Jr. Network for Earthquake Engineering Simulation established under section 14 of that act (42 USC 7708), and the Global Seismographic Network.

U.S. Geological Survey Landslide Hazard Program

The USGS created the Landslide Hazard Program in fulfillment of the requirements of Public Law 106-113 (1999). The primary objective of the program is to reduce long-term losses from landslide hazards by improving the understanding of the causes of ground failure and suggesting mitigation strategies. The federal government takes the lead role in funding and conducting this research, whereas the reduction of losses due to geologic hazards is primarily a state and local responsibility.

Antiquities Act of 1906

The Antiquities Act of 1906 (16 USC 431–433) states, in part:

> That any person who shall appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

Although there is no specific mention of natural or paleontological resources in the act itself, or in the act's uniform rules and regulations (Code of Federal Regulations [CFR] Title 43, Part 3), the term "objects of antiquity" has been interpreted to include fossils by the National Park Service, the Bureau of Land Management, the Forest Service, and other federal agencies. Permits to collect fossils on lands administered by federal agencies are authorized under this act. However, due to the large gray areas left open to interpretation due to the imprecision of the wording, agencies have moved away from reliance on the act for governing paleontological resources (Congressional Research Service Report for Congress 1998).

Archaeological and Paleontological Salvage

The Archaeological and Paleontological Salvage Statute (23 USC 305) amends the Antiquities Act of 1906. Specifically, it states:

> Funds authorized to be appropriated to carry out this title to the extent approved as necessary, by the highway department of any State, may be used for archaeological and paleontological salvage in that state in compliance with the Act entitled "An Act for the preservation of American Antiquities," approved June 8, 1906 (Pub. L. 59-209; 16 USC 431–433), and State laws where applicable.

This statute allows funding for mitigation of paleontological resources recovered pursuant to federal aid highway projects, provided that "excavated objects and information are to be used for public purposes without private gain to any individual or organization" (FHWA 1981).

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act (PRPA) (Title VI, Subtitle D in the Omnibus Public Lands Act of 2009, Public Law 111-011) establishes that the Secretary of Interior and Secretary of Agriculture must manage and protect paleontological resources on federal land using scientific principles and expertise. With the passage of the PRPA, Congress officially recognized the importance of paleontological resources on federal lands owned by U.S. Department of the Interior and U.S. Department of Agriculture by declaring that fossils from federal lands are federal property that must be preserved and protected using scientific principles and expertise. The PRPA provides:

- uniform definitions for "paleontological resources" and "casual collecting"
- uniform minimum requirements for paleontological resource use permit issuance (terms, conditions, and qualifications of applicants), uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from Federal lands
- uniform requirements for curation of federal fossils in approved repositories

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

Alquist-Priolo Earthquake Fault Zoning Act

The purpose of the Alquist-Priolo Earthquake Fault Zoning Act of 1972 (renamed in 1994), Public Resources Code (PRC) Section 2621 et seq., is "to regulate development near active faults so as to mitigate the hazard of surface fault rupture." The state geologist and chief of the Division of Mines and Geology (DMG) is required to delineate Alquist-Priolo Earthquake Fault Zones (formerly known as "Alquist-Priolo Special Studies Zones") along known active faults. As defined by the DMG, an active fault is one that has had surface displacement within Holocene time (roughly the last 11,000 years) or has an instrumental record of seismic activity. Potentially active faults are those that show evidence of surface displacement during Quaternary time (roughly the last 2 million years), but for which evidence of Holocene movement has not been established. The DMG evaluates faults on an individual basis to determine whether a fault will be classified as an Alquist-Priolo Earthquake Fault Zone. In general, faults must meet certain DMG criteria, including seismic activity, historic rupture, and geologic evidence to be zoned as an Alquist-Priolo Earthquake Fault Zone. Cities and counties affected by the zones must regulate certain development within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. Typically, structures for human occupancy are not allowed within 50 feet of the trace of an active fault. If a property within a zone is not currently developed, a fault study may be required prior to the subdivision of the property or prior to any structure being permitted on the property.

Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act (SHMA) of 1990 (PRC Sections 2690–2699.6) directs the California Geological Survey to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the SHMA is to reduce the threat to public safety and to minimize the loss

of life and property by identifying and mitigating these seismic hazards. The SHMA was passed by the legislature following the 1989 Loma Prieta earthquake. Staff geologists in the Seismic Hazard Mapping Program gather existing geological, geophysical, and geotechnical data from numerous sources to compile the Seismic Hazard Zone Maps. They integrate and interpret these data regionally to evaluate the severity of the seismic hazards and designate Zones of Required Investigation for areas prone to liquefaction and earthquake-induced landslides and determine whether structural design or modification of the project site is necessary to ensure safer development. Site-specific geotechnical investigations are conducted to identify and evaluate seismic hazards and formulate mitigation measures prior to permitting most development designed for human occupancy. Cities and counties are then required to use the Seismic Hazard Zone Maps in their land use planning and building permit processes.

California Building Code

The California Building Code (CBC) is updated every 3 years. The most recent update to CBC was in 2022, with the code becoming effective on January 1, 2023. Chapter 16A, Division IV of the CBC, titled "Structural Design," states that the "purpose of the earthquake provisions herein is primarily to safeguard against major structural failures or loss of life." The CBC regulates the design and construction of excavations, foundations, building frames, retaining walls, and other building elements to mitigate the effects of seismic shaking and adverse soil conditions. The procedures and limitations for the design of structures are based on site characteristics, occupancy type, configuration, structural system height, and seismic zoning. Seismic zones are mapped areas that are based on proximity to known active faults, the potential for future earthquakes, and the potential intensity of seismic shaking. Seismic zones range from 0 to 4, with areas mapped as Zone 4 being potentially subject to the highest accelerations due to seismic shaking and the shortest recurrence intervals. According to the CBC, the entire San Diego region is within seismic Zone 4.

The CBC also contains (1) specific provisions to classify soils as expansive, (2) exploratory boring procedures, (3) soil boring reporting procedures, and (4) special building foundation and investigation requirements. Section 1613A.1 describes earthquake loads and states that "every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions." Additionally, structures that require special consideration of their response characteristics and environment that are not addressed by this code and for which other regulations provide seismic criteria include vehicular bridges, electrical transmission towers, hydraulic structures, buried utility lines and their appurtenances, and nuclear reactors.

Construction General Permit

Dischargers whose projects disturb 1 or more acres of soil, or less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the State Water Resources Control Board (SWRCB) Order 2022-0057-DWQ, the Construction General Permit (SWRCB 2022). Construction and demolition activities subject to this permit include clearing, grading, grubbing, and excavation, or any other activity that results in a land disturbance equal to or greater than 1 acre.

Permit applicants are required to submit a notice of intent to the SWRCB and to prepare a Storm Water Prevention Pollution Plan (SWPPP). The SWPPP must identify best management practices (BMPs) that are to be implemented to reduce construction impacts on receiving water quality based on potential pollutants. The SWPPP also must include descriptions of the BMPs to reduce pollutants in storm water discharges after all construction phases are completed at a site (post-construction BMPs). The Construction General Permit also includes requirements for risk-level assessment for construction sites, a storm water effluent monitoring and reporting program, rain event action plans, and numeric action levels for pH and turbidity.

California Coastal Act

The California Coastal Act (PRC Section 30253) provides for the minimization of adverse impacts, including assuring stability and structural integrity, and neither creating nor contributing significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way requiring the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. The California Coastal Commission

has found that siting new development away from eroding bluffs is the preferred means of assuring compliance with this section of the act so developments will not be endangered by erosion nor require the construction of coastal armoring to protect them from erosion over their design life (Johnsson 2003).

Water Quality Control Policy for Siting, Design, Operation, and Maintenance of On Site Wastewater Treatment Systems

On June 19, 2012, SWRCB adopted Resolution No. 2012-0032, adopting the Water Quality Control Policy for Siting, Design, Operation, and Maintenance of OWTS. This policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the level of performance and protection expected from OWTS. The policy includes a conditional waiver of waste discharge requirements for systems in compliance with the policy, which by law expires after 5 years. SWRCB renewed the conditional waiver in 2018 and 2023.

In accordance with Water Code Section 13290 et seq., the policy sets standards for OWTS that are constructed or replaced, that are subject to a major repair, that pool or discharge waste to the surface of the ground, and that have affected, or will affect, groundwater or surface water to a degree that makes it unfit for drinking water or other uses or cause a health or other public nuisance condition. The OWTS Policy also includes minimum operating requirements for OWTS that may include siting, construction, and performance requirements; requirements for OWTS near certain waters listed as impaired under Section 303(d) of the Clean Water Act; requirements authorizing local agency implementation of the requirements; corrective action requirements; minimum monitoring requirements; exemption criteria; requirements for determining when an existing OWTS is subject to major repair; and a conditional waiver of waste discharge requirements.

The OWTS policy was incorporated into the Water Quality Control Plan for the San Diego Basin (Basin Plan) through Basin Plan Amendment (Resolution No. R9-2015-0008), which added implementation measures for areas where surface and groundwater are interconnected and made some other nonsubstantive changes to the Basin Plan.

State Laws Protecting Paleontological Resources

PRC Sections 5097 and 30244 include state-level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts on paleontological resources resulting from development on state lands and define the excavation, destruction, or removal of paleontological "sites" or "features" from public lands without the express permission of the jurisdictional agency as a misdemeanor. As used in Section 5097, "state lands" refer to lands owned by, or under the jurisdiction of, the State of California or any state agency. "Public lands" is defined as lands owned by, or under the jurisdiction of, the State of California, or any city, county, district, authority, or public corporation, or any agency thereof.

Conservation and Safety Elements

Under Government Code Section 65302(d)(1), a general plan must include "[a] conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources." Under Government Code Section 65302(g)(1), a general plan must include "[a] safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other seismic hazards…, and other geologic hazards known to the legislative body... The safety element shall include mapping of known seismic and other geologic hazards." The cities and county government within the San Diego region include these elements within their general plans, and most contain additional information on disaster relief and emergency preparedness for geologic and seismic hazards (see the "Local Jurisdictions' Protection Policies for Protecting against Geologic and Seismic Hazards" section below).

REGIONAL AND LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

County Septic Tank Regulations

The San Diego Regional Water Quality Control Board (RWQCB) authorizes the County of San Diego Department of Environmental Health to issue septic system (OWTS) permits throughout the San Diego region. The County Board of Supervisors approved the updated OWTS (septic systems) ordinance on September 11, 2024, which went into effect on October 11, 2024. The San Diego RWQCB unanimously approved Resolution R9-2024-0130 for San Diego County's 2025 Local Agency Management Program (LAMP) for OWTS on November 13, 2024, and it went into effect on February 1, 2025. The purpose of the LAMP is to implement minimum standards to allow the continued use of OWTS or other sanitation facilities while protecting water quality and public health. The OWTS installation permitting process and the prescribed standards contained in the LAMP are designed to protect groundwater sources and surface water bodies from pollution through the proper siting, design installation, operation, and maintenance of individual new and replacement OWTS and other sanitation facilities in accordance with the provisions of the OWTS Policy and San Diego County Regulatory Code.

Grading and Erosion Regulations

Consistent with state law, local jurisdictions contain grading and erosion-control regulations in their municipal codes. These regulations establish minimum requirements for grading, including clearing and grubbing of vegetation. These regulations ensure compatibility of graded land development sites with surrounding land forms and land uses and prevent unnecessary and unauthorized grading.

Additionally, local jurisdictions have grading and erosion control ordinances that are intended to control erosion and sedimentation caused by construction activities. A grading permit is typically required for construction-related projects. As part of the permit, project applicants usually must submit a grading and erosion-control plan, vicinity and site maps, and other supplemental information. Standard conditions in the grading permit include a description of BMPs similar to those contained in a SWPPP.

Seismic Standards

Many geologic and seismic hazard goals, policies, and mitigation measures are listed in the safety elements of local general plans, and aim to minimize injury, loss of life, and damage to property resulting from potential geologic and seismic disasters. For example, the San Diego County General Plan Safety Element contains goals and policies to minimize personal injury and property damage resulting from seismic hazards (County of San Diego 2011a).

Additionally, the Alquist-Priolo Earthquake Fault Zoning Act, described above, requires that before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults.

County of San Diego, Grading Ordinance

Section 87.430 of the Grading Ordinance states that a qualified paleontologist may be required by the county official to be present during all grading activities for monitoring purposes. If a fossil greater than 12 inches in any diameter is found, all grading operations must be suspended, and the county official must be notified immediately. The county official will analyze the resource and determine the proper course of action, to be carried out by the permittee, prior to the county official's authorization to resume normal grading operations.

Local Jurisdictions' Protection Policies for Protecting against Geologic and Seismic Hazards

To comply with Government Code Section 65302, a general plan must include "A safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other seismic hazards identified pursuant to Chapter 7.8 (commencing with Section 2690) of Division 2 of the PRC, and other geologic hazards known to the legislative body. The safety element shall include mapping of known seismic and other geologic hazards" (GCS 65302[g]). The incorporated cities and

county government within San Diego region contain safety elements within their general plans, and most contain additional information on disaster relief and emergency preparedness for geologic and seismic hazards.

Selected local government policies related to safety and geological hazards are listed in Table 4.7-3.

Table 4.7-3 Local Policies Concerning Geologic and Seismic Hazards

Jurisdiction	Policies
Carlsbad	The Public Safety Element of the Carlsbad General Plan was updated and adopted in 2024. The Public Safety Element contains Policy 6-P.20 through Policy 6-P.31 related to geology and seismicity. These policies establish guidelines for geotechnical requirements and evaluation for development.
Chula Vista	The Environment Element of the Chula Vista General Plan contains Policy E 14.1 through E 14.5 to protect against injury, loss of life, and major property damage through engineering analyses of potential seismic hazards; prohibit subdivision, grading, or development of lands subject to potential geologic hazards; require site-specific geotechnical investigations; promote programs to identify buildings and structures that would be at risk during seismic events; and to discontinue, remove, or relocate structures determined to be unsafe from geologic hazards.
Coronado	The Safety Element of the Coronado General Plan contains goals and policies related to fault zone development, inundation hazard from tsunami or seiche, an emergency warning system, and public education for disaster preparedness.
Del Mar	The Environmental Management Section of the Del Mar Community Plan contains discussion about floodplain overlay and bluff, slope, and canyon overlay zones used by the city to protect the public safety and welfare from hazards such as fire, flooding, landslides, and erosion. The Safety Element of the Community Plan also contains the Sea Level Rise Adaptation Plan, which is intended to guide policy decisions related to future development in areas that are identified as vulnerable to projected sea-level rise, flooding, and erosion. In addition, the City of Del Mar's Municipal Code contains the city's Local Coastal Program Implementing Ordinances related to geology and soils. Specifically, Del Mar Municipal Code Chapter 30.52, Bluff, Slope, Canyon Overlay Zone, is designed to protect the health, safety, and general welfare, and to protect downstream resources. Del Mar Municipal Code Chapter 30.55, Coastal Bluff Overlay Zone, is intended to protect Del Mar's fragile coastal bluffs as a visual resource and avoid the risks to life and property associated with bluff failure and shoreline erosion. Del Mar Municipal Code Chapter 30.56, Floodplain Overlay Zone, is intended to avoid hazards related to flood hazards. Finally, Del Mar Municipal Code Chapter 23.33, Land Conservation Ordinance, which regulates soil disturbances of existing or natural terrain and vegetation, and does not create soil erosion, silting of lower slopes, slide damage, flooding problems, or severe cutting or scarring.
El Cajon	The Safety Element of the City of El Cajon General Plan contains Policy 3.5, which requires enforcing development standards to reduce geologic risk. Policy 3.6 prioritizes retrofits of buildings that pose the greatest risk.
Encinitas	The Public Safety Element of the Encinitas General Plan contains policies to prevent and respond to geologic hazards.
Escondido	The Community Protection Element of the Escondido General Plan contains goals and policies including Policy 7.1 through Policy 7.5 to minimize adverse effects to residents, property, and critical facilities caused by geologic and seismic hazards.
Imperial Beach	The Safety Element of the City of Imperial Beach General Plan and Local Coastal Plan contain policies specific to geologic hazards including Policy S-1 which requires geotechnical investigations and recommendations; Policy S-5 which restricts construction near fault traces; and Policy S-6 which restricts cliff top development.
La Mesa	The Safety Element of the La Mesa General Plan contain goals, objectives, and policies to offer protection from risks associated with geologic and seismic hazards.
Lemon Grove	The Safety Element of the Lemon Grove General Plan contains Policies 1.1, 1.2, and 1.3 to minimize risk of injury and property from seismic and other geologic conditions.
National City	The Safety Element of the National City General Plan contains Policies SE-1.1 through SE-1.6 to minimize risk of injury and property from seismic and geologic hazards.
Oceanside	The Public Safety Element of the Oceanside General Plan contains goals and objectives to ensure an acceptable level of public safety for prevention and reduction of loss of life and personal property at risk from seismic and geologic hazards. The General Plan for Oceanside is being updated. The 2024 public review draft of the General Plan contains Policies 6-41 through 6-53 related to geologic and seismic hazards.
Poway	The Emergency Services Element of the City of Poway General Plan contains Policy B to protect against hazards associated with geologic formations through proper land use policies and mitigation, and Policy C to control seismic hazards to a level of acceptable risk through the identification and recognition of potentially hazardous conditions and areas.

Jurisdiction	Policies
City of San Diego	The Public Facilities, Services, and Safety Element of the City of San Diego General Plan includes Policy PF-Q.1 to protect public health and safety through the application of effective seismic, geologic and structural considerations. Policy PFQ.2 maintains or improves the integrity of structures to protect residents and preserve communities.
San Marcos	The Safety Element of the City of San Marcos General Plan includes Policy S-1.1 which reduces the risk of impacts from geologic and seismic hazards by applying current and proper land use planning, development engineering, building construction, and retrofitting requirements. Policy S-1.2 includes the investigation specific groundwater levels and geologic conditions underlying all new development or redevelopment proposals in areas where potential fault rupture, liquefaction, or other geologic hazards are suspected. The General Plan for San Marcos is being updated as of January 2025; however, these policies will be unaffected according to the draft document.
Santee	The Safety Element of the Santee General Plan includes Policies 2.1, 2.2, and 2.3 which minimize the loss of life and destruction of property in Santee caused by seismic and geologic hazards.
Solana Beach	The Safety Element City of Solana Beach General Plan contains Objective 1.0 to ensure that geologic hazards in all areas for human use or habitation are mitigated properly or avoided prior to or during development. Policies 1.a through 1.e require geotechnical investigations; review of geotechnical reports; require construction to be in conformance with the Uniform Building Code; increased awareness of seismic and geologic hazards; and encourage programs to abate or modify structures deemed hazardous to human habitation. In addition, Chapter 4 of the Solana Beach Local Coastal Program Land Use Plan includes policies to minimize risks related to life and property from geologic, flood, or fire hazards; shoreline management strategies; shoreline erosion and protection; and beach sand replenishment and retention.
Vista	The Public Safety, Facilities, and Services Element of the City of Vista General Plan contains PSFS Goal 3 to reduce damage, losses, and the risk to the community caused by seismic and other geologic hazards. The General Plan contains PSFS Policies 3.1 through 3.9 to minimize geologic hazard risks.
County of San Diego	The San Diego County General Plan Goal S-8 and S-9 in the Safety Element require minimized personal injury and property damage resulting from seismic hazards, and damage caused by mudslides, landslides, or rock falls.

Sources: City of Carlsbad 2024; City of Chula Vista 2021; City of Coronado 2005; City of Del Mar 1985, 2024; City of El Cajon 2021; City of Encinitas 1995; City of Escondido 2012; City of Imperial Beach 2024; City of La Mesa 2013; City of Lemon Grove 1996; City of National City 2024; City of Oceanside 2002, 2024; City of Poway 1991; City of San Diego 2024b; City of San Marcos 2012; City of Santee 2003; City of Solana Beach 2014, 2019; City of Vista 2012; County of San Diego 2011a.

Local Jurisdictions' Protection Policies for Unique Geological and Paleontological Features

Selected local government policies protecting unique geological and paleontological features are listed in Table 4.7-4.

Table 4.7-4 Local Policies Concerning Unique Geologic and Paleontological Features

Jurisdiction	Policies
Carlsbad	The Arts, History, Culture, and Education Element of the City of Carlsbad General Plan contains five policies related to cultural resources, including paleontological resources. The policies require the implementation of the City of Carlsbad Cultural Resources Guidelines to avoid or substantially reduce impacts (Policy 7-P.1); construction monitoring by a qualified professional during ground-disturbing activities for specific development projects (Policy 7-P.8); treatment of any cultural resource discoveries during site grading in compliance with the City of Carlsbad Cultural Resource Guidelines (Policy 7-P.9), consultation with appropriate organizations and individuals to minimize potential project impacts (Policy 7-P.10); and submittal of a cultural resources monitoring report prior to the occupancy of any building (Policy 7-P.11). The Open Space, Conservation, and Recreation Element of the City's General Plan also includes one policy pertaining to paleontological resources, which is to designate areas that preserve historic, cultural, archaeological, paleontological, and educational resources as open space (Policy 4-P.32). Additional paleontological requirements for projects within the coastal zone are included in the City of Carlsbad Local Coastal Program that require impact reviews and the development and implementation of mitigation measures.
Chula Vista	The Environmental Element of the City of Chula Vista General Plan contains one objective and two policies pertaining to paleontological resources. Objective E 10 is to protect important paleontological resources and support and encourage public education and awareness of such resources. Policy 10.1 is to continue to assess and mitigate the potential impacts of private development and public facilities and infrastructure to paleontological resources in accordance with CEQA. Policy 10.2 is to support and encourage public education and awareness of local paleontological resources, including the establishment of museums and educational opportunities accessible to the public.

Jurisdiction	Policies
Coronado	The Conservation Element of the City of Coronado General Plan requires the preservation, documentation, and recovery of paleontological resources that are threatened by new development and contains objectives to protect significant natural resources by mitigating erosion along coastal and bay shorelines. The Local Coastal Program Land Use Plan also requires the reasonable mitigation of adverse impacts to paleontological resources as a result of new development.
Del Mar	The Del Mar Community Plan contains objectives to preserve the integrity of the coastal bluffs and prevent erosion on steep slopes. The Bluff, Slope, and Canyon Specific Plan provides the implementation strategy to protect these natural resources. In addition, Del Mar Municipal Code Chapter 30.52, "Bluff, Slope, Canyon Overlay Zone," is designed to protect the health, safety, and general welfare, and to control the development of properties within the designated zone in order to preserve the scenic sandstone bluffs and related canyons and steep slopes that characterize the area within the zone; Chapter 30.60, "Open Space Overlay Zone," is intended, in part, to preserve scenic vistas and particularly unique natural features in specific neighborhoods; and Chapter 30.92, "Housing Element Implementation Overlay Zone," includes paleontological resources mitigation, monitoring and reporting protocol.
El Cajon	The City of El Cajon General Plan does not include any goals, objectives, policies, or implementation programs related to paleontological resources or unique geological features.
Encinitas	The Resource Management Element of the Encinitas General Plan contains policies to document and preserve paleontological resources and unique natural resources.
Escondido	The Land Use and Community Form and Resource Conservation Elements of the Escondido General Plan contain policies to conserve hillsides, ridgelines, and paleontological resources.
Imperial Beach	The City of Imperial Beach General Plan and Local Coastal Plan contains goals to preserve irreplaceable natural resources such as beaches and ocean shoreline, and notes that there are geologic units in the city that are locally fossiliferous.
La Mesa	The Conservation and Sustainability Element and Recreation and Open Space Element of the La Mesa General Plan contain policies and conservation objectives to protect natural landforms and significant physical features. The Historic Preservation Element notes that paleontological sites may be eligible for designation as a historic landmark.
Lemon Grove	The Conservation and Recreation Element of the Lemon Grove General Plan includes environmental review requirements to protect significant fossils and prehistoric artifacts from development impacts.
National City	The Open Space and Agriculture Element of the National City General Plan contains Policy OS-1.1, which protects and conserves the landforms and open spaces that define the city's urban form, provide public views/vistas, serve as core biological areas and wildlife linkages, or are wetland habitats, and Policy OS-8.8, which requires monitoring for subsurface cultural and paleontological resources during grading and construction activities for all development projects.
Oceanside	The Environmental Resource Management Element of the Oceanside General Plan contains implementation strategies and policies for reducing erosion and other environmentally damaging impacts, and the Land Use Element contains objectives and policies for the evaluation and recovery of paleontological resources, erosion control, and coastal preservation.
Poway	The Natural Resources Element of the City of Poway General Plan and the City of Poway's Habitat Conservation Plan contain descriptions of geological features and landforms and related policies that include the preservation of rock outcroppings, open space, hillsides, ridgelines, and cultural resources.
City of San Diego	The Conservation Element of the City of San Diego General Plan includes a goal for the preservation and long-term management of the natural landforms and open spaces that help make San Diego unique. Policies CE-B.1 to CE-B.9 include procedures to protect and conserve important landforms, canyon lands, and open spaces.
San Marcos	The City of San Marcos General Plan Conservation Element includes Policy COS-2.5, which requires paleontological resources to be analyzed and conserved in compliance with CEQA requirements. Policy COS-3.1 is to preserve prominent landforms through conservation and management policies. Implementing strategies establish provisions for limiting environmental impacts on landforms, reducing erosion, and utilizing techniques for open space conservation.
Santee	The Santee General Plan Conservation Element includes Policy 1.1, which encourages significant natural landforms to be maintained during development whenever possible, and Policy 10.2, which encourages the preservation of significant natural features, such as watercourses, ridgelines, steep canyons, and major rock outcroppings through the development review process. Municipal Ordinance 564 Section 11.40.575 requires that grading operations be halted in the event of a paleontological resource discovery and that grading not recommence until the permittee has received written authority from the city engineer.

Jurisdiction	Policies
Solana Beach	The City of Solana Beach General Plan Conservation and Open Space Element contains Policy 6.b, which requires paleontological resources evaluation of proposed development sites and implementation of appropriate mitigation. The General Plan Land Use Element contains Policy LU-5.1, which requires the City of Solano Beach to maintain ordinances that preserve lands with sensitive geologic features.
Vista	The City of Vista General Plan Sustainability and Conservation Element contains RCS Goal 13 and Policies 13.1 and 13.2 to provide for the protection of paleontological resources by adopting procedures to mitigate impacts during preconstruction and construction phases, including paleontological monitoring and fossil salvage programs. The Land Use and Community Identity Element also contains an Open Space land use designation which was established to preserve portions of the City of Vista in their natural state, including unique geological features.
County of San Diego	The San Diego County General Plan includes Goal COS-9 in the Conservation and Open Space Element, which requires the conservation of paleontological resources and unique geologic features. Policy COS-9.1 requires the salvage and preservation of unique paleontological resources when exposed to the elements during excavation or grading activities or other development processes. Policy COS-9.2 requires future development to minimize impacts on unique geologic features.

Sources: City of Carlsbad 2015a, 2015b; City of Chula Vista 2021; City of Coronado 1994, 2005; City of Del Mar 2021; City of El Cajon 2001; City of Encinitas 2012; City of Escondido 2012; City of Imperial Beach 2024; City of La Mesa 2013; City of Lemon Grove 1996; City of National City 2011; City of Oceanside 2002; City of Poway 1996, 2002;City of San Diego 2024b; City of San Marcos 2012; City of Santee 2003; City of Solana Beach 2010; City of Vista 2012; County of San Diego 2011b.

4.7.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts, in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique characteristics of the proposed Plan and EIR.

Checklist questions for geology and soils are found in Section VII of the CEQA Guidelines. Sections that have been combined and modified are criterion VII(c) related to project location on unstable geologic units or soils and criterion VII(d) related to project location on expansive soils, which are combined as GEO-2 herein. VII(e) of the CEQA Guidelines is modified to include groundwater impacts in GEO-4.

For the purposes of this EIR, implementation of the proposed Plan would have a significant geologic or soils, impact if it would:

GEO-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based on other substantial evidence showing an earthquake fault is active;
- Strong seismic ground shaking;
- Seismic-related ground failure, including liquefaction; and
- Landslides.

GEO-2 Locate projects on a geologic unit or soil that is expansive or unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, creating substantial direct or indirect risks to life or property.

GEO-3 Result in substantial soil erosion or the loss of topsoil.

GEO-4 Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater, potentially causing adverse groundwater impacts.

GEO-5 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

The analysis discloses impacts to geology, soils and paleontological resources. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's geology, soils and paleontological resources impacts would be worsened by climate change. Therefore, a climate change analysis for geology, soils and paleontological resources impacts is not included in this section.

4.7.4 Environmental Impacts and Mitigation Measures

GEO-1 DIRECTLY OR INDIRECTLY CAUSE POTENTIAL SUBSTANTIAL ADVERSE EFFECTS, INCLUDING THE RISK OF LOSS, INJURY, OR DEATH INVOLVING (A) RUPTURE OF A KNOWN EARTHQUAKE FAULT, AS DELINEATED ON THE MOST RECENT ALQUIST-PRIOLO EARTHQUAKE FAULT ZONING MAP ISSUED BY THE STATE GEOLOGIST FOR THE AREA, OR BASED ON OTHER SUBSTANTIAL EVIDENCE SHOWING AN EARTHQUAKE FAULT IS ACTIVE; (B) STRONG SEISMIC GROUND SHAKING; (C) SEISMIC-RELATED GROUND FAILURE, INCLUDING LIQUEFACTION; OR (D) LANDSLIDES.

Analysis Methodology

This analysis acknowledges that the entire San Diego region is subject to strong ground shaking during an earthquake on a fault or fault zone inside or outside of the region. It identifies the location of forecasted regional growth and land use change and planned transportation network improvements as part of the proposed Plan in relation to known earthquake faults in the San Diego region, including Alquist-Priolo Earthquake Fault Zones. This analysis also identifies the location of forecasted regional growth and land use change or planned transportation network improvements in relation to areas subject to seismic-related ground failure, including liquefaction and seismically induced landslides. The analysis then qualitatively discusses the potential of the proposed Plan to directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving earthquakes and related seismic hazards as a result of forecasted development and planned transportation network improvements. Finally, the analysis assesses the ability of specific requirements of existing laws and regulations (as described in Section 4.7.2, "Regulatory Setting") to minimize any substantial adverse direct or indirect effects.

Impact Analysis

2035

Regional Growth and Land Use Change

As identified in Table 2-1 in Chapter 2, "Project Description," from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

As shown in Figure 4.7-2, several active fault lines and Alquist-Priolo Earthquake Fault Zones are located in areas that are currently developed and that are forecasted to develop between 2022 and 2035 (Figure 2-4 in Chapter 2, "Project Description"). Areas that contain or are in proximity to Alquist-Priolo Earthquake Fault Zones include Downtown San Diego, Coronado, and communities along Interstate (I) 5. Additionally, several earthquake fault lines are located in the western third of the region. New development and infrastructure planned to occur

between 2022 and 2035 would increase the number of people and structures located in or near areas containing Alquist-Priolo Earthquake Fault Zones, earthquake fault lines, and other geologic hazards. Earthquakes within 60 miles of the San Diego region are capable of generating strong ground shaking. This ground shaking could be generated along the San Clemente, San Diego Trough, Coronado Bank, Rose Canyon, Elsinore, San Jacinto, and Sweetwater Fault Zones. Surface rupture and severe ground shaking could cause catastrophic damage to new development associated with implementation of the proposed Plan, including catastrophic damage to structures.

As shown in Figure 4.7-3, very high landslide susceptibility zones (e.g., classes VIII, IX, and X) are scattered throughout the region. Additionally, areas prone to liquefaction also occur throughout the region (Figure 4.7-4). Some of these liquefaction- and landslide-susceptible areas are located in developed areas and areas that are forecasted to develop as a result of regional growth and land use changes between 2022 and 2035. Therefore, implementation of the proposed Plan would expose people and structures to the adverse effects of landslides and liquefaction.

Long-term effects associated with earthquakes include phenomena such as regional subsidence or emergence of landmasses and regional changes in groundwater levels. As a result of forecasted regional growth and land use change, the proposed Plan would increase the risk of loss, injury, or death associated with earthquakes and seismic hazards.

Earthquake-resistant designs employed on new structures can minimize the impact on public safety from seismic events. There are numerous federal, state, and local laws; regulations; and policies in place to avoid or reduce impacts from earthquakes and other geologic hazards as discussed in Section 4.7.2, "Regulatory Setting." For example, the Alquist-Priolo Earthquake Fault Zoning Act requires that before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist, and if an active fault is found, a structure for human occupancy cannot be placed over the fault and must be set back, generally 50 feet from the fault.

Furthermore, all projects would be required to adhere to standard design, grading, and construction practices described in the CBC, which regulates the design and construction of excavations, foundations, building frames, retaining walls, and other building elements. The CBC requirements, along with all other standard geotechnical investigation, design, grading, and construction standards and practices, would mitigate the effects of seismic shaking and adverse soil conditions and avoid or reduce impacts from earthquake, ground shaking, ground failure, and landslides. Additionally, adherence to the SHMA would reduce threats to public safety by identifying and mitigating for seismic hazards.

Regulatory agencies with oversight of development associated with the proposed Plan have developed regulations and engineering design specifications to consider and compensate for site-level geological and seismic conditions. Adherence to these laws and regulations would ensure impacts from land use changes between 2022 and 2035 would not expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction or seismically included landslides. Therefore, the impact would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

The majority of improvements by 2035 (as shown in Figures 2-7, 2-10, and 2-13 in Chapter 2, "Project Description") would be located in proximity to several fault lines and Alquist-Priolo Earthquake Fault Zones (as identified in Figure 4.7-2 above), which would result in increased exposure of people and structures to risk of loss, injury, or death from earthquakes and other geologic hazards. Specific transportation facilities that would be most at risk for damage from seismic effects due to their proximity to fault lines include those in Downtown San Diego and improvements along the I-5, I-805, and SR 94 corridors. (*See, e.g.,* Fig. 4.7-2.) Due to historic activity of faults in the region, the potential for surface rupture and ground-shaking remains.

As discussed above, landslide-susceptible zones and areas prone to liquefaction occur throughout the region. Some of these liquefaction and landslide-susceptible areas are located in areas in which transportation network improvements are planned between 2022 and 2035; therefore, implementation of the proposed Plan would expose people and structures to the adverse effects of landslides and liquefaction.

Federal, state, and local laws; regulations; and policies included in Section 4.7.2, "Regulatory Setting," would require future improvements and projects to be reviewed by appropriate regulatory agencies prior to construction and would require each improvement or project to adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce impacts from geologic hazards. Adherence to these laws and regulations would ensure impacts from transportation network improvements in place between 2022 and 2035 would not expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction or seismically included landslides. Therefore, the impact would be less than significant.

2035 Conclusion

Between 2022 and 2035, implementation of the proposed Plan would result in land use changes and the construction of transportation network improvements that would expose a greater number of people and structures to impacts from seismic activity, including earthquakes, ground shaking, ground failure, and landslides. However, adherence to the laws, regulations, and policies included in Section 4.7.2, "Regulatory Setting," would ensure people or structures would not be exposed to substantial adverse effects. Therefore, this impact (GEO-1) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As identified in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Similarly, these same three jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050.

As discussed in the 2035 analysis above, regional growth and land use change resulting in the construction of new and redeveloped buildings would result in significant impacts regarding the exposure of people and structures to seismic activity, including earthquakes, ground shaking, ground failure, and landslides. These risks would continue to occur into 2050 as development increases and infrastructure is extended to accommodate forecasted growth. Land use change by 2050 would result in an increase in regional growth and development, and as shown in Figure 4.7-2, some of the developments would occur near an earthquake fault zone. Approximately 52% (33,865 units) of the housing units forecasted to be developed between 2036 and 2050 would occur in the city of San Diego, which lies in the Rose Canyon Fault Zone.

Landslide-susceptible zones and areas prone to liquefaction occur throughout the region, as shown in Figures 4.7-3 and 4.7-4. Some of these liquefaction- and landslide-susceptible areas are located in areas in which residential,

mixed use, and commercial development are forecasted between 2036 and 2050 (Figure 2-5 in Chapter 2 "Project Description"). As a result, implementation of the proposed Plan would expose people and structures to the adverse effects of landslides and liquefaction.

As discussed in the 2035 analysis and in Section 4.7.2, "Regulatory Setting," the development and improvement of new structures would be required to adhere to existing federal, state, and local laws; regulations; and policies, including the design standards described in the CBC. Regional growth and land use change between 2036 and 2050 would not expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction or seismically induced landslides through compliance with existing regulations. Therefore, the impact would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, some of the improvements would be located in areas containing Alquist-Priolo Earthquake Fault Zones and other earthquake faults, including the Rose Canyon, Coronado, Sweetwater, and La Nacion Faults. In these areas, additional people or structures would be at risk of loss, injury, or death from earthquakes and other geologic hazards.

As shown in Figures 4.7-3 and 4.7-4, landslide susceptibility zones and areas prone to liquefaction occur throughout the region. Some of these liquefaction- and landslide-susceptible areas are located in developed areas and areas that are forecasted to develop between 2036 and 2050 as a result of transportation network improvements; therefore, implementation of the proposed Plan would expose people and structures to the adverse effects of landslides and liquefaction.

As discussed above, existing federal, state, and local laws; regulations; and policies included in Section 4.7.2, "Regulatory Setting," would require improvements and projects to be reviewed by appropriate regulatory agencies prior to construction and would require each improvement or project to adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce impacts from geologic hazards. Adherence to existing laws and regulations would ensure that the proposed transportation network improvements would not expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction or seismically induced landslides. Therefore, the impact would be less than significant.

2050 Conclusion

Between 2036 and 2050, implementation of the proposed Plan would result in land use change and the construction of transportation network improvements that would expose a greater number of people and structures to impacts from seismic activity, including earthquakes, ground shaking, ground failure, and landslides. However, adherence to the laws, regulations, and polices included in Section 4.7.2, "Regulatory Setting," would ensure people and structures would not be exposed to substantial adverse effects. Therefore, this impact (GEO-1) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

GEO-2 LOCATE PROJECTS ON A GEOLOGIC UNIT OR SOIL THAT IS EXPANSIVE OR UNSTABLE, OR THAT WOULD BECOME UNSTABLE AS A RESULT OF THE PROJECT, AND POTENTIALLY RESULT IN ON- OR OFF-SITE LANDSLIDE, LATERAL SPREADING, SUBSIDENCE, LIQUEFACTION, OR COLLAPSE, CREATING SUBSTANTIAL DIRECT OR INDIRECT RISKS TO LIFE OR PROPERTY.

Analysis Methodology

This analysis identifies the location of forecasted regional growth and land use change or planned transportation network improvements in relation to geologic units and soils that are expansive or unstable or that would become unstable as a result of land development or a transportation network improvement. The analysis describes the risks associated with locating development projects and transportation network improvements on expansive or unstable geologic units or soils, including on site or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. The analysis next assesses the ability of specific requirements of existing laws and regulations (as described in Section 4.7-2, "Regulatory Setting") to minimize these risks. (Impact GEO-1 separately addresses unstable soils or geologic units resulting in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse because of earthquakes or seismic events.)

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Lateral spreading is the movement of sloping ground as a result of liquefaction. Areas become more prone to liquefaction and lateral spreading during a large earthquake event. Conditions favorable for lateral spreading are frequently found along streams and waterfronts or in loosely placed, saturated, sandy fill. Constructed facilities of most types are vulnerable to heavy damage by lateral spreading, including being pulled apart, buckling, or suffering severe structural damage. In addition, liquefaction can also cause slumping of embankments or tilting of retaining walls that may be associated with regional growth and land use change. Forecasted regional growth and land use change may be located on soils that are prone to lateral spreading and liquefaction.

As regional growth and land use changes occur, a growing population between 2022 and 2035 would demand additional water supply. Additional housing units would draw additional groundwater. As discussed in Section 4.18, "Water Supply," implementation of the proposed Plan would comply with the adopted groundwater management plans in the Plan area for sustainable groundwater management. However, future growth could occur on land overlying 23 groundwater basins and rural aquifers that were identified by the County of San Diego as having an insufficient level of storage and would have insufficient storage under the 2011 General Plan buildout conditions (Impact WS-2). Increased groundwater drawing in these basins could cause land subsidence, which can result in unstable soils or cause ground failure.

Much of the population growth projected between 2022 and 2035 would occur in or adjacent to areas with existing development. Although these areas may already have been tested for slope failure, even developed areas, particularly those on or near mountains, hills, or the coast, can experience slope failure. New development in areas prone to slope failure would be at a higher risk, particularly development located in coastal communities. Redevelopment of existing areas or new development would likely require grading or earthwork, which may increase the propensity for soils to become unstable and cause slope failure.

Development may occur in areas containing expansive soils, thereby increasing the risk to people and structures of the deterioration of infrastructure, structures, and pavements. If the moisture content or soil type differs at various locations under the foundation of a structure, localized or nonuniform movement may occur. This movement can cause damage to the foundation and building structural system, evidenced by cracking of the slab or foundation, cracking in the exterior or interior wall coverings (indicating movement of support framing), uneven floors, or misaligned doors and windows. Damage caused by expansive soils can be slow and long term and not attributable to any particular event. Development that occurs near the coast would be more susceptible to damage caused by expansive soils due to the presence of clayey soils. Any structure developed in the western part of the San Diego region may also be at risk for being sited on expansive soils.

Development associated with the proposed Plan would be required to adhere to existing laws and regulations, including the design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce geologic hazards, including those associated with lateral spreading, subsidence, unstable soils, slope failure, and expansive soils as described in Section 4.7.2, "Regulatory Setting." Specifically, the CBC addresses the design and construction of excavations, foundations, and other building elements to mitigate adverse soil conditions by requiring structures and buildings are built to withstand potential hazards associated with unstable or problematic soils. Compliance with the CBC would minimize risks associated with locating future development on unstable geologic units or soils.

Although slope failure may not be completely avoidable, site-specific analyses would reduce risks associated with development as a result of regional growth. Corrective measures, such as structural reinforcement and using engineered fill to replace unstable and expansive soils, would be applied to the design of individual future projects. All site designs would be reviewed and approved by the appropriate agencies.

The incorporated cities and county government within the region have, in their general plans, safety elements, which contain the requirements concerning the risks associated with expansive soils, landslides, subsidence, liquefaction, and other seismic and geologic hazards, as summarized in Table 4.7-3. Project-specific geotechnical investigations consistent with existing regulatory requirements would identify areas of damage and recommend geotechnical measures for long-term stability, minimizing the risks that regional growth and land use changes on geologic units or soils that are expansive or unstable would become unstable as a result of the proposed Plan, or result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Adherence to these laws, regulations, local plans, design standards, and practices would minimize risks to people and property. Therefore, the impact would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Some of these improvements may involve significant grading or earthwork, which increases the likelihood of encountering unstable geologic units and increases the propensity for slope failure. Additionally, some of the transportation improvements would be located in, on, or near hills, coastal areas, canyons, and other places with steep slopes or unstable soils. Specific transportation facilities that would be susceptible to hazards associated with slope failure or the development of which more likely to cause slope failure include those near the coast and improvements to highways that would involve grading or tunneling through hills or mountains. In addition, transportation network improvements in the western part of the San Diego region would have the potential to be sited on expansive soils.

Transportation network improvements planned between 2022 and 2035 that are located in the coastal areas of the region would be subject to lateral spreading and liquefaction, which can cause the slumping of embankments or tilting of retaining walls associated with transportation network improvements. In addition, liquefaction can cause the failure of highway and railroad embankments built over liquefiable soils. Transportation network improvements in areas prone to lateral spreading and liquefaction would be at risk of damage to pavement, misalignment of railroad tracks, or the failure of bridge piers or abutments.

Transportation network improvements planned between 2022 and 2035 that are located on sloped areas with exposed soil or in areas with soils that have high erosion potential may result in greater risk for the effects of slope failure or cause soils to become unstable. Soil erosion and slope failure could damage roadways and weaken bridge foundations, which would cause risks to people or structures in proximity to these improvements.

Improvements to the transportation network implemented between 2022 and 2035 may be located in areas with expansive soils, particularly if they are located near the coast. The wetting and drying of soils from water application during construction, landscape irrigation, water pipe leaks, and storm events can cause significant movement in expansive soils. Transportation network improvements constructed on or adjacent to expansive soils may suffer infrastructure damage, such as weakening or cracking or bridges, concrete platforms, and other facilities.

As discussed previously, existing federal, state, and local laws; regulations; and policies included in Section 4.7.2, "Regulatory Setting," would require improvements and projects to be reviewed by appropriate regulatory agencies prior to construction and would require each improvement and project to adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce impacts from geologic hazards, including unstable and expansive soils and slope failure. Adherence to grading and erosion regulations and seismic standards that include geologic investigations required by the Alquist-Priolo Earthquake Fault Zoning Act would reduce geologic hazards. Project-specific geotechnical investigations consistent with existing regulatory requirements would identify areas of damage and recommend geotechnical measures to ensure long-term stability, minimizing the risks that soils that are expansive or unstable would become unstable as a result of the proposed Plan, or result in on site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Therefore, the impact would be less than significant.

2035 Conclusion

Between 2022 and 2035, implementation of the proposed Plan would result in land use changes and the construction of transportation network improvements that would expose a greater number of structures to risks from unstable and expansive soils, including landslides, lateral spreading, subsidence, liquefaction, or collapse, or cause soils to become unstable. Adherence to the laws, regulations, and programs included in Section 4.7.2, "Regulatory Setting," and project-specific investigations following state and local standards and practices would minimize risks to people and property. Therefore, this impact (GEO-2) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the regional is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the city of Carlsbad, and the city of El Cajon. Approximately 78.8% of new housing units would be developed the City of San Diego (51.6%), Chula Vista (17.1%) and the unincorporated jurisdictions. Similarly, these same three jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050. Regional growth and land use change between 2036 and 2050 would result in increased housing units and employment opportunities in the region and population increase in Chula Vista.

As discussed above in the 2035 analysis, regional growth and land use change would result in the construction of new and redeveloped buildings that may be in areas with unstable soils or prone to slope failure and areas with expansive soils. Impacts would remain between 2036 and 2050 as development or redevelopment activities would

occur in coastal communities or near areas with canyons and hills. As mentioned above, slope failure may not be completely avoidable, but site-specific analyses would minimize risks associated with development in response to regional growth. Also, additional housing units would draw groundwater and could result in land subsidence.

All projects associated with regional growth would be required to adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce geologic hazards, including those associated with unstable soils, slope failure, and expansive soils. Regulatory agencies with oversight of development associated with the proposed Plan have developed regulations and engineering design specifications to consider and compensate for site-level geological and seismic conditions. Specifically, the Alquist-Priolo Earthquake Fault Zoning Act regulates development near active faults by prohibiting human occupancy structures within 50 feet of the tract of an active fault; the CBC regulates the design and construction of excavation, foundations, building frames, retaining walls, and other building elements to mitigate the effects of seismic shaking and adverse soil conditions; and local jurisdictions provide geologic and seismic hazards protection goals policies in the safety elements within their general plans to protect the community from geologic hazards.

Corrective measures, such as structural reinforcement and using engineered fill to replace unstable and expansive soils, would be applied to the design of individual future projects. The incorporated cities and county government within the region have safety elements in their general plans which contain the requirements concerning the risks associated with landslides, subsidence, liquefaction, and other seismic and geologic hazards, as summarized in Table 4.7-3. Adherence to grading and erosion regulations and seismic standards that include geologic investigations required by the Alquist-Priolo Earthquake Fault Zoning Act would reduce geologic hazards, as discussed above. All site designs would be reviewed and approved by the appropriate agencies.

Project-specific geotechnical investigations consistent with existing regulatory requirements would identify areas of damage and recommend geotechnical measures for long-term stability, minimizing the risks that regional growth and land use change on geologic units or soils that are expansive or unstable would become unstable as a result of the proposed Plan or result in on site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Adherence to these laws and regulations and project-specific investigations would minimize risks to people and property. The impact would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, transportation network improvements would occur in areas susceptible to slope failure and unstable soils, particularly improvements located in hilly or coastal areas. These improvements may be at a greater risk for effects of slope failure or cause greater risks to people or structures in proximity to these improvements. Specific transportation facilities prone to risks of slope failure or the development of which would be likely to cause slope failure include those in Downtown San Diego, improvements near the coast, and improvements to highways that would involve grading or tunneling through hills or mountains. In addition, transportation network improvements would be in areas with expansive soils, particularly improvements located near the coast.

As discussed above, existing federal, state, and local laws; regulations; and policies included in Section 4.7.2, "Regulatory Setting," would require improvements and projects to be reviewed by appropriate regulatory agencies prior to construction and would require each improvement and project to adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce impacts from geologic hazards related to unstable and expansive soils and slope failure. Project-specific geotechnical investigations consistent with existing regulatory requirements would identify areas of damage and recommend geotechnical

measures to ensure long-term stability, minimizing the risks that geologic units or soils that are expansive or unstable would not become unstable as a result of the proposed Plan, or result in on site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Therefore, the impact would be less than significant.

2050 Conclusion

Between 2036 and 2050, implementation of the proposed Plan would result in regional growth development and transportation network improvements that would be constructed on expansive soils, expose a greater number of structures to risks from unstable soils—including landslides, lateral spreading, subsidence, liquefaction, or collapse—or cause soils to become unstable. Adherence to the laws and regulations and programs included in Section 4.7.2, "Regulatory Setting," and project-specific investigations consistent with local and state standards and practices would minimize risks to people and property. Therefore, this impact (GEO-2) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

GEO-3 RESULT IN SUBSTANTIAL SOIL EROSION OR THE LOSS OF TOPSOIL.

Analysis Methodology

Some land use or transportation network improvement projects would require extensive cut-and-fill or grading and could result in manufactured slopes that become unstable over time and increase long-term erosion potential.

Unusually high volumes of storm water runoff can also cause slope failures, particularly in areas where native soils have a moderate to high erosion potential. In addition to soil erosion from long-term exposure to water, the analysis describes the routine soil erosion and loss of topsoil that may also result from construction activities (movement of soil or changes to drainage). This analysis discusses erosion and the loss of topsoil qualitatively in regard to regional growth and land use change or transportation network improvements.

The analysis assesses how adherence to state and local regulations and standards for the design and practice of grading, clearing, and filling of land would minimize impacts related to soil erosion and loss of topsoil.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Development associated with the proposed Plan would cause erosion due to a greater degree of exposed graded or disturbed surfaces, excavation, or stockpiling that would occur with development. This growth would mainly take place in areas of existing urban development, which may increase the susceptibility of soil erosion or loss of topsoil in erosion-prone areas, such as along the coast. New development may disturb soils in previously undisturbed areas. Increased development may also cause higher amounts of water runoff, which can cause or exacerbate erosion problems and slope failure. In addition, the potential for erosion is most common in beachside areas and coastal communities subject to wave action.

Slope instability or erosion problems in the San Diego region are primarily regulated through the CBC and the grading ordinances of local jurisdictions. The CBC requires special foundation engineering and investigation of soils on proposed development sites located in geologic hazard areas. Reports developed based on the findings of these investigations must demonstrate either that the hazard presented by the project will be eliminated or that there is no danger for the intended use. To minimize slide danger and erosion, a grading permit must be obtained for all major earth-moving projects. All local jurisdictions (county and cities) have grading ordinances designed in part to ensure that development in earthquake- or landslide-prone areas does not threaten human life or property. Many of the county's most slide-prone or erosion-prone areas occur along the coastal bluffs, which are regulated under the California Coastal Act and are within the jurisdiction of the California Coastal Commission (CCC). In addition to protecting unique recreational and natural resources, the CCC requires the inclusion of grading, drainage, and erosion-control plans with the submittal of a development application. The local geologic background and potential for geologic impacts are important components of local coastal programs under each coastal jurisdiction.

As discussed in Section 4.7.2, "Regulatory Setting," construction site storm water management is regulated by the Construction General Permit, which requires measures that reduce the effects of erosion. Under the Construction General Permit, permit applicants would be required to prepare a SWPPP, which identifies BMPs that must be implemented to reduce construction effects on receiving water quality based on pollutants. The BMPs are directed at implementing both sediment and erosion-control measures and other measures to control chemical contaminants.

Adherence to the CBC, coastal zone regulations, Construction General Permit requirements, and local grading and erosion-control ordinances would reduce the potential for substantial soil erosion or loss of topsoil. The impact would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Some of the transportation improvements included in the proposed Plan would be constructed on or in proximity to steep slopes and would increase the amount of impervious surfaces and the removal of additional vegetative cover. Some transportation or transit projects would require significant earthwork, including cuts into hillsides that can become unstable over time, increasing long-term erosion potential. Road cuts can expose soils to erosion over the life of the project, creating potential landslide and falling rock hazards. Engineered roadways can be undercut over time by storm water drainage and wind erosion. Some areas would be more susceptible to erosion than others due to the naturally occurring soils with higher erosion potential. Improvements to the transportation network implemented between 2022 and 2035 may cause or worsen soil erosion or loss of topsoil, particularly if those improvements require significant earthwork, such as below-grade transit line extensions or routes. Vibration from new or expanded highways or transit lines may also cause or exacerbate soil erosion along hillsides in canyons or coastal bluffs.

Improvements or projects associated with the proposed Plan would be reviewed by appropriate regulatory agencies prior to construction and would adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce soil erosion or loss of topsoil. Projects involving major ground-disturbing activities are subject to local grading and erosion control ordinances, which require implementation of erosion control measures during construction. Projects that result in more than 1 acre of

ground disturbance are subject to SWRCB's Construction General Permit, which require implantation of SWWP and BMPs to control sedimentation and erosion. Projects located within the jurisdiction of the CCC are required to apply for a coastal development permit, which require development of grading, drainage, and erosion control plans. Adherence to these regulations would reduce the potential for substantial soil erosion or loss of topsoil. For this reason, the impact would be less than significant.

2035 Conclusion

Between 2022 and 2035, implementation of the proposed Plan would result in land use changes and the construction of transportation network improvements, both of which would cause soil erosion or the loss of topsoil. However, adherence to the CBC design and construction standards and compliance with the Construction General Permit and other local ordinances would avoid or reduce soil erosion or loss of topsoil. Therefore, this impact (GEO-3) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the city of Carlsbad, and the city of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050.

Although the regional population is forecasted to decrease from 2036 to 2050, the housing units and employment are forecasted to increase during the same period. The region would result in similar types of development (e.g., housing, commercial, and industrial development) through 2050 as with the development through 2035 throughout the region (Figures 2-4 and 2-5). Given that similar types of development would occur, the risk of erosion and loss of topsoil associated with land use development between 2036 and 2050 would be similar to the risk associated with land use development occurring between 2022 and 2035. As stated in the 2035 analysis, the potential for erosion and loss of topsoil increases with human activity and development or redevelopment. Activities such as grading, excavation, stockpiling, boring, and cut-and-fill grading can increase erosion potential and loss of topsoil. Additionally, as described in the 2035 analysis, an increase in volume or velocity of storm water can increase erosion potential and loss of topsoil.

Similar to the discussion in the 2035 analysis, adherence to the CBC, coastal zone regulations, Construction General Permit requirements, and local grading and erosion-control ordinances would reduce the potential for substantial soil erosion or loss of topsoil. For this reason, the impact would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the discussion in the 2035 analysis, transportation network improvements would cause or worsen soil erosion or loss of topsoil, particularly if those improvements require significant earthwork, such as below-grade transit line extensions or routes. Vibration from new or expanded highways or transit lines may also cause or exacerbate soil erosion along hillsides in canyons or coastal bluffs. It is anticipated that transportation network

improvements would start between 2022 and 2035 and continue to be implemented between 2036 and 2050. Many significant earthwork (e.g., grading, excavation, and foundation building) would occur between 2022 and 2035. Other above-grade construction (roadways extension and bridge construction) would continue throughout 2050. Therefore, the greatest impacts from construction would likely occur by 2035.

Improvements or projects associated with the proposed Plan would be reviewed by appropriate regulatory agencies prior to construction and would adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce soil erosion or loss of topsoil. Adherence to these regulations would reduce the potential for substantial soil erosion or loss of topsoil. For this reason, the impact would be less than significant.

2050 Conclusion

Between 2036 and 2050, implementation of the proposed Plan would result in land use change and the construction of transportation network improvements, both of which would cause soil erosion or the loss of topsoil. Compliance with regulatory requirements and implementation of required design measures would ensure that regional growth and land use changes, as well as transportation network improvements and programs associated with the proposed Plan would avoid or reduce soil erosion or loss of topsoil. Therefore, this impact (GEO-3) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

GEO-4 HAVE SOILS INCAPABLE OF ADEQUATELY SUPPORTING THE USE OF SEPTIC TANKS OR ALTERNATIVE WASTEWATER DISPOSAL SYSTEMS WHERE SEWERS ARE NOT AVAILABLE FOR THE DISPOSAL OF WASTEWATER, POTENTIALLY CAUSING ADVERSE GROUNDWATER IMPACTS.

Analysis Methodology

The analysis identifies the general locations of forecasted regional growth and land use change under the proposed Plan that would occur in areas without sewer systems and that thus rely on OWTS. It includes a discussion of the relevant regulations, including county policies for permitting septic systems and their ability to minimize impacts on groundwater quality.

Transportation network improvements and programs would not affect septic systems or OWTS because facilities associated with transportation network improvements and programs would not use septic systems; therefore, they are not addressed further in the impact analysis.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to increase by 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035, are in the cities of San Diego (51%), Chula Vista (26%), and San Marcos (16%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

As discussed in Section 4.7.1, expansive soils occur throughout the region, but predominately in the coastal plains. Expansive soils can expand when wet and drink when dry. If the moisture content or soil type differs at various locations supporting a septic tank or alternative wastewater disposal system, localized or nonuniform movement

may occur. This movement can cause damage to the septic tank or alternative wastewater disposal system. Damaged septic tanks can leak harmful substances such as nitrates, pathogens, and other pollutants into groundwater, thereby causing adverse groundwater impacts. Therefore, expansive soils are unstable and not suitable for septic tanks or OWTS. Regional growth and land use change associated with implementation of the proposed Plan would occur throughout the region as shown in Figure 2-4. Therefore, future development could occur in areas containing expansive soils that are incapable of supporting the use of septic tanks or OWTS. Damage to septic tanks or OWTS caused by expansive soils can be slow and long term, and not attributable to any particular event. The issue of expansive soils, or soils incapable of adequately supporting septic tanks or OWTS, is not as common in the San Diego region as in other parts of the country. however, septic tanks or OWTS that occurs near the coast would be more susceptible to damage caused by expansive soils than eastern areas of the region, where the use of septic systems is more common.

The most common type of septic system found in the San Diego region consists of a septic tank connected to leach lines (County of San Diego 2025). A leach line consists of a trench, rock or other approved filter materials, such as rock-less charmers, a perforated pipe, filter protecting fabric or paper, and soil cover (County of San Diego 2025). Leach lines would allow wastewater from the septic systems to percolate and filter through soil and prevent contamination of groundwater sources. Areas with OWTS, rather than sewer connections, include the unincorporated communities of North Mountain, Ramona, Rainbow, San Dieguito, Spring Valley, Sweetwater, Valley Center, Alpine, El Cajon, Bonsall, Fallbrook, Central Mountain, North County Metro, Mountain Empire, Julian, Desert, and Crest/Dehesa. Although not coastal communities, these areas have the potential for the presence of expansive soils. The North County Metro area has potential expansive soils mapped in the northern part of the community, whereas Fallbrook and Spring Valley both have potential expansive soils throughout their boundaries. Valley Center has potential expansive soils throughout the community, and Ramona has a concentration of potential expansive soils in the heart of the community surrounding SR 67 (County of San Diego 2011b). Between 2022 and 2035, the population in the unincorporated area is forecasted to decrease from 513,170 to 500,460 (Table 4.14-2) while the housing units are forecasted to increase from 178,774 to 185,014 (Table 4.14-3). Therefore, forecasted housing growth in the unincorporated area between 2022 and 2035 would have the potential to be located in communities with soils incapable of supporting septic tanks or OWTS.

Areas with high groundwater levels can also cause unstable soils and may not be able to support the use of septic tanks or alternative wastewater disposal systems. However, high groundwater levels occur mainly in the coastal communities of the region, where reliance on these systems is not common. As summarized in Table 4.14-3, housing development would occur between 2022 and 2035 in the coastal cities of Carlsbad, Coronado, Del Mar, Escondido, Imperial Beach, National City, and Solana Beach. Housing development in these coastal cities would have the potential to install septic tanks or OWTS. Therefore, regional growth and land use change associated with the proposed Plan in this area would have the potential to occur on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.

Regional growth and land use change associated with the proposed Plan would be required to adhere to design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce adverse groundwater impacts associated with expansive soils, or soils incapable of adequately supporting the use of septic tanks and alternative wastewater disposal systems, as described in Section 4.7.2, "Regulatory Setting." Specifically, the CBC requires provisions to classify soils as expansive and measures to address expansive soils' potential impacts on structures, such as septic tanks. SWRCB Resolution No. 2012-0032 establishes siting, construction, performance requirements, corrective action requirements, monitoring requirements, and waste discharge requirements, which would ensure that septic tanks or OWTS would not affect groundwater or surface water to a degree that makes it unfit for drinking water or other uses. In addition, the San Diego County 2025 LAMP for OWTS, effective February 1, 2025, establishes an installation permitting process and prescribes standards to protect groundwater sources and surface water bodies from pollution through the proper siting, design installation, operation, and maintenance of individual new and replacement OWTS and other sanitation facilities.

Corrective measures would be applied to the design of individual future projects. All site designs would be reviewed and approved by the appropriate agencies and consistent with regulatory requirements, which would minimize risks

that new septic tanks or alternative wastewater disposal systems associated with regional growth and land use change would result in adverse groundwater impacts due to unsuitable soils. The impact would be less than significant.

2035 Conclusion

Some regional growth and land use change associated with the proposed Plan would occur on expansive or unstable soils incapable of supporting the use of septic tanks or alternative wastewater disposal systems; however, adherence to the laws and regulations included in Section 4.7.2, "Regulatory Setting," and described above would minimize the potential for adverse impacts on groundwater. Therefore, this impact (GEO-4) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the city of Carlsbad, and the city of El Cajon. Approximately 78.8% of new housing units would be developed in the cities of San Diego (51.6%), City of Chula Vista (17.1%), and the unincorporated jurisdictions. Similarly, these same three jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050.

The issue of expansive soils, or soils incapable of adequately supporting septic tanks or OWTS, is not as common in the San Diego region as in other parts of the country; however, development that occurs near the coast would be more susceptible to damage caused by expansive soils than eastern areas of the region, where the use of septic systems is more common. However, expansive soils are not confined to the coastal areas, as described in Section 4.7.1, "Existing Conditions." Areas with OWTS, rather than sewer connections, include the unincorporated communities of the county described above in the 2035 analysis. In certain parts of these unincorporated communities with forecasted housing unit growth between 2036 and 2050, development could occur on soils incapable of supporting septic tanks or OWTS.

Additionally, areas with high groundwater levels can also cause unstable soils and may not be able to support the use of septic tanks or alternative wastewater disposal systems. Because high groundwater levels occur mainly in the coastal communities of the region, where reliance on these systems is not common and where land use is not forecasted to change substantially between 2036 and 2050, regional growth and land use change associated with the proposed Plan in this area would not be likely to occur on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

As mentioned above in the 2035 analysis, all projects associated with regional growth and land use change under the proposed Plan would be required to adhere to design standards described in the CBC and standard design, grading, and construction practices to avoid or reduce adverse impacts on groundwater from expansive soils or soils incapable of supporting the use of septic tanks or OWTS. Regulatory agencies with oversight of regional growth and land use change associated with the proposed Plan have developed regulations and engineering design specifications to reduce risks from expansive soils.

Corrective measures would be applied to the design of individual future projects. All site designs would be reviewed and approved by the appropriate agencies, and consistency with regulatory requirements, minimizing the risks that new septic tanks or alternative wastewater disposal systems associated with regional growth and land use change would result in adverse groundwater impacts due to unsuitable soils. The impact would be less than significant.

2050 Conclusion

Between 2036 and 2050, some regional growth and land use change associated with the proposed Plan would occur on expansive or unstable soils incapable of supporting the use of septic tanks or alternative wastewater disposal systems; however, adherence to the laws and regulations included in Section 4.7.2, "Regulatory Setting"

and described above would minimize the potential for adverse impacts on groundwater. Therefore, this impact (GEO-4) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

GEO-5 DIRECTLY OR INDIRECTLY DESTROY A UNIQUE PALEONTOLOGICAL RESOURCE OR SITE OR UNIQUE GEOLOGICAL FEATURE.

Analysis Methodology

This section analyzes the potential for ground-disturbing construction activities associated with the implementation of the proposed Plan to impact unique paleontological resources and unique geologic features. For this analysis, implementation of the proposed Plan would result in a significant impact if it would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Paleontological resources (i.e., fossil remains) are known to occur within the coastal plain, the desert, and alluvial deposits and other mountain formations (Table 4.7-1). Fossils are limited, nonrenewable resources and the loss of a single unique paleontological resource or site may result in the permanent unavailability of the resource and associated data to scientific research and education. Unique geologic features are not common in San Diego County (County of San Diego 2007). Those that are present (see Table 4.7-2) are primarily located in the eastern portion of San Diego County; however, there are some in the western portion of the County as well. Many of the unique geologic features are on a larger scale than is typical for paleontological resources, such as the full extent of a geologic unit in a region (e.g., the San Onofre Breccia in the San Onofre Hills). Depending on the nature of the unique geologic feature, preservation of the entirety of the feature is not necessarily needed as long as examples remain represented. Therefore, analyzing impacts on unique geologic features includes determining if a project, as designed, will materially impair the feature by destroying or altering those physical characteristics that convey the uniqueness of the resource.

Construction activities associated with both forecasted regional growth and land use change and planned transportation network improvements (deep excavation, trenching, tunneling, blasting, chiseling rock formations, altered hydrologic flow, vibration, or erosion) in previously undisturbed areas would have the highest likelihood for destroying unique paleontological resources and unique geologic features. This analysis compares areas identified for regional growth and land use change or transportation network improvements (Figures 2-4, 2-5, 2-7, 2-10, 2-13; Tables 2-1, 4.14-2, 4.14-3) with areas mapped or described as having paleontological sensitivity (Table 4.7-1; County of San Diego 2009; City of San Diego 2007, 2024a) and the locations of unique geologic features (Table 4.7-2; County of San Diego 1975) to assess the potential impacts on these resources.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. As described in Section 4.7.1 and Table 4.7-1, geologic formations with moderate to high paleontological resource potential are present throughout the San Diego region, but particularly within the Coastal Plain Region, which is forecasted to have the highest proportion of regional population and housing unit increases from 2022 to 2035.

Excavation and grading activities associated with new development and redevelopment of the areas included in the proposed Plan, including the cities of San Diego, San Marcos, and Chula Vista and unincorporated communities, like Lakeside, North County Metro, and Otay, may result in impacts on unique paleontological resources and unique geologic features. Ground-disturbing activities in high- or moderate-sensitivity fossil-bearing geologic formations, such as those listed in Table 4.7-1, have the potential to damage or destroy unique paleontological resources that may be present below the ground surface.

The majority of unique geologic features described in Table 4.7-2 are located in the eastern portions of the region in areas that are not forecasted to change significantly between 2022 and 2035. Additionally, many of the unique geologic features are located in canyons, riverbanks, or other areas where construction would be infeasible or difficult. The policies and ordinances of local jurisdictions typically restrict construction on steep slopes to preserve hillsides and reduce hazards (e.g., City of San Diego Municipal Code Chapter 14, Article 3, Division 1 and City of San Marcos Policy COS-3.2). Therefore, the majority of identified unique geologic features would not be directly impacted from regional development associated with the proposed Plan land use pattern.

However, some of the identified unique geologic features listed in Table 4.7-2 are located in areas that would experience increased regional growth and land use change under the proposed Plan. Communities such as Mission Valley contain unique geologic features and are forecast to increase in population and housing unit densities between 2022 and 2035. These geologic features may experience direct impacts from construction associated with increased development, including impacts caused by changes to hydrology and water runoff. Features sensitive to the effects of erosion, such as geologically unique valley walls, may be impacted by runoff or vibration from construction activities.

Any future development projects implementing the proposed Plan, including those within areas with high sensitivity, would be required to adhere to the regulations and policies discussed in Section 4.7.2, "Regulatory Setting" (e.g., PRC Sections 5097 and 30244, City of Chula Vista Policy E 10.1, City of San Marcos Policies COS 2.5 and COS 3.1, City of San Diego Policies CE-B.1 to CE-B.9). These regulations and policies require protection of paleontological resources, with measures such as paleontological monitoring during grading projects and reduction of erosion and runoff in areas where unique paleontological resources and unique geologic features are located, and in some cases limiting development in those areas. These requirements would help reduce impacts on unique paleontological resources and unique geologic resources through avoidance and implementation of BMPs. However, because these requirements are not uniformly strict or enforceable, these measures do not guarantee reduced significant impacts for all future development projects. Therefore, impacts on unique paleontological resources and unique geologic features are considered significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Ground disturbances associated with the construction of transportation network improvements and programs would occur within geologic formations of moderate to high paleontological resource potential and areas containing unique geologic features during the 2022 to 2035 timeframe, including projects such as the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Realignment. Ground disturbance associated with roadway improvements, bridge replacements, new rail tracks, track reconfigurations, grade separations; and construction of facilities, such as commuter rail maintenance facilities, can directly impact unique paleontological resources in areas with high or moderate paleontological resource sensitivity, and can directly and permanently alter unique

geologic features, particularly in canyons, on coastlines, and on mountain passes. These direct impacts occur as a result of the physical destruction and alteration of the resources and features by construction equipment during grading, excavation, trenching, boring, pile driving, and tunneling activities. Construction and operation of these transportation network improvements would also produce vibration and contribute to the effects of erosion, which could indirectly impact unique paleontological resources and unique geologic features.

Upon implementation of the transportation network improvements and programs included in the proposed Plan, both unique paleontological resources and unique geologic features would likely be encountered. As discussed above, existing federal, state, and local laws; regulations; and programs included in Section 4.7.2 would help reduce impacts on unique paleontological resources and unique geologic features, but because these requirements are not uniformly strict or enforceable, these measures do not ensure less than significant impacts for future projects. Therefore, impacts on unique paleontological resources and unique geologic features are considered significant.

2035 Conclusion

Direct impacts to paleontological resources and unique geologic features would occur as a result of the physical destruction and alteration of the resources and features by construction equipment during ground disturbing activities such as grading, excavation, trenching, boring, pile driving, and tunneling activities. Indirect impacts to paleontological resources and unique geologic features would occur as a result of increased erosion effects that expose unique paleontological resources to destruction through mechanical and chemical weathering and destroy or alter the physical characteristics of unique geologic features. Therefore, implementation of the proposed Plan would result in regional growth and land use change as well as transportation network improvements and programs that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Therefore, this impact (GEO-5) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As discussed in the 2035 analysis above, geologic formations with moderate to high paleontological resource potential are present throughout the San Diego region, particularly within the Coastal Plain Region, which is forecasted to have the highest proportion of regional population and housing unit increases from 2036 to 2050. As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions.

Excavation and grading activities associated with new development and redevelopment of the areas included in the proposed Plan, including the cities of San Diego, and Chula Vista, may result in impacts on unique paleontological resources and unique geologic features. Ground-disturbing activities in high- or moderate-sensitivity fossil-bearing geologic formations, such as those listed in Table 4.7-1, have the potential to damage or destroy unique paleontological resources that may be present below the ground surface.

Although the regional population is forecasted to decrease from 2036 to 2050, the housing units and employment are forecasted to increase during the same period. The region would result in similar types of development (e.g., housing, commercial, and industrial development) through 2050 as with the development through 2035 throughout the region (Figures 2-4 and 2-5). Given that similar types of development would occur, the types of activities that would result in significant impacts on unique paleontological resources and unique geologic features (e.g., excavation and grading) between 2036 and 2050 would be similar to the impacts associated with land use development occurring between 2022 and 2035. In addition, with more construction planned within previously unearthed areas, or with an increase in the likelihood of impacts from erosion or changes to hydrology, the potential to physically destroy or alter unique paleontological resources and unique geologic features increases.

As discussed in the 2035 analysis, existing federal, state, and local laws; regulations; and programs included in Section 4.7.2 (e.g., PRC Sections 5097 and 30244, City of Chula Vista Policy E 10.1, City of San Diego Policies CE-B.1 to CE-B.9) would help reduce impacts on unique paleontological resources and unique geologic features, including in areas with high sensitivity. However, because these requirements are not uniformly strict or enforceable, these measures do not guarantee reduced significant impacts for all future projects. Therefore, impacts on unique paleontological resources and unique geologic features are considered significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

It is anticipated that transportation network improvements would start between 2022 and 2035 and continue to be implemented between 2036 and 2050. Many significant earthwork activities (e.g., grading, excavation, and foundation building) would occur between 2022 and 2035. Other above-grade construction (roadways extension and bridge construction) would continue throughout 2050. Therefore, the greatest impacts from construction would likely occur by 2035. However, ground disturbances associated with the construction of transportation network improvements and programs, such as shoulder widening and rail construction projects, would still occur within geologic formations of moderate to high paleontological resource potential and areas containing unique geologic features during the 2036 to 2050 timeframe. Other unique paleontological resources or unique geologic features could also be destroyed or altered by runoff or erosion.

As discussed in the 2035 analysis, existing federal, state, and local laws; regulations; and programs included in Section 4.7.2 would help reduce impacts on unique paleontological resources and unique geologic features, but because these requirements are not uniformly strict or enforceable, these measures do not guarantee reduced significant impacts for all future projects. Therefore, impacts on unique paleontological resources and unique geologic features are considered significant.

2050 Conclusion

Direct impacts to paleontological resources and unique geologic features would occur as a result of the physical destruction and alteration of the resources and features by construction equipment during ground disturbing activities such as grading, excavation, trenching, boring, pile driving, and tunneling activities. Indirect impacts to paleontological resources and unique geologic features would occur as a result of increased erosion effects that expose unique paleontological resources to destruction through mechanical and chemical weathering and destroy or alter the physical characteristics of unique geologic features. Therefore, implementation of the proposed Plan would result in regional growth and land use change as well as transportation network improvements and programs that would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. This impact (GEO-5) in the year 2050 is significant.

MITIGATION MEASURES

GEO-5 DIRECTLY OR INDIRECTLY DESTROY A UNIQUE PALEONTOLOGICAL RESOURCE OR SITE OR UNIQUE GEOLOGICAL FEATURE.

2035, 2050

GEO-5a Identify the Potential for Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements.

During planning, design, and project-level CEQA review of transportation network improvements or development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, assess the potential for disturbing unique paleontological resources (e.g., fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small; and uncommon invertebrate, plant, and trace fossils) or affecting unique geological features (i.e., a geologic feature that is the best example of its kind locally or regionally, illustrates a geologic principle, provides a key piece of geologic information, is the "type locality" of a fossil or formation, or has high aesthetic appeal) in the project area. For project sites with a high probability of these resources being present, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, retain a qualified paleontologist to conduct a field survey and recommend subsequent steps to be taken during project construction to reduce or avoid impacts on these resources—as described in Mitigation Measure GEO-5b—in a report documenting the field survey, and with as-needed support from a registered geologist for unique geologic features not related to fossil localities or fossiliferous deposits.

GEO-5b Impacts on Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements.

If it is determined during planning, design, and project-level CEQA review that transportation network improvements or development projects would be located within an area that likely contains unique paleontological resources or unique geologic features (based on results of the work done in Mitigation Measure GEO-5a), SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, avoid or reduce impacts on these resources when feasible.

If impacts to paleontological resources cannot be avoided, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, retain a qualified paleontologist prior to construction to:

- Prepare a paleontological monitoring and mitigation plan, which will outline where monitoring should occur and procedures for discoveries, consistent with applicable regulations and guidelines. Such regulatory standards include the Antiquities Act of 1906, PRPA, and PRC requirements; regional and local policies of San Diego County and the cities of Carlsbad, Chula Vista, Coronado, Del Mar, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, and Vista; and guidelines of other transportation project sponsors, such as California Department of Transportation's *Standard Environmental Reference, Environmental Handbook: Volume 1: Guidance for Compliance,* "Chapter 8: Paleontology" (Caltrans 2025).
- Establish procedures for monitoring and the possible preconstruction salvage of exposed unique resources if fossil-bearing rocks or unique geologic features have the potential to be affected.
- Provide preconstruction coordination with contractors.
- Be on site to observe during grading operations and oversee original cutting in previously undisturbed areas of sensitive geologic formations, temporarily halt or redirect construction activities as appropriate to allow recovery of newly discovered fossil remains, recover scientifically valuable specimens or ensure avoidance of the unique paleontological resource, and oversee fossil salvage operations and reporting.

If impacts to unique geologic resources cannot be avoided, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should:

- Implement construction techniques or project features that minimize the potential for damage, if feasible.
- Establish procedures for the collection and preservation of important scientific data from the unique geologic feature prior to and, if warranted, during construction.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of regional growth and land use change as well as transportation network improvements and programs of the proposed Plan would result in significant impacts on a unique paleontological resource or unique geologic feature in 2035 and 2050, despite compliance with existing regulations. Implementation of mitigation measures GEO-5a and GEO-5b would protect these unique resources through the presence of a certified paleontologist; however, it cannot be guaranteed that these measures will reduce impacts to a less-than-significant level for projects under the proposed Plan. Therefore, this impact (GEO-5) is significant and unavoidable.

4.7.5 Cumulative Impacts Analysis

C-GEO-1 MAKE A CUMULATIVE CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON GEOLOGICAL AND SOIL RESOURCES

C-PALEO-1 MAKE A CUMULATIVE CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON PALEONTOLOGICAL RESOURCES

The area of geographic consideration for cumulative impacts is the Southern California and Northern Baja California region. While some geology and soil features can be very distinct to certain locations, geologic features can also have broad-reaching elements, such as faults and underlying bedrock formations. Geology, soils, and paleontological resources are not confined by jurisdictional boundaries. Thus, it is necessary to consider geologic resources, soils, and paleontological resources in Southern California and Northern Baja California as a whole region.

A projection approach for cumulative analysis of geologic, soils, and paleontological resources allows for an overarching discussion of regional and cross-border risks of seismic and geologic hazards, soil erosion or loss, and destruction of unique paleontological resources or unique geologic features associated with general patterns of regional urbanization, growth, and land use changes. A significant cumulative impact on geology, soils, and paleontological resources would occur if the proposed Plan's incremental effect would be cumulatively considerable when considered in combination with the effects on geology, soils, and paleontological resources resulting from implementation of approved regional planning documents. Significant cumulative impacts would occur if there were cumulative risks of exposure of people or structures to substantial seismic or geologic hazards, development on unstable geologic units, soil loss or erosion, or destruction of unique paleontological resources or unique geologic features in Southern California and Northern Baja California.

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan, the Southern California Association of Governments (SCAG) 2024-2050 RTP/SCS EIR (SCAG 2024) for the Southern California region, the County of San Diego 2011 General Plan Update EIR (County of San Diego 2011b), and the California-Baja California Border Master Plan (Caltrans and SIDURT 2021). There are generally no regional plans pertaining to such resources for the Northern Baja California region.

Impacts of the Proposed Plan

Regional growth and land use change and the transportation network improvements associated with the proposed Plan would expose additional people and structures to seismic hazards, such as strong seismic ground shaking, fault rupture, liquefaction, and earthquake-induced landslides because development would occur in hazard areas within the San Diego region.

Future land development and transportation network improvements under the proposed Plan also would place structures at risk of impacts caused by unstable soils, including expansive, collapsible, or unstable soils; landslides; and erosion or loss of topsoil. Future development on soils that incapable of adequately supporting the use of septic tanks or OWTS would cause adverse groundwater impacts. Compliance with existing regulations discussed in Section 4.7.2, "Regulatory Setting," would ensure that these impacts would not be significant in 2035 or 2050. Compliance with regulatory requirements and implementation of required design measures would ensure that regional growth and land use change as well as transportation network improvements and programs associated with the proposed Plan would not cause substantial soil erosion or the loss of topsoil, and the impact would be less than significant in 2035 and 2050 (Impacts GEO-1 through GEO-4).

Areas throughout the region have distinct geologic rock formations with known paleontological sensitivity and areas with unique geologic features. Ground-disturbing activities, such as construction associated with development, redevelopment, and transportation network improvements, in some locations would directly or indirectly destroy a unique paleontological resource or site or unique geological feature. Existing federal, state, and local laws; regulations; and policies included in Section 4.7.2, "Regulatory Setting," would help reduce impacts on paleontological resources and unique geological resources, but they may not keep impacts from being significant. Therefore, impacts on paleontological resources and unique geologic features would be significant in 2035 and 2050 (Impact PALEO-1).

Impacts of Related Projects

Projects planned in the Southern California region, such as the Navy OTC Revitalization Project, San Diego International Airport (SDIA) Airport Development Plan, High-Speed Train (HST), Midway Rising Specific Plan, and City of San Diego Pure Water North City, would involve ground-disturbing activities that could result in impacts related to destruction or alteration of paleontological resources or unique geologic features. Other land development and infrastructure projects throughout the region, such as transportation infrastructure, energy generation and transmission corridors, and commercial and residential land development would also result in impacts if these projects occur in areas containing significant paleontological resources or unique geologic features.

For example, the HST project in the San Diego region would result in construction of track, bridges and elevated guideways, stations, and other features that may result in destruction or alteration of paleontological resources (HSRA 2005). The EIR/EIS prepared for the HST project determined that the project would result in significant cumulative impacts on paleontological resources. The EIR/EIS also determined that the project would result in a considerable contribution to the cumulative impact to geology and soils related to slope stability in areas susceptible to slope failure and the contributions to the cumulative impacts related to major geologic hazards such as major fault crossings, oil fields, and landslide areas, will be avoided through implementation of mitigation measures. The EIR for the SDIA Airport Development Plan did not identify significant impacts to paleontological resources (SDCRAA 2020). The SDIA Airport Development Plan, in combination with cumulative projects, would result in a less than significant impact related to geologic hazards such as ground rupture, ground acceleration, liquefaction, and settlements (SDCRAA 2020). The Navy OTC Revitalization Project would also not result in cumulatively considerable impacts related to paleontological resources and geologic hazards such as landslides, liquefaction, and soil stability characteristics (U.S. Department of the Navy 2021). The City of San Diego Pure Water North City Project concluded that impacts on paleontological resources and geology and soils would be less than significant with the implementation of mitigation measures (City of San Diego 2018). Impacts would similarly be cumulatively considerable, if these projects occur in proximity to one another within the same paleontologically sensitive geologic units or unique geologic feature.

Impacts of Projections in Adopted Plans

The EIR prepared for the SCAG 2024-2050 RTP/SCS analyzed impacts on the SCAG region up to 2050 and identified significant and unavoidable impacts related to implementation of that plan due to substantial soil erosion and loss of topsoil and the destruction of a unique paleontological resource or site or unique geologic feature. The EIR also found that the 2024-2050 SCAG RTP/SCS would contribute to a cumulatively considerable impact related to the geology, soils, and paleontological resources (SCAG 2024). The EIR prepared for the County of San Diego 2011 General Plan Update found that implementation of the updated General Plan would not result

in significant direct or cumulative impacts associated with the exposure to seismic-related hazards, soil erosion or topsoil loss, soil stability, or expansive soils; and with mitigation, the General Plan Update would result in less-than-significant direct or cumulative impacts on paleontological resources (County of San Diego 2011b).

Geology and Soils

Adopted plans for local jurisdictions in Southern California and Northern Baja California would support the construction of new development and redevelopment through policy changes, general plan updates, and zoning amendments that encourage and facilitate population growth and land use changes. Due to the seismically active nature of the Southern California and Northern Baja California region, these development projects would subject additional people and structures to ground shaking, fault rupture, liquefaction, and earthquake-induced landslides. Projects would also be susceptible to impacts caused by unstable soils, including expansive, collapsible, or unstable soils; and landsliding. The severity of these impacts would be determined by geographic location, soil type, and construction requirements, such as grading and excavation. Development associated with the implementation of regional planning documents in California would be required to adhere to the design standards described in the CBC and the Uniform Building Code (UBC), which regulate the design and construction of buildings and structures and effectively reduce the effects of seismic activity and geologic hazards at the project level.

Paleontological Resources

The California-Baja California Border Master Plan does not provide analysis of impacts on paleontological resources; however, projects included in the Master Plan could have adverse impacts on paleontological resources due to ground disturbance necessary for construction of infrastructure.

Cumulative Impacts and Impact Conclusions

2035

A significant cumulative impact in the year 2035 would result if the proposed Plan's incremental effect would be cumulatively considerable when considered along with the effects from adopted plans and cumulative projects within the Southern California and Norther Baja California region.

Geology and Soils

As described above, implementation of the regional growth and land use change and transportation network improvements associated with the proposed Plan would expose additional people and structures to seismic hazards, such as ground shaking, fault rupture, liquefaction, and earthquake-induced landslides, as development occurs in hazard areas within the San Diego region. Future development would also place structures at risk to impacts caused by unstable soils, including expansive, collapsible, or unstable soils; landsliding; and erosion or loss of topsoil. Whether from the proposed Plan or from cumulative projects or development associated with other approved plans, such as the SCAG 2024-2050 RTP/SCS, impacts would generally be confined to a specific project area, rather than result in an aggregated cumulative effect over the Southern California and Northern Baja California region. All development and infrastructure projects in the state of California would be required to adhere to the design standards described in the CBC and the UBC, which regulate the design and construction of buildings and structures and substantially reduce the effects of seismic activity and other geologic hazards at the project level, as described in Section 4.7.4 "Environmental Impacts and Mitigation Measures." Development of septic tanks in the region would be required to comply with standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce adverse groundwater impacts associated with expansive soils, or soils incapable of adequately supporting the use of septic tanks and alternative wastewater disposal systems, as described in Section 4.7.2, "Regulatory Setting." Therefore, cumulative impacts related to geologic and seismic hazards or unstable soils would not be significant, and the proposed Plan would not result in cumulatively considerable impacts related to geologic and seismic hazards or unstable soils.

Paleontological Resources

As described above, any future development projects implementing the proposed Plan would be required to adhere to the regulations and policies discussed in Section 4.7.2, "Regulatory Setting"; however, these measures

do not guarantee reduced significant impacts for all future development projects. The proposed Plan's incremental impacts on unique paleontological resources and unique geologic features are significant. Implementation of the proposed Plan combined with other regional plans and cumulative projects in the Southern California and Northern Baja California region would result in a significant cumulative impact associated with paleontological resources and unique geological features from extensive grading, excavation, or other ground-disturbing activities. Development would be regulated by state and local laws and regulations, including CEQA and local jurisdictions' grading ordinances. However, cumulative growth and development located in Mexico would not be subject to compliance with such regulations. Additionally, the loss of paleontological resources or unique geological features on a regional level would not be adequately avoided or reduced through methods specified in these regulations because regulatory requirements are not uniformly strict or enforceable. According to the above analysis, cumulative impacts on paleontological resources and unique geological features would be significant. Because cumulative paleontological resource impacts throughout the Southern California and Northern Baja California region would be significant and because the proposed Plan's incremental impacts are significant, the proposed Plan's incremental paleontological resource and unique geological feature impacts are cumulatively considerable and therefore significant (Impact C-PALEO-1).

2050

A significant cumulative impact in the year 2050 would result if the proposed Plan's incremental effect would be cumulatively considerable when considered along with the effects from adopted plans and cumulative projects within the Southern California and Norther Baja California region.

Geology and Soils

By 2050, transportation and development projects associated with the proposed Plan and other development in Southern California and Northern Baja California region associated with cumulative projects and other regional plans would expose additional people and structures to geologic and seismic hazards, such as ground shaking, fault rupture, liquefaction, and earthquake-induced landslides; would also place structures at risk to impacts caused by unstable soils, including expansive, collapsible, or unstable soils, and landsliding and would cause erosion or loss of topsoil. Similar to the 2035 analysis, all development and infrastructure projects in the state of California would be required to adhere to the design standards described in the CBC and the UBC, which regulate the design and construction buildings and structures and substantially reduce the effects of seismic activity and other geologic hazards at the project level, as described in Section 4.7.4 "Environmental Impacts and Mitigation Measures." Therefore, cumulative impacts related to geologic and seismic hazards or unstable soils would not be significant, and the proposed Plan would not result in cumulatively considerable impacts related to geologic and seismic hazards or unstable soils.

Paleontological Resources

As described in the 2035 analysis, cumulative impacts on paleontological resources and unique geological features would be significant because there would be cumulative adverse changes in the significance of those resources due to the proposed Plan, cumulative projects, and development located in Southern California and Northern Baja California region associated with other regional plans. Because the proposed Plan's impacts on paleontological resources and unique geological features are significant, they are also cumulatively considerable and significant in 2050 (Impact C-PALEO-1).

MITIGATION MEASURES

C-PALEO-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS ON PALEONTOLOGICAL RESOURCES

Mitigation measure GEO-5a calls for project implementation agencies to assess impacts on unique paleontological resources or unique geological features prior to construction of individual projects associated with the proposed Plan. If a project is determined to be located within an area likely to contain unique paleontological resource sensitivity or unique geologic features, implementation of mitigation measure GEO-5b calls for avoidance where

feasible or provide a qualified paleontologist to be stationed on site of any future development to monitor construction; identify valuable paleontological specimens, if any; and recover and report on any significant resources found at the site. Additionally, when avoidance of unique geologic features is not feasible, mitigation measure GEO-5b calls for the implementation of construction techniques and project features that minimize damage, and for the collection and preservation of scientific data associated with the unique geologic feature.

Implementation of mitigation measures GEO-5a and GEO-5b would protect these resources through the presence of a certified paleontologist and compliance with existing regulations; however, it cannot be guaranteed that these measures will reduce impacts to a less-than-significant level for all projects. Therefore, the proposed Plan's incremental contributions to cumulative paleontological and unique geologic feature impacts in years 2035 and 2050 would remain cumulatively considerable and significant post-mitigation.

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4.8 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

This section evaluates the greenhouse gas (GHG) emissions impacts of the proposed Plan.

4.8.1 Existing Conditions

GLOBAL CLIMATE CHANGE

The phenomenon known as the greenhouse effect keeps the atmosphere near the earth's surface warm enough for the successful habitation of humans and other life. Present in the earth's lower atmosphere, GHGs play a critical role in maintaining the earth's temperature. Sunlight—including infrared, visible, and ultraviolet radiation—passes through the atmosphere. Some of the sunlight striking the earth is absorbed and converted to heat, which warms the surface. The surface emits infrared radiation to the atmosphere, where some of it is absorbed by GHGs and re-emitted toward the surface; some of the heat is not trapped by GHGs and escapes into space. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and amplifying the warming of the earth (IPCC 2013).

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution. According to the Intergovernmental Panel on Climate Change (IPCC), human influence has warmed the climate at a rate that is unprecedented in at least the last 2,000 years (IPCC 2022). In addition, the IPCC reported with high confidence that in 2019 carbon dioxide (CO_2) concentrations were higher than at any time in at least 2 million years, and reported with very high confidence that 2019 concentrations of methane (CH_4) and nitrous oxide (N_2O) were higher than at any time in at least 800,000 years (IPCC 2023a). Rising atmospheric concentrations of GHGs in excess of natural levels enhance the greenhouse effect, which contributes to global warming of the earth's lower atmosphere. This warming induces large-scale changes in ocean circulation patterns, precipitation patterns, global ice cover, biological distributions, and other changes to the earth's system that are collectively referred to as climate change. The scale of recent changes across the climate system as a whole and the present state of many aspects of the climate system are unprecedented over many centuries to many thousands of years (IPCC 2023a). IPCC also reports that many changes in the climate system become larger in direct relation to increasing global warming, including increases in the frequency and intensity of extreme heat events, marine heatwaves, and heavy precipitation, agricultural and ecological droughts in some regions, and proportion of intense tropical cyclones, as well as reductions in Arctic sea ice, snow cover, and permafrost (IPCC 2023a). In addition, low-likelihood outcomes, such as ice sheet collapse, abrupt ocean circulation changes, some compound extreme events, and warming substantially greater than the assessed very likely range of future warming cannot be ruled out (IPCC 2023a).

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs). Criteria air pollutants and TACs occur locally or regionally, and local concentrations respond to locally implemented control measures. However, the long atmospheric lifetimes of GHGs allow them to be transported great distances from the original emissions source. GHGs and global climate change therefore represent cumulative impacts; that is, GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change.

PRINCIPAL GREENHOUSE GASES

As defined in Section 15364.5 of the California Environmental Quality Act Guidelines (CEQA Guidelines) (Title 14, Division 6, Chapter 3 of the California Code of Regulations [CCR]), GHGs include the following gases: CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorinated carbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (humanmade) sources. The primary GHGs associated with implementation of the proposed Plan are CO_2, CH_4, and N_2O. Minor amounts of HFCs, which are considered high global warming potential (GWP) GHGs,

may also be generated by leakages from air conditioners and refrigerators. The principal characteristics of these pollutants are discussed in this section.

Methods have been set forth to describe emissions of GHGs in terms of a single gas equivalent to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in the IPCC reference documents. IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalent (CO_2e), which compares the gas in question to that of the same mass of CO_2 (which has a GWP of 1 by definition) (IPCC 2023b).

This EIR calculates CO_2e using the same GWP values that the California Air Resources Board (CARB) uses to prepare the state's annual statewide GHG emissions inventory, including the most recent statewide inventory completed in 2022. CARB uses GWP values from the IPCC Fourth Assessment Report (AR4) as shown in Table 4.8-1 (CARB 2024a). The GWP values are considered over a 100-year timeframe.

Carbon Dioxide

CO_2 is the most abundant anthropogenic GHG and accounts for more than 75% of all GHG emissions caused by humans. Its long atmospheric lifetime ensures that atmospheric concentrations of CO_2 will remain elevated for decades even after mitigation efforts to reduce GHG concentrations are promulgated (EPA 2025a). The primary sources of anthropogenic CO_2 in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO_2 is also removed from the atmosphere by photosynthetic organisms. Atmospheric CO_2 has increased from a preindustrial concentration of 280 parts per million (ppm) to a global monthly mean of 426 ppm (NOAA 2025a).

Methane

CH_4, the main component of natural gas, is the second most abundant GHG and has a GWP of 25 according to IPCC's AR4 (CARB 2024a). Sources of anthropogenic emissions of CH_4 include natural gas and petroleum systems, livestock cultivation, and waste decomposition in landfills (EPA 2025a). Certain land uses also function as both a source and sink for CH_4. For example, wetlands are a terrestrial source of CH_4, whereas undisturbed, aerobic soils act as a CH_4 sink (i.e., they remove CH_4 from the atmosphere). Atmospheric CH_4 has increased from a preindustrial concentration of 721 parts per billion (ppb) to a global monthly mean of 1,943 ppb as of October 2024 (NOAA 2025a).

Nitrous Oxide

N_2O is a powerful GHG with a GWP of 298 based on the AR4 (CARB 2024a). Anthropogenic sources of N_2O include agricultural processes (e.g., fertilizer application), nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. N_2O also is used in rocket engines, racecars, and as an aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also produce N_2O, which can be released to the atmosphere by diffusion. In the United States more than 70% of N_2O emissions are related to agricultural soil management practices, particularly fertilizer application. N_2O concentrations in the atmosphere have increased 18% from preindustrial levels of 270 ppb to a global monthly mean of 338 ppb as of October 2024 (NOAA 2025a).

Hydrofluorocarbons

HFCs are humanmade chemicals used in commercial, industrial, and consumer products and have high GWPs ranging from 12 (HFC-161) to 14,800 (HFC-23) (Greenhouse Gas Protocol 2024). HFCs are generally used as substitutes for ozone-depleting substances in automobile air conditioners and refrigerants. They were introduced as alternatives to ozone-depleting substances (ODS) in serving many industrial, commercial, and personal needs. HFCs are emitted as byproducts of industrial processes and are also used in manufacturing. More than three-quarters of HFC emissions in California come from the use of refrigerants in the commercial, industrial, residential, and transportation sectors (CARB 2025a). In 2022, high-GWP gases comprised 5.7% of California's emissions. This sector includes releases of ODS substitutes, sulfur hexafluoride emissions from the electricity transmission and distribution system, and emissions from semiconductor manufacturing. Emissions of ODS substitutes account for 68.5% of emissions from this sector and consist primarily of HFCs. In the transportation sector, HFCs from refrigeration and air-conditioning units represented about 2.6% of total on-road emissions in California (CARB 2024a).

Perfluorocarbons

PFCs are a group of humanmade chemicals composed of carbon and fluorine. PFCs do not harm the stratospheric ozone layer, but they are powerful GHGs (CARB 2025b), with GWPs ranging from 7,390 (PFC-14) to 12,200 (PFC-116) (Greenhouse Gas Protocol 2024). These chemicals (predominantly carbon tetrafluoride and hexafluoroethane) were introduced as alternatives, along with hydrofluorocarbons, to ODS. PFCs are emitted as byproducts of industrial processes and are also used in manufacturing.

Sulfur Hexafluoride

SF_6 is a humanmade chemical used as an electrical insulating fluid in power distribution equipment, in the magnesium industry, for semiconductor manufacturing, and as a tracer chemical for the study of oceanic and atmospheric processes. SF_6 is a powerful GHG with a GWP of 22,800 (Greenhouse Gas Protocol 2024). Because SF_6 is a humanmade chemical, it did not exist in the atmosphere before the 20th century.

GREENHOUSE GAS GLOBAL WARMING POTENTIALS

Table 4.8-1 lists AR4 GWP values and atmospheric lifetimes of CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6.

Table 4.8-1 Greenhouse Gas Global Warming Potentials

Greenhouse Gas Name	Greenhouse Gas Formula	Lifetime (years)[1]	Global Warming Potential (AR4)
Carbon dioxide	CO_2	Varies[2]	1
Methane	CH_4	12	25
Nitrous oxide	N_2O	114	298
Hydrofluorocarbons	HFCs	1–270	675–14,800
Perfluorocarbons	PFCs	2,600–50,000	7,390–12,200
Sulfur hexafluoride	SF_6	3,200	22,800

Note: AR4 = Intergovernmental Panel on Climate Change Fourth Assessment Report.

[1] Defined as the half-life of the gas.

[2] CO_2 cannot be represented with a single lifetime value because the gas is not destroyed over time but instead moves among different parts of the ocean–atmosphere–land system. Some amounts of CO_2 are absorbed from the atmosphere relatively quickly (for example, by the ocean), but some will remain in the atmosphere for thousands of years, due in part to the slow process by which carbon is transferred to ocean sediments. However, most lifetime estimates fall in the 100- to 300-year range.

Sources: CARB 2025a; CARB 2024a; Greenhouse Gas Protocol 2024.

GREENHOUSE GAS INVENTORIES

A GHG inventory is a quantification of all GHG emissions and sinks[1] in a selected physical or economic boundary. GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a particular building or person). Although some processes are difficult to evaluate, agencies and practitioners have developed tools to quantify emissions from many common sources.

Table 4.8-2 provides the results of the most recent global, national, statewide, and regional GHG inventories to contextualize regional emissions. Globally, the two highest emitting economic sectors of anthropogenic GHG emissions are electricity and heat production (34%); industry (24%); agriculture, forestry, and other land use (22%); transportation (15%); and building energy (6%) (IPCC 2022). At the federal level, transportation is the largest emission source (28%), followed by electric power (25%) (EPA 2024a).

[1] A GHG sink is a process, activity, or mechanism that removes a GHG from the atmosphere.

Table 4.8-2 Global, National, State, and San Diego Region Greenhouse Gas Emissions Inventories

Greenhouse Gas Emissions Inventory	Annual Emissions ($MMTCO_2e$)
2019 IPCC Global GHG Emissions Inventory[1]	59,000
2022 EPA National GHG Emissions Inventory[2, 3]	6,343
2022 CARB State GHG Emissions Inventory[2]	371.1
2022 San Diego Region GHG Emissions Inventory[2]	22.25

Notes: $MMTCO_2e$ = million metric tons of carbon dioxide equivalent; GHG = greenhouse gas; IPCC = Intergovernmental Panel on Climate Change; AR5 = Fifth Assessment Report; AR4 = Fourth Assessment Report; GWP = global warming potential.

[1] These values are estimated using IPCC's AR5 GWPs.

[2] These values are estimated using IPCC's AR4 GWPs.

[3] This total accounts for sequestration of carbon from the land sector.

Sources: IPCC 2022; EPA 2024a; CARB 2024a; Appendix E.

Within California, transportation is the largest emission source (39%), followed by industrial (23%) and electric power sources (in-state generation and imported) (16%) (CARB 2024a). In the transportation sector, the majority of emissions are from passenger vehicles (73%) and heavy-duty vehicles (20%), with smaller amounts from aviation (3%), ships and commercial boats (3%), and rail (1%) (CARB 2024a). Table 4.8-3 summarizes the statewide GHG inventory for California emissions by sector and percentage in 2022.

Table 4.8-3 Statewide Greenhouse Gas Emissions by Economic Sector (2022)

Sector	$MMTCO_2e$	Percent
Transportation	143.6	39
Industrial	83.8	23
Electricity generation (in state)	42.3	11
Electricity generation (imports)	17.5	5
Agriculture	29.8	8
Residential	30.7	8
Commercial	23.4	6

Notes: $MMTCO_2e$ = million metric tons of carbon dioxide equivalent. Totals may not equal the sum of the numbers because of independent rounding. $MMTCO_2e$ = million metric tons of carbon dioxide equivalent.

Source: CARB 2024a.

Appendix G, "2022 Greenhouse Gas Emissions Inventory and Projections for the San Diego Region," to the Regional Plan includes the methodology used to calculate emissions inventory and projections by emissions category. Within the San Diego region, on-road transportation—passenger cars and light-duty vehicles—is the largest emission source (35%), followed by electricity consumption (18%), natural gas consumption (14%), industrial uses (11%), on-road transportation including heavy-duty trucks and vehicles (10%), other fuels (4%), off-road transportation (3%), solid waste disposal (i.e., off-gassing of fugitive methane) (1%), aviation (1%), water treatment and distribution (1%), and other sectors representing1% of total emissions or less (Appendix E: "Appendix G of the Regional Plan; 2022 Greenhouse Gas Emissions Inventory and Projections for the San Diego Region"). Table 4.8-4 summarizes the 2022 GHG inventory for the San Diego region.

Table 4.8-4 San Diego Region Greenhouse Gas Emissions by Source (2022)

Source	$MMTCO_2e$	Percent
Passenger cars and light-duty vehicles	7.80	35
Electricity	4.03	18
Natural gas	3.01	14

Source	$MMTCO_2e$	Percent
Industrial	2.40	11
Heavy-duty trucks and other vehicles	2.28	10
Other fuels	0.86	4
Off-road vehicles	0.62	3
Solid waste	0.32	1
Aviation	0.31	1
Water	0.25	1
Agriculture	0.18	0.8
Marine vessels	0.11	0.5
Wastewater	0.05	0.2
Rail	0.03	0.1
Total	22.25	100

Notes: Totals may not equal the sum of the numbers because of independent rounding. $MMTCO_2e$ = million metric tons of carbon dioxide equivalent.

Source: Data modeled by EPIC in 2025 (included in Appendix E: "Appendix G of the Regional Plan; 2022 Greenhouse Gas Emissions Inventory and Projections for the San Diego Region")

ANTICIPATED EFFECTS OF CLIMATE CHANGE

IPCC predicts that the global mean surface temperature increase by the end of the 21st century (2081–2100), relative to 1986–2005, could range from 0.5 to 8.7°F. Additionally, IPCC projects that global mean sea-level rise will continue during the 21st century, very likely at a faster rate than observed from 1901 to 2015. By 2100, the rise will likely range from 18 to 33 inches (0.43 to 0.84 meters), relative to 1986–2005 (IPCC 2023b). According to *California's Fourth Climate Change Assessment*, with global GHGs reduced at a moderate rate, California will experience average daily high temperatures that are warmer than the historic average by 2.5 degrees Fahrenheit (°F) from 2006 to 2039, by 4.4°F from 2040 to 2069, and by 5.6°F from 2070 to 2100; and if GHG emissions continue at current rates, then California will experience average daily high temperatures that are warmer than the historic average by 2.7°F from 2006 to 2039, by 5.8°F from 2040 to 2069, and by 8.8°F from 2070 to 2100 (LCI [formerly known as OPR] et al. 2018).

Since its previous climate change assessment in 2012, California has experienced several of the most extreme natural events in its recorded history: a severe drought from 2012 to 2016, an almost nonexistent Sierra Nevada winter snowpack in 2014/2015, increasingly large and severe wildfires, and back-to-back years of the warmest average temperatures (LCI [formerly known as OPR] et al. 2018). According to California Natural Resource Agency's *Safeguarding California Plan: 2018 Update*, California experienced the driest 4-year statewide precipitation on record from 2012 through 2015; the warmest years on average in 2014, 2015, and 2016; and the smallest and second smallest Sierra snowpack on record in 2015 and 2014 (CNRA 2018). The year 2024 was the warmest year since global records began in 1850 at 1.29 degrees Celsius (°C, or 2.32°F) above the 20th century average of 13.9°C (57.0°F). This value is 0.10°C (0.18°F) more than the previous record set in 2023. The 10 warmest years in the 174-year record have all occurred during the last decade (2014–2024) (NOAA 2025b). In contrast, the northern Sierra Nevada experienced one of its wettest years on record during the 2016/2017 water year (CNRA 2018). The changes in precipitation exacerbate wildfires throughout California through a cycle of high vegetative growth coupled with dry, hot periods, which lowers the moisture content of fuel loads. As a result, the frequency, size, and devastation of forest fires have increased.

In November 2018, the Camp Fire destroyed the town of Paradise in Butte County and caused 85 fatalities, becoming the state's deadliest fire in recorded history, and the largest fires in the state's history have occurred in the 2018–2020 period. Most recently in January of 2025, the Los Angeles area fires burned an area of approximately 50,000 acres, killing more than two dozen people, destroying over 15,000 homes and businesses, and creating unhealthy air quality for millions of people (NOAA 2025c).

Moreover, changes in the intensity of precipitation events following wildfires can also result in devastating landslides. In January 2018, following the Thomas Fire, 0.5 inches of rain fell in 5 minutes in Santa Barbara causing destructive mudslides formed from the debris and loose soil left behind by the fire.

As temperatures increase, the amount of precipitation falling as rain rather than snow also increases, which could lead to increased flooding because water that would normally be held in the snowpack of the Sierra Nevada and the Cascade Range until spring would flow into the Central Valley during winter rainstorm events. This scenario would place more pressure on California's levee/flood control system (CNRA 2018). Furthermore, in the extreme scenario involving the rapid loss of the Antarctic ice sheet and the glaciers atop Greenland, the sea level along California's coastline is expected to rise 54 inches by 2100 if GHG emissions continue at current rates (LCI [formerly known as OPR] et al. 2018).

Temperature increases and changes to historical precipitation patterns will likely affect ecological productivity and stability. Existing habitats may migrate from climatic changes where possible, and those habitats and species that cannot retreat will be severely threatened. Altered climate conditions will also facilitate the movement of invasive species to new habitats, thus potentially outcompeting native species. Altered climatic conditions dramatically endanger the survival of arthropods (e.g., insects, spiders), which could have cascading effects throughout ecosystems (Lister and Garcia 2018). Conversely, a warming climate may support the populations of other insects, such as ticks and mosquitos, which transmit diseases harmful to human health, such as the Zika virus, West Nile virus, and Lyme disease (European Commission Joint Research Centre 2018).

Changes in temperature, precipitation patterns, extreme weather events, wildfires, and sea-level rise have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018; LCI [formerly known as OPR] et al. 2018). The effects of climate change will also have an indirect adverse impact on the economy as more severe natural disasters cause expensive physical damage to communities and the state.

4.8.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

There is no overarching federal law specifically related to climate change or the reduction of GHG emissions. Additionally, in March 2025, the current administration announced that EPA will undertake 31 actions, focusing primarily on reconsidering actions adopted by previous administrations, including numerous actions and regulations related to climate change and the reduction of GHG emissions. These include, but are not limited to, reconsideration of regulations on power plants, the Mandatory Reporting Rule, the Endangerment Finding, and fuel economy standards, among others. As of the writing of this Draft EIR, none of these regulations have been repealed or replaced with newly adopted regulations. Therefore, these regulations are discussed below.

Greenhouse Gas Regulations Under the Clean Air Act

Massachusetts v. Environmental Protection Agency

The U.S. Supreme Court ruled in *Massachusetts v. Environmental Protection Agency*, 127 S. Ct. 1438 (2007) that CO_2 and other GHGs are pollutants under the federal Clean Air Act (CAA) (42 USC Section 7401 et seq.), which EPA must regulate if it determines those GHGs pose an endangerment to public health or welfare.

Endangerment Finding and Cause or Contribute Finding

On December 7, 2009, the EPA administrator signed two distinct findings regarding GHGs under Section 202(a) (42 United States Code [USC] Section 7521).

- Endangerment Finding: The administrator found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. On July 29, 2025, EPA announced a proposal to rescind the

Endangerment Finding and repeal all GHG emission standards for light-duty, medium-duty, and heavy-duty vehicles and engines pursuant to CAA section 202(a). As of writing this EIR, EPA has not adopted this proposal (EPA 2025b). The proposed rule would remove GHG-related provisions from 40 CFR part 600 without affecting provisions related to CAFE standards and fuel economy labeling. In general, the proposed rule would remove MY 2012 and later GHG emission standards for passenger cars and light trucks, and MY 2014 and later GHG emission standards for medium-duty vehicles (EPA 2025b). These regulatory repeals would affect certain motor vehicle GHG emissions estimates using EMFAC2014 (used for the Impact GHG-2 analysis) and EMFAC2017 (used for the Impact GHG-1 analysis), which both assumed implementation of certain federal emissions standards proposed for repeal. As of the writing of this EIR, EPA has not adopted this proposal (EPA 2025b), and CARB has provided no guidance on how to address this issue in emissions modeling. Given these considerations, at the time of EIR preparation, EMFAC2014 and EMFAC2017 were the most appropriate methodology for the EIR to use to estimate GHG impacts under Impacts GHG-2 and GHG-1, respectively.

- Cause or Contribute Finding: The administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Mandatory Reporting Rule

EPA adopted a mandatory GHG reporting rule in September 2009. The rule requires suppliers of fossil fuels or entities that emit industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more of GHG emissions to submit annual reports to EPA beginning in 2011. Vehicle and engine manufacturers were required to begin reporting GHG emissions starting with model year 2011.

Fuel Economy and Emissions Standards for Passenger Cars and Light Trucks

The Corporate Average Fuel Economy Standards (CAFE) were first enacted in 1975 to improve the average fuel economy of cars and light duty trucks. In 2024, CAFE standards were finalized for model years (MYs) 2027 through 2031. The final rule establishes standards that require an industry-wide fleet average of approximately 49 miles per gallon (mpg) for passenger cars and light trucks. The final rule establishes standards that would require an industry-wide fleet average of approximately 50.4 mpg in MY 2031 for passenger cars and light trucks and an industry fleet-wide average for heavy-duty pickup trucks and vans (HDPUVs) of roughly 2.851 gallons per 100 miles in MY 2035. The final CAFE standards increase at a rate of 2% per year for passenger cars in MYs 2027–2031 and 2% per year for light trucks in model years 2029–2031. The final HDPUV fuel efficiency standards increase at a rate of 10% per year in MYs 2030–2032 and 8% per year in MYs 2033–2035 (NHTSA 2024).

Medium- and Heavy-Duty Vehicle Program

EPA and the National Highway Safety Administration (NHTSA) also set fuel efficiency and GHG standards for medium- and heavy-duty trucks. In 2011, EPA and NHTSA finalized a joint rule that established a national program to reduce GHG emissions and improve fuel economy for new medium- and heavy-duty engines and vehicles. This rule—called the Phase 1 standards—requires fuel efficiency standards for engines in model years 2014 through 2018 (40 CFR Parts 85, 86, 1036, 1037, 1065, 1066, and 1068). In 2016, EPA and NHTSA adopted the Phase 2 standards, which require fuel efficiency standards for engines in model years 2018 through 2027 (40 CFR Parts 9, 22, 85, 86, 600, 1033, 1036, 1037, 1039, 1042, 1043, 1065, 1066, and 1068) (EPA 2016).

Emission Standards for Nonroad Diesel Engines

EPA has established a series of increasingly strict emission standards for new nonroad diesel engines. Tier 1 standards were phased in on newly manufactured equipment from 1996 through 2000 (year of manufacture), depending on the engine horsepower category (40 CFR Part 89). Tier 2 standards were phased in on newly manufactured equipment from 2001 through 2006 (40 CFR Part 89). Tier 3 standards were phased in on newly manufactured equipment from 2006 through 2008 (40 CFR Part 89). Tier 4 standards, which require advanced emission control technology to attain them, were phased in between 2008 and 2015 (40 CFR Part 1039). These emissions standards apply to all nonroad (off-road) equipment that is anticipated to be used to construct elements of the proposed Plan (EPA 2004).

2024-2027 Climate Adaptation Plan

EPA's 2024-2027 Climate Adaptation Plan focuses on priority actions to address the impacts of climate change and help build a more climate-resilient nation. The plan allows EPA to deliver on its mission to protect human health and the environment, even as the climate changes. Through the plan, EPA will modernize its financial assistance programs to encourage climate-resilient investments throughout the United States. The intent of the plan is to offer financial resources to local jurisdictions, as well as tools, data, information, and technical support needed to assess climate risks and develop climate-resilience solutions based on geographic-specific climate threats. The plan measures potential exposure of extreme heat, extreme precipitation, sea-level rise, wildfire risk, and flooding at federally owned facilities under IPCC's Representative Concentration Pathways 4.5 (intermediate emissions scenario) and 8.5 (high emissions scenario) and identifies adaptation strategies to improve the resilience of identified federal facilities (EPA 2024b).

Phasedown of Hydrofluorocarbons

On October 11, 2024, EPA finalized a rule that establishes an emissions reduction and reclamation program for the management of certain HFCs and their substitutes (40 CFR Parts 84, 261, 262, 266, 270, and 271). Requirements include leak repair for refrigerant-containing appliances (e.g., refrigerators, chillers, mobile air conditioners), a standard for reclaimed HFC refrigerants (i.e., no more than 15% new HFCs by weight), and compliance deadlines for servicing applicants (i.e., workers who interact with appliances containing refrigerants) disposing of HFC devices to minimize release of HFCs during servicing, repair, disposal, and/or installation of equipment that require HFCs.

Public Law No. 119-15

On June 12, 2025, Public Law 119-15, enacting House Joint Resolution 87, was signed into law. The law utilized the Congressional Review Act to disapprove EPA's rule that had granted California a waiver to enforce stricter emissions standards for heavy-duty vehicles under the Clean Air Act. The disapproved rule included programs such as the Advanced Clean Trucks regulation and zero-emission requirements for airport shuttles. Passed under the Congressional Review Act, the law prevents EPA from implementing or reissuing the same or similar rules without new congressional authorization. This effectively blocks California, and other states that follow its standards, from enforcing these specific vehicle emission and warranty regulations. However, the implications of this federal law on the State's capability to enforce its independent heavy-duty vehicle emissions standards are uncertain at this time, as the California Attorney General filed a lawsuit challenging P.L. No. 119-15 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the heavy-duty vehicle regulations during the legal process. Notably, as discussed under the analysis of Project impacts in Section 4.8.4, "Environmental Impacts and Mitigation Measures," Impact GHG-1 uses EMFAC2017 and Impact GHG-2 uses EMFAC2014 to calculate mobile source emissions. These analyses do not account for California's stricter emissions standards for heavy-duty vehicles because these standards had not yet been adopted at the time the EMFAC2014 or EMFAC2017 methodologies were last updated, and thus were not factored into the modeling.

Public Law No. 119-16

Similarly on June 12, 2025, Public Law No. 119-16, enacting House Joint Resolution 88, became law. The law also relied on the Congressional Review Act to disapprove the EPA's December 2024 waiver under the CAA that allowed California to implement and enforce the Advanced Clean Cars II (ACC II) regulation. ACC II included a zero-emission vehicle (ZEV) mandate targeting 100% new light-duty ZEV sales by 2035. Again, the implications of this law on the State's capability to enforce its independent fuel economy standards are uncertain at this time, as the California Attorney General filed a lawsuit challenging P.L. No. 119-16 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the ACC II regulation during the legal process. Notably, as discussed under the analysis of Project impacts in Section 4.8.4, "Environmental Impacts and Mitigation Measures," Impact GHG-1 uses EMFAC2017 and Impact GHG-2 uses EMFAC2014 to calculate mobile source emissions estimates. These analyses do not account for ACC II because ACC II had not yet been adopted at the time the EMFAC2014 or EMFAC2017 methodologies were last updated, and thus were not factored into the modeling.

Public Law No. 119-17

Public Law 119–17, enacted on June 12, 2025, disapproves, under the Congressional Review Act, the EPA's rule titled "California State Motor Vehicle and Engine and Nonroad Engine Pollution Control Standards; The 'Omnibus' Low NO_X Regulation; Waiver of Preemption; Notice of Decision." The law disapproves the EPA's January 6, 2025, Low-NO_x rule that would have granted California a waiver to enforce stricter emissions standards for both on-road and non-road heavy-duty engines. Similar to the other CRA resolutions listed above targeting emissions waivers, this law prohibits the EPA from reissuing the same or substantially similar rule without new authorization from Congress. The law effectively blocks California, and any states following its standards, from implementing this omnibus Low-NO_X regulatory package. Again, the implications of this federal law on the State's capability to enforce its independent Low NO_X regulatory package are uncertain at this time, as the California Attorney General filed a lawsuit challenging P.L. No. 119-17 on June 12, 2025. Whether this action will be successful is unknown, as is the possibility that a federal judge will issue a stay to halt the implementation of the Low NO_X regulatory package during the legal process.

Notably, as discussed under the analysis of Project impacts in Section 4.8.4, "Environmental Impacts and Mitigation Measures," Impact GHG-1 uses EMFAC2017 and Impact GHG-2 uses EMFAC2014 to calculate mobile source emissions estimates. The EMFAC2014 analyses do not account for the Low NO_X rule because it had not yet been adopted at the time the EMFAC2014 methodology was last updated, and thus was not factored into the modeling. Although the EMFAC2017 post-processing adjustment factor assumes implementation of the Low NO_X rule, EIR mobile source emissions were calculated prior to the June 12, 2025 disapproval of the low NO_X rule, there is legal uncertainty about enforceability of the federal disapproval of these regulations, and CARB has provided no guidance on how to address this issue in EMFAC modeling at the time of EIR preparation. Given these considerations, at the time of EIR preparation, EMFAC2014 and EMFAC2017 were the most appropriate methodologies for the EIR to use to calculate mobile source emissions.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

The State of California has adopted several laws addressing various aspects of climate change, GHG mitigation, energy efficiency, and renewable energy. Much of this establishes a broad framework for the state's long-term GHG and energy reduction goals and climate change adaptation program. Governors have also issued several executive orders (EOs) related to the state's evolving climate change policy.

Notably, as discussed in Section 4.3, "Air Quality," the CAA allows California, and other states, to seek a waiver of preemption, which prohibits states from enacting emission standards for new motor vehicles. EPA must grant a waiver, however, before California's rules may be enforced. According to the CAA Section 209(b), "State Standards," EPA shall grant a waiver unless the EPA administrator finds that California:

- was arbitrary and capricious in its finding that its standards are, in the aggregate, at least as protective of public health and welfare as applicable federal standards;
- does not need such standards to meet compelling and extraordinary conditions; or
- such standards and accompanying enforcement procedures are not consistent with Section 202(a) of the CAA.

As of April 2025, CARB has rescinded its waiver requests for several regulations including the In-Use Locomotive Regulation, portions of the Advanced Clean Fleets regulation, and the Transportation Refrigeration Unit regulation. See Section 4.3.2 in Section 4.3, "Air Quality," for further details regarding these regulations and the status of their waiver requests. Also, as noted above, Congress has enacted Public Law No. 119-16 to rescind the State's waiver under the CAA to enforce the ACC II regulation (discussed in greater detail below). The implications of this action are uncertain due to pending legal action by the California Attorney General.

A summary of key laws, regulations, plans, and policies, relevant to the proposed Plan is provided below, organized by general categories.

Executive Orders

There are four overarching executive order (EOs) related to the state's GHG-reduction and climate change adaptation efforts. In general, EOs provide direction to state government agencies but do not place mandates on regional or local governments or the private sector.

- **EO S-03-05 (2005):** Established GHG-reduction targets for 2010 (2000 emission levels), 2020 (1990 emission levels), and 2050 (80% below 1990 levels).
- **EO S-30-15 (2015):** Established a GHG reduction target for 2030 (40% below 1990 levels).
- **EO B-55-18 (2018):** Established a new statewide goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." This EO directs CARB to ensure future climate change scoping plans (discussed below) identify and recommend measures to achieve the carbon neutrality goal.
- **EO N-19-19 (2019):** Among other things, this EO required the Department of Finance to create a climate investment framework and required the state transportation agency to align transportation spending with achieving objectives of the climate change scoping plan, and to reduce vehicle miles traveled (VMT) through strategic discretionary investments.
- **EO N-82-20 (2020):** Directs the California Natural Resources Agency, in consultation with other state agencies, to establish the California Biodiversity Collaborative, to bring together governmental partners, California Native American tribes, experts, business and community leaders, and other stakeholders from across the state to protect and restore the state's biodiversity. EO N-82-29 declares that the state's goal is to conserve at least 30% of California's land and coastal waters by 2030. To further this goal, the EO directed the California Resources Agency and other relevant state agencies, in consultation with the California Biodiversity Collaborative, to develop and report strategies to the governor no later than February 1, 2022.
- **EO N-27-25:** Issued following the federal government's revocation of California's EPA waivers under the CAA. The EO calls for direct investments in EV charging infrastructure, collaboration with other states to establish voluntary emissions standards, increase public sector adoption of EVs, and expand incentives for EV purchase within the state.

Legislative GHG-Reduction Targets

State law sets forth the following requirements for reducing statewide levels of GHG emissions by 2020, 2030, and 2045.

- **Assembly Bill (AB) 32, Health and Safety Code Section 38500 et seq.** AB 32 codified the 2020 reduction target of EO S-03-05 (i.e., reduce statewide GHG emissions to 1990 levels by 2020). AB 32 required CARB to develop a scoping plan that describes California's strategy for achieving the 2020 target and to update it every five years.
- **Senate Bill (SB) 32, Health and Safety Code Section 38566.** SB 32 codified the 2030 reduction target of EO B-30-15 (i.e., reduce statewide GHG emissions to 40% below 1990 levels by 2030). Adopted in tandem with SB 32, AB 197 of 2016 (Chapter 250, Statutes of 2016) required CARB, in implementing SB 32's 2030 GHG-reduction target, to (1) prioritize emissions reductions to consider the "social costs" of GHG emissions and (2) prioritize "direct emission reductions" at large stationary sources and at mobile sources. In 2017, CARB adopted a scoping plan that describes California's strategy for achieving the 2030 reduction target.
- **AB 1279, Health and Safety Code Section 38562.2**. On September 16, 2022, the California legislature enacted AB 1279, which codified stringent emissions targets for the state of achieving carbon neutrality no later than 2045 and negative emissions thereafter, and an 85% reduction in 1990 anthropogenic emissions level by 2045. (This superseded the previous GHG emissions-reduction target set forth by EO S-3-05.)

- **CEQA Guidelines Environmental Analysis Tiering for CEQA Qualified Climate Action Plans or Greenhouse Gas Reduction Plans** Section 15183.5(b) of the State CEQA Guidelines states that project-specific environmental documents can find that project-level GHG emissions would not be cumulatively considerable if the project complies with the requirements of a qualified GHG emissions reduction plan. To meet the requirements of State CEQA Guidelines Section 15183.5(b), a qualified GHG emissions reduction plan must do the following:

(1) Plan Elements. A plan for the reduction of greenhouse gas emissions should:

(A) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;

(B) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;

(C) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;

(D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;

(E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;

(F) Be adopted in a public process following environmental review.

Several of the climate action plans (CAPs) and greenhouse gas reduction plans (GHGRPs) evaluated within this analysis (Impact GHG-3) meet the requirements of a qualified GHG emissions reduction plan in accordance with Section 15183.5(b) of the State CEQA Guidelines. These plans include the jurisdiction's GHG emissions inventory, GHG emissions forecasts, and GHG emissions targets. These plans also provide specific GHG emission reduction strategies and actions that collectively achieve the emissions targets.

State Agency GHG-Reduction Plans and Strategies

CARB and other state agencies have adopted several plans and strategies to reduce statewide GHG emissions as described below.

- **AB 32 Scoping Plan.** The AB 32 Scoping Plan identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires CARB and other state agencies to develop and enforce regulations and other initiatives to reduce GHG emissions. Adopted in 2008, it comprises the state's roadmap for meeting AB 32's reduction target. Specifically, the scoping plan articulates a key role for local governments by recommending that they establish GHG emissions-reduction goals for both their municipal operations and the community that are consistent with those of the state (i.e., approximately 15% below current levels) (CARB 2008). The AB 32 Scoping Plan was updated in 2014.
- **2017 Scoping Plan.** The 2017 Scoping Plan represents the state's roadmap to achieving the 2030 GHG-reduction target of SB 32. Because energy is one of the state's largest contributors to GHG emissions, efforts to reduce energy-related emissions are a key component of the 2017 Scoping Plan. The actions outlined in the Scoping Plan Update also support California's efforts to build a state-of-the-art energy generation, supply, and distribution system that is clean, affordable, and reliable.
- **2022 Scoping Plan for Achieving Carbon Neutrality.** CARB adopted the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 16, 2022. The 2022 Scoping Plan traces the state's pathway to achieve its goals of carbon neutrality and an 85% reduction in emissions by 2045 relative to 1990 levels, as codified by AB 1279 in September 2022. These targets are in line with scientifically established levels to limit the rise in global temperature to no more than 2°C, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature

increase even further to 1.5°C (United Nations 2015). The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile-source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals. The 2022 Scoping Plan details a multitude of strategies for reducing GHG emissions in each of these sectors. Examples of statewide goals include achieving a per capita VMT reduction of at least 25% below 2019 levels by 2030 and 30% below 2019 levels by 2045 to reduce GHGs from the transportation sector; installing/retrofitting three million all-electric and electric-ready homes by 2030 and seven million by 2035 with six million heat pumps installed statewide by 2030 to reduce GHG emissions in the commercial and residential building sector; and using long-term planning processes to support grid reliability, expansion of renewable and zero-carbon resources, and infrastructure deployment to reduce energy sector GHG emissions. The 2022 Scoping Plan is the state's current scoping plan.

Table 4.8-5 summarizes the actions identified for the Scoping Plan Scenario which shows California's track to achieve the SB 32 GHG reduction target for 2030 and become carbon neutral no later than 2045. The tables cover actions related to anthropogenic sources of emissions as well as natural and working lands.

Table 4.8-5 2022 Scoping Plan Scenario Actions

Sector	Action	Statutes, Executive Orders, Other Direction, Outcome
GHG Emissions Reductions Relative to the Senate Bill (SB) 32 Target	40% below 1990 levels by 2030	SB 32: Reduce statewide GHG emissions. Assembly Bill (AB) 197: direct emissions reductions for sources covered by the AB 32 Inventory
Smart Growth / Vehicle Miles Traveled (VMT)	VMT per capita reduced 25% below 2019 levels by 2030, and 30% below 2019 levels by 2045	SB 375: Reduce demand for fossil transportation fuels and greenhouse gases (GHGs), and improve air quality. In response to Board direction and environmental justice (EJ) Advisory Committee recommendations
Light-duty Vehicle (LDV) Zero Emission Vehicles (ZEVs)	100% of LDV sales are ZEV by 2035	Executive order (EO) N-79-20: Reduce demand for fossil transportation fuels and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory 2035 target aligns with the EJ Advisory Committee recommendation.
Truck ZEVs[1]	100% of medium-duty (MDV)/HDV sales are ZEV by 2040 (AB 74 University of California Institute of Transportation Studies [ITS] report)	EO N-79-20: Reduce demand for fossil transportation fuels and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Aviation	20% of aviation fuel demand is met by electricity (batteries) or hydrogen (fuel cells) in 2045. Sustainable aviation fuel meets most or the rest of the aviation fuel demand that has not already transitioned to hydrogen or batteries.	Reduce demand for petroleum aviation fuel and reduce GHGs. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory In response to Governor Newsom's July 2022 letter to California Air Resources Board (CARB) Chair Liane Randolph
Ocean-going Vessels (OGV)	2020 OGV At-Berth regulation fully implemented, with most OGVs utilizing shore power by 2027. 25% of OGVs utilize hydrogen fuel cell electric technology by 2045.	Reduce demand for petroleum fuels and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Port Operations	100% of cargo handling equipment is zero-emission by 2037. 100% of drayage trucks are zero emission by 2035.	Executive Order N-79-20: Reduce demand for petroleum fuels and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory

Sector	Action	Statutes, Executive Orders, Other Direction, Outcome
Freight and Passenger Rail[2]	100% of passenger and other locomotive sales are ZEV by 2030. 100% of line haul locomotive sales are ZEV by 2035. Line haul and passenger rail rely primarily on hydrogen fuel cell technology, and others primarily utilize electricity.	Reduce demand for petroleum fuels and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Oil and Gas Extraction	Reduce oil and gas extraction operations in line with petroleum demand by 2045.	Reduce GHGs and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Petroleum Refining	Carbon capture and sequestration (CCS) on majority of operations by 2030, beginning in 2028 Production reduced in line with petroleum demand.	Reduce GHGs and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Electricity Generation	Sector GHG target of 38 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2030 and 30 $MMTCO_2e$ in 2035 20 gigawatts (GW) of offshore wind by 2045 Meet increased demand for electrification without new fossil gas-fired resources.	SB 350 and SB 100: Reduce GHGs and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory In response to Governor Newsom's July 2022 letter, Board direction, and EJ Advisory Committee recommendation
New Residential and Commercial Buildings	All electric appliances beginning 2026 (residential) and 2029 (commercial), contributing to 6 million heat pumps installed statewide by 2030	Reduce demand for fossil gas and GHGs, and improve ambient and indoor air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory In response to Governor Newsom's July 2022 letter
Existing Residential Buildings	80% of appliance sales are electric by 2030 and 100% of appliance sales are electric by 2035. Appliances are replaced at end of life such that by 2030 there are 3 million all-electric and electric-ready homes—and by 2035, 7 million homes—as well as contributing to 6 million heat pumps installed statewide by 2030.	Reduce demand for fossil gas and GHGs, and improve ambient and indoor air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory In response to Governor Newsom's July 2022 letter
Existing Commercial Buildings	80% of appliance sales are electric by 2030, and 100% of appliance sales are electric by 2045. Appliances are replaced at end of life, contributing to 6 million heat pumps installed statewide by 2030.	Reduce demand for fossil gas and GHGs, and improve ambient and indoor air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory In response to Governor Newsom's July 2022 letter
Food Products	7.5% of energy demand electrified directly and/or indirectly by 2030; 75% by 2045	Reduce demand for fossil gas and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Construction Equipment	25% of energy demand electrified by 2030 and 75% electrified by 2045	Reduce demand for fossil energy and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory

Sector	Action	Statutes, Executive Orders, Other Direction, Outcome
Chemicals and Allied Products; Pulp and Paper	Electrify 0% of boilers by 2030 and 100% of boilers by 2045. Hydrogen for 25% of process heat by 2035 and 100% by 2045 Electrify 100% of other energy demand by 2045.	Reduce demand for fossil energy and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Stone, Clay, Glass, and Cement	CCS on 40% of operations by 2035 and on all facilities by 2045 Process emissions reduced through alternative materials and CCS	SB 596: Reduce demand for fossil energy, process emissions, and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Other Industrial Manufacturing	0% energy demand electrified by 2030 and 50% by 2045	Reduce demand for fossil energy and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Combined Heat and Power	Facilities retire by 2040.	Reduce demand for fossil energy and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Agriculture Energy Use	25% energy demand electrified by 2030 and 75% by 2045	Reduce demand for fossil energy and GHGs, and improve air quality. AB 197: direct emissions reductions
Low Carbon Fuels for Transportation	Biomass supply is used to produce conventional and advanced biofuels, as well as hydrogen.	Reduce demand for petroleum fuel and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Low Carbon Fuels for Buildings and Industry	In 2030s biomethane blended in pipeline Renewable hydrogen blended in fossil gas pipeline at 7% energy (~20% by volume), ramping up between 2030 and 2040 In 2030s, dedicated hydrogen pipelines constructed to serve certain industrial clusters	Reduce demand for fossil energy and GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory
Non-combustion Methane Emissions	Increase landfill and dairy digester methane capture. Some alternative manure management deployed for smaller dairies Moderate adoption of enteric strategies by 2030 Divert 75% of organic waste from landfills by 2025. Oil and gas fugitive methane emissions reduced 50% by 2030 and further reductions as infrastructure components retire in line with reduced fossil gas demand	SB 1383: Reduce short-lived climate pollutants.
High GWP Potential Emissions	Low GWP refrigerants introduced as building electrification increases, mitigating HFC emissions	SB 1383: Reduce short-lived climate pollutants.

Sector	Action	Statutes, Executive Orders, Other Direction, Outcome
Natural and Working Lands (NWL)	Conserve 30% of the state's NWL and coastal waters by 2030. Implement near- and long-term actions to accelerate natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities—and in particular low-income, disadvantaged, and vulnerable communities.	EO N-82-20 and SB 27: CARB to include an NWL target in the Scoping Plan. AB 1757: Establish targets for carbon sequestration and nature-based climate solutions. SB 1386: NWL are an important strategy in meeting GHG reduction goals.
Forests and Shrublands	At least 2.3 million acres treated statewide annually in forests, shrublands/chaparral, and grasslands, comprised of regionally specific management strategies that include prescribed fire, thinning, harvesting, and other management actions. No land conversion of forests, shrublands/chaparral, or grasslands.	Restore health and resilience to overstocked forests and prevent carbon losses from severe wildfire, disease, and pests. Improve air quality and reduce health costs related to wildfire emissions. Improve water quantity and quality and improve rural economies. Provide forest biomass for resource utilization. EO B-52-18: CARB to increase the opportunity for using prescribed fire. AB 1504 (Skinner, Chapter 534, Statutes of 2010): CARB to recognize the role forests play in carbon sequestration and climate mitigation.
Grasslands	At least 2.3 million acres treated; includes increased management of grasslands interspersed in forests to reduce fuels surrounding communities using management strategies appropriate for grasslands. No land conversion of forests, shrublands/chaparral, or grasslands.	Help to achieve climate targets, improve air quality, and reduce health costs.
Croplands	Implement climate smart practices for annual and perennial crops on ~80,000 acres annually. Land easements/ conservation on annual crops at ~5,500 acres annually. Increase organic agriculture to 20% of all cultivated acres by 2045 (~65,000 acres annually).	Reduce short-lived climate pollutants. Increase soil water holding capacity. Increase organic farming and reduce pesticide use. SB 859: Recognizes the ability of healthy soils practices to reduce GHG emissions from agricultural lands. Target increased in response to Governor Newsom's direction to prioritize sustainable land management.
Developed Lands	Increase urban forestry investment by 200% above current levels and utilize tree watering that is 30% less sensitive to drought. Establish defensible space that accounts for property boundaries.	Increase urban tree canopy and shade cover. Reduce heat island effects and support water infrastructure. Reduce fire risk via defensible space. AB 2251 (Calderon, Chapter 186, Statutes of 2022): Increase urban tree canopy 10% by 2035. Target increased in response to AB 2251 and Governor Newsom's direction on CO2 removal targets in his July 2022 letter.
Wetlands	Restore 60,000 acres of Delta wetlands.	Increase carbon sequestration and reduce short-lived climate pollutants. Helps to reverse land subsidence while improving flood protection and providing critical habitat.
Sparsely Vegetated Lands	Land conversion at 50% of the Reference Scenario land conversion rate.	Reduce the rate of land conversion to more GHG-intensive land uses.

[1] CARB withdrew its waiver request from EPA to implement the federal components of the Advanced Clean Fleets regulation. (CARB 2025c).

[2] CARB withdrew its waiver request from EPA to implement the In-Use Locomotives regulation (CARB 2025d).

Source: CARB 2022a.

On January 4, 2023, the Legislative Analyst's Office (LAO) released a brief which assessed the 2022 Scoping Plan. *Assessing California's Climate Policies: The 2022 Scoping Plan Update* was prepared pursuant to Chapter 135 of 2017 (AB 398, E. Garcia), which requires the LAO to report annually on the economic impacts and benefits of the state's 2020 and 2030 GHG goals. The brief argues and ultimately concludes that the 2022 Scoping Plan does not provide a clear strategy for meeting the state's 2030 emissions reduction target and is hindered by the Cap-and-Trade program's insufficiency in helping the state achieve this target. LAO interprets the Scoping Plan analysis as establishing a revised target for 2030 at a 48% reduction from a 1990 statewide inventory, which according to the LAO is a needed revised reduction target as compared to that codified by SB 32 (i.e., a 40% reduction from a 1990 statewide inventory by 2030). This target is not codified, however. Therefore, this analysis assesses the project against the state's 2030 target as mandated by SB 32.

The brief recommends that the Legislature evaluate potential changes to the Cap-and-Trade program to address concerns regarding program stringency (LAO 2023).

- **California State Priority Climate Action Plan.** California's State Priority Climate Action Plan (PCAP), as funded by EPA's Climate Pollution Reduction Grants (CRPG) Program, was developed to achieve GHG reductions across the geographic extent of California from nearly every economic sector (CARB 2024b). The PCAP includes several elements: a 2021 statewide GHG emissions inventory, the state's overarching GHG targets codified by AB 32 and AB 1279, an overview of the state's approach to low-income and disadvantaged community benefits analysis, workforce considerations, and GHG-reduction measures that target reductions in the transportation, industrial, energy, high GWPs, agriculture, natural and working lands, and waste sectors. The PCAP was developed to support statewide GHG-reduction targets through implementation of the following reduction measures.
- **Transportation measures:**
  - create a holistic, heavy-duty zero-emissions vehicle buydown program,
  - install truck charging to support zero-emissions goods movement at California ports and warehouse districts,
  - advance the deployment of clean off-road equipment,
  - bolster investments in the state's sustainable port and freight infrastructure,
  - support mobility projects uplifted by communities, and
  - allow for local deployment of ZEV infrastructure and low-income ZEV support.
- **Industrial measure:**
  - accelerate industrial decarbonization by expanding the existing industrial decarbonization and improvement to grid operations program.
- **Energy measures:**
  - expand decarbonization through the Energy Conservation Assistance Act,
  - create a funding program to upgrade the capacity of distribution systems,
  - expand the success of California's Self-Generation Incentive Program for behind the meter energy storage,
  - bolster healthy landscapes and resilient communities through expanding the Biomass to Carbon Negative Biofuels Program,
  - deploy equitable building decarbonization,
  - implement bioenergy projects, and
  - enable renewable microgrids for rural communities and tribes.

- **High global warming potential cases measure:**
  - expand F-gas Reduction Incentive Program.
- **Agriculture measures:**
  - expand California's healthy soils practices, and
  - reduce methane emissions by expanding California's existing Dairy Digester Research and Development Program.
- **Natural and working lands measures:**
  - bolster California's Forest Health Program,
  - expand urban and community forest projects, and
  - expand the state's Wetland Restoration Program.
- **Waste measures:**
  - establish a Food Waste Prevention and Edible Food Recovery Program, and
  - bolster organics recycling infrastructure.

The PCAPs were submitted to EPA on or before March 1, 2024 (April 1 for Tribal Nations) (CARB 2024b). Entities that received funding under the CRPG must now complete the Comprehensive Climate Action Plan (CCAP), which is due in Fall 2025. The CRPG program will then track the efficacy of the CCAPs in a status report in 2027.

- **Mobile Source Strategy.** The Mobile Source Strategy was developed by CARB to provide an integrated planning perspective and common vision for transforming the mobile sector to achieve air quality and climate change goals. It uses conceptual scenarios to illustrate the emissions-reduction potential of different vehicle technology mixes and VMT reductions to inform state policy development (CARB 2021a). The Mobile Source Strategy addresses on-road vehicles, including passenger cars and light-duty trucks, medium and heavy-duty trucks, and buses, as well as off-road vehicles and equipment, including locomotives, cargo-handling equipment, and construction equipment. It supports multiple planning efforts, including the state implementation plans for criteria air pollutants, the scoping plan, the Short-Lived Climate Pollutant Reduction Strategy (discussed below), and the Sustainable Freight Action Plan (discussed below). CARB is required to update the Mobile Source Strategy every 5 years. The 2020 Mobile Source Strategy continued the multipollutant planning approach to illustrate the pathways forward for the various mobile sectors that are necessary in order to achieve California's numerous goals and targets through 2050. CARB is currently developing the 2025 Mobile Source Strategy. A discussion draft of the 2025 Mobile Source Strategy was released on October 11, 2024 (CARB 2025b).
- **Sustainable Freight Action Plan.** The Sustainable Freight Action Plan (Action Plan) provides an integrated action plan that establishes clear targets to improve freight efficiency, transition to zero-emission technologies, and increase the competitiveness of California's freight system. The Action Plan was developed by several state agencies and is a recommendation document that integrates investments, policies, and programs across agencies to help realize a singular vision for California's freight transport system. This Action Plan provides a recommendation on a high-level vision and broad direction to the governor to consider for state agencies to use when developing specific investments, policies, and programs related to the freight transport system that serves California's transportation, environmental, and economic interests. The 2022 Scoping Plan incorporates actions from the Action Plan that provide GHG emissions-reduction benefits, such as 100% line haul ZEV locomotive sales by 2035. (CARB 2022a).
- **Short-Lived Climate Pollutant Strategy.** SB 1383 (Chapter 395, Statutes of 2016) requires CARB to develop and implement a Short-Lived Climate Pollutant (SLCP) Strategy with the following reductions in emissions by 2030 compared to 2013 levels: methane by 40%, HFCs by 40%, and black carbon (nonforest) by 50%. The bill also specifies targets for reducing organic waste in landfills. SB 1383 also requires CARB to adopt regulations

to be implemented on or after January 1, 2024, specific to the dairy and livestock industries, requiring a 40% reduction in methane emissions below 2013 levels by 2030, if certain conditions are met. Lastly, the bill requires CalRecycle to adopt regulations to achieve specified targets for reducing organic waste in landfills. Per its directive, CARB adopted the SLCP Strategy in 2017, establishing a path to decrease SLCPs from various sectors of the economy. Strategies span from wastewater and landfill practices and methane recovery to reducing natural gas leaks and consumption. The SLCP Strategy also identifies measures that can reduce HFC emissions through incentive programs and limitations on the use of high-GWP refrigerants in new refrigeration and air-conditioning equipment (CARB 2017b).

- **Natural and Working Lands Climate Smart Strategy**. In response to the signing of EO N-82-20, the California Natural Resources Agency (CNRA) prepared the Natural and Working Lands Climate Smart Strategy (NWL Strategy) to expand climate action in the NWL sector, which has been called for in the 2022 Scoping Plan and the California State PCAP (see above). The NWL Strategy defines California's eight natural and working landscapes; describes how improved management of these landscapes can deliver on the state's climate change goals and advance broader environmental, economic, and social objectives; highlights priority nature-based climate solutions to address the climate crisis; outlines regional opportunities for climate-smart land management; identifies options to track nature-based climate action and measure progress; and packages recommendations to scale nature-based climate solutions identified through public engagement (CNRA 2022). While local efforts in the San Diego region to improve the carbon sequestration of natural and working lands would result in a net carbon dioxide decrease, the GHG emissions inventory summarized in Table 4.8-4 and used in this analysis does not include the GHG flux associated with carbon stocks in California's natural and working lands consistent with CARB's approach in developing statewide GHG emissions inventories (refer to Appendix E: Appendix G to the Regional Plan for additional discussion of the methodologies used to prepare the regional GHG emissions inventory).

Transportation Planning

- **SB 375, Chapter 728, Statutes of 2008.** SB 375 provides a new planning process that integrates regional transportation, land use, GHG reduction, and housing planning. It requires regional transportation plans (RTPs) to incorporate a sustainable communities strategy (SCS) that demonstrates how the region would achieve regional GHG emission reduction targets for passenger vehicles set by CARB. CARB revised SANDAG's GHG targets in 2018 to 15% reduction in passenger vehicle emissions per capita by 2020 and 19% by 2035 using a 2005 baseline.

  Recent reports on the state's climate goals suggest that the regional 2035 GHG emissions reduction targets under SB 375 are not adequate to fully meet the GHG reduction goals of SB 32 (CARB 2022b). Collectively, CARB determined that if the state's 18 MPOs' all met the SB 375 GHG emission reduction targets set by CARB in 2018, a 19% reduction in per capita VMT would be achieved by 2035. In The Updated Final Staff Report to the Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets (CARB 2018a), CARB expressed that to meet the statewide reduction goals set forth by SB 32, the state would need to reduce per capita GHG emissions by 25% by 2035, resulting in a 6% gap between the 19% emissions reductions targets set for the regions (averaged for the 18 MPOs and compared to a baseline year of 2005). Notably, CARB is required to update the reduction targets under SB 375 every 8 years and is currently conducting workshops to solicit opinions from stakeholders for the next target update planned for 2026. It is possible that 2035 targets for MPOs, including SANDAG, could be adjusted during this process to account for this gap identified by CARB.

  In the *2022 Progress Report California's Sustainable Communities and Climate Protection Act*, CARB states that an RTP/SCS that meets the applicable SB 375 targets alone will not result in the GHG emissions reductions necessary to meet state climate goals in 2030 or 2050 (CARB 2022b). CARB states that California is still not reducing GHG emissions from personal vehicle travel as needed to meet climate commitments and as targeted under SB 375 (CARB 2022b). CARB notes that per capita GHG emissions and per capita VMT continued to increase, though more slowly than what was identified in CARB's previous 2018 Progress Report. Additionally, CARB data indicates that housing construction is not meeting regional houses in numbers, types, and location (CARB 2022b). Under SB 375, CARB must agree that SCSs are able to meet GHG-reduction

targets. For this purpose, in September 2019, CARB published updated SCS Program and Evaluation Guidelines, clarifying the scope of the updated strategy-based SCS evaluation process, which consists of four key components (CARB 2019a):

- Tracking implementation under SB 150. Report on the progress regions have made toward meeting their SB 375 GHG-reduction targets.
- Policy commitments. Determine whether the planned strategies and commitments, when fully and effectively implemented, would achieve the GHG-reduction targets and whether there are any risks to not achieving those commitments.
- Incremental progress. Report on whether a metropolitan planning organization's (MPO's) proposed SCS has more or enhanced strategies than the currently adopted SCS.
- Equity. Report on the efforts that MPOs are taking to meet federal and state requirements related to equity.
- The policy commitments component is the only component used by CARB as the basis for accepting or rejecting the MPO's SB 375 GHG emission reduction target determination (CARB 2019a).

- **SB 743, Chapter 386, Statutes of 2013**. SB 743 was signed into law by Governor Jerry Brown on September 27, 2013, and encourages development of mixed-use, transit-oriented infill projects by (1) establishing new CEQA exemptions for transit-oriented developments located in transit priority areas that are consistent with an adopted specific plan, (2) eliminating the requirement to evaluate aesthetic and parking impacts in those targeted development areas, and (3) directing the Governor's Office of Planning and Research (OPR) (now known as the Governor's Office of Land Use and Climate Innovation) to develop an alternative metric to evaluate transportation-related impacts under CEQA.
  - SB 743 exempts from CEQA a residential, employment center, or mixed-use development project, including any subdivision or any zoning change that meets all of the following criteria:
  - The project is proposed within a transportation priority area.
  - The project is undertaken to implement and is consistent with a specific plan for which an environmental impact report has been certified.
  - The project is consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either an SCS or an alternative planning strategy accepted by CARB.

  Furthermore, SB 743 establishes that the new transportation impact analysis methodology should appropriately balance the needs of congestion management with statewide goals related to transit-oriented mixed-use infill development, promotion of public health through active transportation, and reduction of GHG emissions. See Section 4.16, "Transportation," for further information regarding SB 743.
- **Climate Action Plan for Transportation Infrastructure.** In July 2021, the California State Transportation Agency (CalSTA) adopted the Climate Action Plan for Transportation Infrastructure (CAPTI). The CAPTI was prepared in the wake of EO N-19-19 and serves an integrated climate change infrastructure plan. In January 2025, CalSTA adopted the CAPTI update, which includes new strategies and actions to further implement CAPTI's investment framework (CalSTA 2025).

Fuel Economy Standards and Electric Vehicles

- **Advanced Clean Cars Program (passenger vehicles).** AB 1493 of 2002 (known as Pavley I, Chapter 200, Statutes of 2002) provided the nation's first GHG standards for automobiles. AB 1493 required CARB to adopt vehicle standards that lowered GHG emissions from new light-duty automobiles to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards referred to as the Advanced Clean Cars (ACC) Program's Low Emission Vehicle (LEV) III Regulation was adopted for vehicle model years 2017–2025 in 2012 (13 California Code of Regulations [CCR] Section 1900 et seq.).

The ACC Program also includes the Zero Emission Vehicle Program and the Clean Fuels Outlet Regulation. The Zero Emission Vehicle Program is designed to achieve California's long-term emission reduction goals by requiring manufacturers to offer for sale specific numbers of ZEVs, which include battery electric, fuel cell, and plug-in hybrid electric vehicles. The Clean Fuels Outlet regulation is intended to ensure that fuels, such as electricity and hydrogen, are available to meet the fueling needs of new advanced technology vehicles as they come to market. The ACC II Program was adopted by CARB in August 2022, and provides the regulatory framework for ensuring the sales requirement goal of EO N-79-20 to ultimately reach 100% ZEV sales in the state by 2035. The EPA granted CARB its California's CAA waiver request on December 18, 2024.

- **AB 126:** Signed by the governor on October 7, 2023, AB 126 includes provisions to provide, upon appropriation by the legislature, funding in the form of grants, revolving loans, loan guarantees, loans, or other appropriate funding measures to various private and public entities to help attain the state's climate change policies. AB 126 is intended to facilitate the development and deployment of zero-emission technology and fuels in the marketplace where feasible and near-zero-emission technology and fuels elsewhere. Provisions related to electric vehicles (EVs) and EV infrastructure include creation of the Air Quality Improvement Program (HSC Section 44274[a]) to provide funding for zero-emission fuel projects where feasible and near-zero-emission fuel projects elsewhere to develop and improve zero-emission and near-zero-emission fuels (Health and Safety Code [HSC] Section 44272 [h][1]), a program to provide funding for homeowners who purchase a plug-in EV to offset costs associated with modifying electrical sources to include a residential plug-in EV charging station (HSC Section 44272 [h][13]). Awardees of funding for EV-charging infrastructure are required to report to the California Energy Commission (CEC) "the source and greenhouse gas emissions intensity, on an annual basis, of the electricity used and dispensed by electric vehicle charging stations at the meter" (HSC Section 44272 [m]). Funding is also authorized to be provided toward incentives for medium- and heavy-duty vehicles and equipment mitigation, including electric, hybrid, and plug-in hybrid on-road and off-road medium- and heavy-duty equipment (HSC Section 44274[c][4]).
- **Low Carbon Fuel Standard.** Originally mandated a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 (17 CCR Section 95480 et seq.). In September 2018, to help achieve SB 32's emission reduction target, the Low Carbon Fuel Standard (LCFS) regulation was amended to increase the statewide goal to a 20% reduction in carbon intensity of California's transportation fuels by 2030. The majority of the emissions benefits due to the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe) (CARB 2020). On November 8, 2024, CARB approved amendments to the LCFS regulation to maintain momentum for global, national, and local private sector investment toward increasing cleaner fuel and transportation options for consumers, accelerating the deployment of zero-emission infrastructure and clean fuel production to support clean vehicle regulations, and keeping the state on track to meet statutorily mandated air quality and climate targets (CARB 2025e). On January 3, 2025, CARB submitted the final proposed amendments to the LCFS regulation to the Office of Administrative Law (OAL) for review in accordance with Government Code Section 11349.1 (CARB 2025e). On February 18, 2025, OAL issued a routine disapproval of amendments to the LCFS regulation on technical grounds, not on the merits of the regulation. CARB staff made necessary revisions and resubmitted the regulation for OAL approval on May 16, 2025. On June 27, 2025, OAL approved this rulemaking and filed it with the Secretary of State with an effective date of July 1, 2025 (CARB 2025f).
- **Medium- and heavy-duty vehicles.** In 2008, CARB approved the Phase 1 Tractor-Trailer Greenhouse Gas Regulation to reduce GHG emissions by requiring the use of aerodynamic tractors and trailers that are also equipped with low-rolling-resistance tires (13 CCR Section 2020 et seq.). The regulation applies to certain Class 8 tractors manufactured for use in California and is harmonized with the parallel EPA and NHTSA Phase 1 heavy-duty truck standards. CARB amended the Tractor-Trailer Greenhouse Gas Regulation in 2019 (Phase 2 standards) to align with EPA and NHTSA Phase 2 heavy-duty truck standards.
- **Zero-emission trucks.** In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000). In 2008, CARB adopted the *Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* (CARB

2008). As an ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs. CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). These regulations include the Advanced Clean Fleets regulation, the Advanced Clean Trucks Regulation, and the Innovative Clean Transit (ICT) regulation, discussed separately in this section. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butafidiene, diesel particulate matter [diesel PM]) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of CARB's Risk Reduction Plan and other regulatory programs, CARB estimates that by 2035, emissions of diesel PM will be less than half of those in 2010 (CARB 2023).

- **Advanced Clean Trucks**. CARB adopted the Advanced Clean Trucks (ACT) Regulation in March 2021, with minor amendments in 2024. The regulation aims to accelerate the sales of heavy-duty EVs. The regulation consists of two parts: a manufacturer component and a fleet reporting component. Manufacturers are required to sell an increasing percentage of heavy-duty ZEV between 2024 and 2035. By 2035, 40% of Class 8 truck purchases will be required to be zero emission. Fleets with 50 or more vehicles will be required to report on their fleet's composition and activities in order to help CARB craft new strategies to hasten the adoption of ZEV (CARB 2021b). EPA granted the waiver request under the CAA to enact the more stringent fuel economy components of the ACT regulation on April 6, 2023 (EPA 2023). However, P.L. 119-15 retroactively revoked the state's waiver issued by EPA under the CAA to implement the Advanced Clean Trucks regulation.
- **Advanced Clean Fleets.** CARB's 2022 Advanced Clean Fleets regulation was developed to reduce diesel PM through the transition of medium- and heavy-duty trucks to become fully electric by 2045. At the time of the writing of this Draft EIR, California has withdrawn its request for a waiver and authorization for the addition of the Advanced Clean Fleets regulation to its emissions control program (CARB 2025d). CARB is not enforcing the existing portions of the Advanced Clean Fleets regulation that require a federal waiver or authorization, such as the portions of the Advanced Clean Fleet regulation that apply to high-priority and drayage fleets. However, not all elements of the Advanced Clean Fleets regulation require a federal waiver or authorization (CARB 2025f). State and local government fleets will still be required to be fully electric by 2045.
- **Innovative Clean Transit.** The Innovative Clean Transit (ICT) regulation was adopted in 2018 and requires all public transit agencies to incrementally reduce fleet vehicle tailpipe emissions and prioritize first- and last-mile connectivity and improved mobility for transit riders. Additionally, the ICT regulation provides various exemptions and compliance options to provide safeguards and flexibility for transit agencies through this emission reduction schedule. The ICT regulation was developed to align with other state policies, including the Sustainable Communities and Climate Protection Program (SB 375), and SB 350. SB 375 creates initiatives for increased development of transit-oriented communities, better-connected transportation, and active transportation. SB 350 provides an opportunity for transportation electrification, including wide use of zero-emission buses. The California Public Utilities Commission (CPUC) is collaborating with CARB and CEC to implement requirements set forth by SB 350 to support widespread transportation electrification. Through the deployment of zero-emission technologies, the ICT regulation will provide significant benefits across the state, including:
  - reducing NO_x and GHG emissions for all Californians, especially transit-dependent and disadvantaged communities; the majority of these benefits will be in the state's most populated and impacted areas where transit buses are most prevalent
  - increasing penetration of the first wave of zero-emission heavy-duty technologies into applications that are well suited to their use to further achieve emission reduction benefits
  - saving energy and reducing dependency on petroleum and other fossil fuels

- expanding the ZEV industry to bring high-quality green jobs to local communities and trained workforce to California
- providing other societal benefits by encouraging improved mobility and connectivity with zero-emission transportation modes and reduced growth in light-duty VMT.

The goal of this program is to continue CARB, CEC, and CPUC's partnership with transit agencies to maximize these benefits, while providing flexibility and sufficient time for transit agencies to address potential challenges and use available funds. This regulation strives to not just maintain but enhance transit service through increased mobility options and has built-in technological and financial safeguards to ensure transit service or fares are not adversely impacted by the regulation (13 CCR 2023).

Renewable Energy

- **Renewables Portfolio Standard.** SB 1078 (Sher, 2002) established California's Renewables Portfolio Standard (RPS). The program sets continually escalating renewable electricity procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities. SB 2 (1X) of 2011 obligates all California electricity providers to obtain at least 33% of their energy from renewable resources by 2020. CPUC and CEC are jointly responsible for implementing the program.
- **SB 350.** This bill's key provisions are to require the following by 2030: (1) an RPS of 50% and (2) a doubling of efficiency for existing buildings.
- **SB 100.** This bill establishes a new RPS target of 50% by 2026, increases the RPS target in 2030 from 50 to 60%, and establishes a goal of 100% zero-carbon energy sources by 2045.
- **SB 1020.** This bill superseded the goals of SB 100 by requiring that 90% of all retail sales of electricity to California end-use customers are procured from renewable energy and zero-carbon resources by December 31, 2035. The requirement increases to 95% by December 31, 2040, and to 100% by December 31, 2045. Under SB 1020, state agency facilities must use 100% renewable and zero-carbon energy resources by December 31, 2035.
- **Integrated Energy Policy Report.** SB 1389 (Chapter 568, Statutes of 2002) required CEC to "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety" (PRC Section 25301[a]). This work culminated in the Integrated Energy Policy Report (IEPR). CEC adopts an IEPR every 2 years and an update every other year. The 2023 IEPR is the most recent IEPR, including the 2024 Draft Update to the 2023 IEPR. The 2023 IEPR provides a summary of priority energy issues currently facing the state and outlines strategies and recommendations to further the state's goal of ensuring reliable, affordable, and environmentally responsible energy sources. The report contains an assessment of major energy trends and issues in California's electricity, natural gas, and transportation fuel sectors. The report provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety. Topics covered in the 2023 IEPR include the accelerated connection of clean energy, the California Energy Demand Forecast, the potential growth of hydrogen in the state, and updates to issues, such as energy efficiency, gas utility decarbonization, and the Clean Transportation Program (CEC 2024a).

Building Efficiency

- **California Building Energy Efficiency Standards.** The energy consumption of new residential and nonresidential buildings in California is regulated by the California Energy Code's Building Energy Efficiency Standards (California Energy Code) (24 CCR Part 6). CEC updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption. The 2022 California Energy Code went into effect on January 1, 2023. The 2022 California Energy Code advances the on-site energy generation progress started in the 2019 California Energy Code by encouraging electric heat pump technology and use,

establishing electric-ready requirements when natural gas is installed, expanding solar photovoltaic (PV) system and battery storage standards, and strengthening ventilation standards to improve indoor air quality. CEC estimates that the 2022 California Energy Code will save consumers $1.5 billion and reduce GHGs by 10 $MMTCO_2e$ over the next 30 years (CEC 2021). The 2025 Building Energy Efficiency Standards (2025 California Energy Code) were adopted on September 11, 2024, and will go into effect on January 1, 2026, for nonresidential development. According to CEC, the 2025 California Energy Code puts particular emphasis on replacing end-of-life rooftop heating, ventilation, and air-conditioning units of a certain size with high efficiency systems; establishing electric-ready requirements for commercial kitchens; and updating solar and storage standards for assembly buildings to make clean energy available for on-site use while minimizing exports to the electrical grid (CEC 2024b). On June 30, 2025, the Governor signed AB 130, which institutes a six-year freeze on updates to state and local residential building standards, through 2031, with exceptions only for emergency measures, energy/fire safety, accessibility, and wildland-urban code updates. During this period, local jurisdictions may not adopt new residential building code amendments unless they are confirmed by the Building Standards Commission as emergency or health-and-safety necessities. The law also guarantees that model-home building standards remain locked in for up to 10 years or until the design significantly changes, ensuring long-term planning stability and guarding builders against sudden code shifts.

- **California Green Building Standards Code.** California has adopted the Green Building Standards Code (CALGreen) (24 CCR Part 11), which identifies both mandatory and voluntary energy efficiency standards for new residential and nonresidential buildings. The standards are updated every 3 years, and the current version is the 2022 CALGreen Code. However, the 2025 CALGreen Code was adopted on September 11, 2024, and will go into effect on January 1, 2026 for nonresidential development. The 2025 version proposes increased requirements for EV charging infrastructure (i.e., a higher percentage of parking spaces that must be equipped with EV chargers and more stringent requirements for the types of chargers that must be installed) in nonresidential buildings. The 2025 CALGreen Code also includes required analysis of embodied carbon in building materials, which was not required under the 2022 CALGreen Code. Lastly, the 2025 CALGreen Code includes updates to energy efficiency standards aimed at further reducing energy consumption in buildings and promoting the use of renewable energy sources (CEC 2024b). CALGreen requirements are complementary with the California Energy Code discussed above. Discussed above, AB 130 freezes the residential building code, including the CALGreen Code, until 2031; however, the requirements of the 2025 nonresidential CALGreen Code will be applied to new nonresidential development effective January 1, 2026.
- **AB 130:** AB 130 of 2025 imposes a moratorium on changes to California building codes affecting residential units, including both state and local amendments, through 2031, with limited exemptions. Essentially, AB 306 would prohibit CEC or any other adopting agency from considering, approving, or adopting any proposed building standards affecting residential units, unless a certain condition is met, including that the CEC deems those changes necessary as emergency standards to protect health and safety. The 2025 Energy Code will proceed as planned with an effective date of January 1, 2026, and the 2031 Energy Code cycle is anticipated to be unaffected.

California Cap-and-Trade Program

- **Cap-and-Trade Program.** The California Cap-and-Trade Program (Program) was adopted by CARB in October 2011 and took effect on January 1, 2012. The Program establishes a declining limit on major sources of GHG emissions, and it creates a powerful economic incentive for significant investment in cleaner, more efficient technologies. The Program applies to entities and activities that collectively comprise approximately 80% of the state's GHG emissions. CARB creates allowances equal to the total amount of permissible emissions (i.e., the "cap" or "budget"). One allowance equals 1 $MTCO_2e$ emissions (using the 100-year GWPs). Fewer allowances are created each year; thus, the annual caps decline over time. An annual auction reserve (or floor) price for allowances that increases each year and the reduction in annual allowance budgets creates a steady and sustained carbon price signal to prompt action to reduce GHG emissions. All facilities covered by the Program are still subject to applicable local air quality permit limits for criteria and toxic air pollutants. The Program currently covers in-state electricity generators, including electricity imported into California; large industrial

sources of GHG emissions; transportation fuel suppliers; and suppliers of natural gas and propane combusted at commercial, residential, and small industrial facilities; and other sources not directly covered by the Program.

Under the Program, covered entities do not have individual or facility-specific GHG emissions-reduction requirements. Rather, all companies covered by the Program are required to surrender allowances in an amount equal to their total covered GHG emissions during each compliance period. Covered entities can also meet a limited portion of their compliance obligation (4% for emissions during 2021–2025 and 6% for emissions after 2025) by surrendering approved offset credits issued under CARB-approved compliance offset protocols.

CARB regularly adopts amendments to the Program that include a decline on the cap for emissions, resulting in increasingly stringent permissible emissions limits for stationary sources. The most recent update to the Program was made in 2018 (CARB 2019b). Thus, the Program continues to be instrumental in assisting the state in meeting its long-term GHG-reduction goals as set forth by AB 1279 (i.e., carbon neutrality and an 85% reduction in GHG emissions by 2045 relative to 1990 levels) as identified in the 2022 Scoping Plan.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

SANDAG

SANDAG's Climate Resilience Program helps to reduce regional GHG emissions in alignment with statewide goals to prepare for the impacts of climate change. Efforts include climate action planning and energy engineering technical services for local jurisdictions, support for electric vehicle deployment and charging installation, and regional climate action and resilience guidance (SANDAG 2023).

San Diego Regional Energy Strategy

The SANDAG Regional Energy Strategy (RES) serves as the energy policy blueprint for the San Diego region through 2050 to support decision-making as the region strives to meet the energy needs of the growing population (SANDAG 2014). The RES establishes long-term goals in topic areas such as energy efficiency, renewable energy, distributed generation, transportation fuels, land use and transportation planning, border energy issues, and the green economy. SANDAG and local governments identified six early actions to focus on in the near term:

- pursue a comprehensive building retrofit program to improve efficiency and install renewable energy systems.
- create financing programs to pay for projects and improvements that save energy.
- use the SANDAG-SDG&E Local Government Partnership to implement the RES at the local level. SANDAG will work with local governments to identify opportunities and implement energy savings at government facilities and throughout their communities.
- support land use and transportation planning strategies that reduce energy use and GHGs.
- support use of existing unused reclaimed water to decrease the amount of energy needed to meet the water needs of the San Diego region.

Originally adopted in 2009, a technical update of the RES was completed in 2014 to inform the development of the 2021 Regional Plan. This technical update demonstrates progress toward attaining the RES goals, updates existing conditions and future projections data, and recommends priorities for moving forward.

San Diego Forward: The Regional Plan

The 2025 Regional Plan covers a broad range of topics, including air quality, borders and tribal nations, climate change, economic prosperity, emerging technologies, transit and automobile energy efficiency and fuels, habitat preservation, community health, public facilities, shoreline preservation, transportation, and water quality. The 2025 Regional Plan emphasizes the importance of multimodal transportation and active transportation, such as walking and biking, and reducing car use to minimize GHG emissions, diminish air pollution, and maximize public health. The 2025 Regional Plan also includes an SCS, which identifies strategies to complement the goal of

sustainability. These strategies focus on job growth and housing in urbanized areas with existing public transportation options by addressing housing needs for all economic segments of the population, preserving open space, investing in an accessible transit network, and reducing GHG emissions through the implementation of actions such as increasing public transportation infrastructure and access, encouraging active transportation through upgrades to pedestrian and bike facilities, incentivizing EV use, and providing additional EV infrastructure.

The 2025 Regional Plan is intended to achieve the regional per capita passenger vehicle GHG-reduction target (19% below 2005 levels) in 2035. The 2025 Regional Plan is projected to reduce per capita GHG emissions from cars and light-duty trucks to 19.3% below 2022 levels by 2035.

Regional Transportation Plan/Sustainable Communities Strategy

The approved 2021 Regional Plan (RTP/SCS) provides a long-term blueprint for the San Diego region that seeks to meet regulatory requirements, address traffic congestion, and create equal access to jobs, education, healthcare, and other community resources. It also provides a framework for achieving the regional per capita passenger vehicle GHG-reduction target (19% below 2005 levels) in 2035. The plan is the result of years of planning, data analysis, and community engagement to reimagine the San Diego region with a transformative transportation system, a sustainable pattern of growth and development, and innovative demand and management strategies. The SANDAG Board of Directors adopted the Final 2021 Regional Plan on December 10, 2021.

ReCAP

The SANDAG Board of Directors (Board) accepted the Regional Climate Action Planning Framework (ReCAP) in 2018 (SANDAG 2025a). ReCAP identifies best practices and guidance for preparing climate action plans (CAPs) and monitoring implementation over time. ReCAP establishes a technical framework for regionally consistent climate action planning that preserves local policy flexibility for the unique needs and circumstances of each local jurisdiction.

Incentive Programs

SANDAG currently has two incentive programs that promote the purchase of ZEVs in the San Diego region. The Zero-Emission Vehicle Incentive Program will help reduce the cost of buying a ZEV for residents in low-income and underserved communities in San Diego County. As of March 2025, SANDAG is in the process of designing this program, and the program is planned for launch sometime in 2025. The EV Charger Rebate Program provides rebates to property owners who install publicly accessible charging stations throughout the region. As of April 2024, 56% of program funds have gone toward installations in low-income and disadvantaged communities. The program is no longer accepting new applications (SANDAG 2025b).

San Diego Air Pollution Control District

The Scoping Plan does not provide an explicit role for local air districts in implementing GHG reductions, but it does state that CARB will work actively with air districts in coordinating emissions reporting, encouraging and coordinating GHG reductions, and providing technical assistance in quantifying reductions. The ability of air districts to control emissions (both criteria pollutants and GHGs) is provided primarily through permitting, as well as through their role as a CEQA lead or responsible agency, the establishment of CEQA thresholds, and the development of analytical requirements for CEQA documents. As discussed in Section 4.3, "Air Quality," the San Diego Air Pollution Control District (SDAPCD) is responsible for air quality planning in San Diego County. To date, SDAPCD has not developed specific thresholds of significance with regard to the GHG emissions in CEQA documents.

San Diego Regional Air Quality Strategy

The San Diego Regional Air Quality Strategy (RAQS), initially adopted in 1991, outlines SDAPCD's plans and control measures designed to attain and maintain the state standards, while San Diego's portions of the SIP are designed to attain and maintain federal standards. The RAQS is updated on a triennial basis, with updates being made in 1995, 1998, 2001, 2004, 2009, and 2016, and 2022. On March 9, 2023, SDAPCD adopted the revised 2022 RAQS for San Diego County (SDAPCD 2022). The RAQS plan demonstrates how the San Diego region will further reduce air pollution emissions to meet state health-based standards for ground-level ozone. The 2022 RAQS guides the SDAPCD in deploying tools, strategies, and resources to continue reducing pollutants that are precursors to ground-level ozone, including NOx and VOC. The 2022 RAQS emphasizes ozone control measures

but also identifies complementary measures and strategies that can reduce emissions of GHGs and PM. It also includes new analyses exploring ozone and its relationship to public health, mobile sources, under-resourced communities, and GHGs and climate change. The 2022 RAQS contains strategies to continue directly reducing emissions of ozone precursors, while also reducing particulate matter and GHGs as a co-benefit. See Section 4.3, "Air Quality" for further discussion of the 2022 RAQS.

County of San Diego

San Diego Regional Decarbonization Framework

The San Diego Regional Decarbonization Framework (RDF) considers how to achieve decarbonization of the San Diego region's energy system with the ultimate goal of achieving net-zero carbon emissions by 2045. The RDF includes the RDF Technical Report (Technical Report) that provides technical and policy pathways to decarbonization in the medium-term to inform near-term policymaking in regional, County, and city governments. The Technical Report models science-based pathways to net zero carbon emissions for the San Diego region by 2045, consistent with the Paris Climate Agreement and state mandates. The pathways provide a shared vision for the San Diego region to collectively reduce net GHG emissions in alignment with California's net-zero carbon goal. The Technical Report details numerous methods by which the region can achieve regional emissions goals in multiple sectors and highlights uncertainties in the decarbonization process and the need for ongoing planning processes that can adapt as technology and policy landscapes evolve (County of San Diego 2022).

Guidelines for Determining Significance: Climate Change

The County's Guidelines for Determining Significance for Climate Change were developed pursuant to mitigation measures in their General Plan Program EIR. The Guidelines were adopted by the County Board of Supervisors by separate resolution concurrently with the County's CAP on September 11, 2024, consistent with CEQA Guidelines section 15064.7. The County's CAP is also intended to be used for future project-specific GHG emissions analyses by being prepared consistent with the tiering and streamlining provisions of Section 15183.5 of the CEQA Guidelines. The County's CAP is a long-term programmatic plan that identifies strategies, measures, and actions to meet the County's targets to reduce GHG emissions by 2030 and 2045, consistent with the State's 2022 Scoping Plan for Achieving Carbon Neutrality and legislative GHG reduction targets and demonstrates progress towards the State's 2045 net zero GHG emissions goal. The Guidelines direct project applicants to use the CAP Consistency Checklist to assess GHG impacts (County of San Diego 2024). Because the Guidelines and the CAP were prepared specific to the County's jurisdiction only, i.e., unincorporated county, the thresholds contained therein are not applicable to the proposed Plan.

General Plans

Several of SANDAG's member agencies have general plan elements and policies that specifically address energy use and conservation, VMT reduction, alternative fuels, and modes of transportation, as well as the reduction of GHG emissions and strategies to prepare for the effects of climate change. Such general plans contain goals, objectives, and policies aimed at reducing energy consumption and GHG emissions. These include policies on topics such as energy retrofits to existing residential and commercial buildings, zoning and building ordinances to increase energy efficiency in new construction, and ways to reduce VMT through land use and transportation planning.

Local Plans to Reduce GHG Emissions

Most of SANDAG's member jurisdictions have adopted CAPs, GHG-reduction plans, or sustainability plans that set goals and targets for the reduction of GHG emissions, and outline policies or measures to achieve those goals and targets. Table 4.8-6 summarizes the status of local plans to reduce GHG emissions in the San Diego region (as of March 2025).

Many of the local plans to reduce GHG emissions have been adopted consistent with CEQA Guidelines Section 15183.5, which specifies requirements to ensure the GHG plan is "qualified" for future CEQA streamlining, while many of the plans have not been adopted for CEQA streamlining. These plans serve as policy documents that demonstrate a commitment to reduce GHG emissions and establish a range of possible reduction measures.

Table 4.8-6 Summary of Local Plans to Reduce GHG Emissions (as of March 2025)

Jurisdiction	Adopted (year)
Carlsbad	2024
Chula Vista	2017 (update in progress)
Coronado	2022
Del Mar	2016
El Cajon	2020
Encinitas	2020 (update in progress)
Escondido	2021
Imperial Beach	2019
La Mesa	2024
Lemon Grove	2020
National City	2011
Oceanside	2019
Port of San Diego	2013
Poway	n/a
San Diego (County)	2024
San Diego (City)	2022
San Diego Regional Airport	2020
San Marcos	2020
Santee	2019
Solana Beach	2024
Vista	2021

Sources: City of Carlsbad 2024, City of Chula Vista 2017, City of Coronado 2022, City of Del Mar 2016, City of El Cajon 2020, City of Encinitas 2020, City of Escondido 2021, City of Imperial Beach 2019, City of La Mesa 2024, City of Lemon Grove 2020, National City 2011, City of Oceanside 2019, Port of San Diego 2013, City of San Diego 2022, County of San Diego 2024, San Diego Regional Airport Authority 2020, City of San Marcos 2020, City of Santee 2019, City of Solana Beach 2024, and City of Vista 2021.

Local Community Choice Energy Programs

San Diego Gas and Electric's (SDG&E's) eligible renewable (i.e., solar, wind, eligible hydroelectric, geothermal, and biomass and biowaste) procurement for calendar year 2022 was approximately 44.8% (CEC 2024c). However, through SDG&E's EcoChoice mix, customers in SDG&E's service area may voluntarily choose to receive their electricity from 100% eligible renewable sources. The cities of Chula Vista, Encinitas, Imperial Beach, La Mesa, and San Diego have formed the San Diego Community Power (SDCP) Community Choice Energy (CCE) Program. The current members of SDCP include the cities of Chula Vista, Encinitas, Imperial Beach, La Mesa, National City, and San Diego and the unincorporated communities of County of San Diego.

Additionally, the cities of Carlsbad, Del Mar, and Solana have formed the Clean Energy Alliance (CEA), another CCE Program, which started delivering power to customers in May 2021. SDCP and CEA work in partnership with SDG&E to deliver GHG-efficient electricity to customers within its member jurisdictions. CEA offers four plan options. Clean Impact is CEA minimum 50% renewable energy option, increasing annually to achieve 100% renewable energy by 2035. Clean Impact Plus is the default option and offers 50% renewable/75% carbon-free energy content. Green Impact is CEA's 100% renewable energy option. CEA also offers an option for homes with eligible renewable energy systems (e.g., rooftop solar). See Section 4.6, "Energy," for further details regarding local CCE programs.

4.8.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. The significance criteria specifically developed for this EIR are based on the Appendix G checklist questions and CEQA Guidelines Section 15064.4. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, the unique nature of the proposed Plan's GHG impacts, and the unique characteristics of the proposed Plan.

Checklist questions for GHGs are provided in Section VIII of Appendix G. According to Appendix G of the CEQA Guidelines, an impact related to GHG emissions is considered significant if implementation of the proposed Plan would do any of the following:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

To better focus the potential impacts associated with the proposed Plan, the Appendix G questions have been combined and modified. Both checklist questions for GHGs have been modified and expanded upon to better focus the potential impacts of Plan implementation against varying regulations and across various benchmark years. For purposes of this EIR, the implementation of the proposed Plan would have a significant GHG impact if it would:

GHG-1 Directly or indirectly result in an increase in GHG emissions compared to existing conditions (2022).

GHG-2 Conflict with the SANDAG region's achievement of SB 375 GHG emissions reduction targets for 2035.

GHG-3 Conflict with or impede the implementation of local plans adopted for the purpose of reducing GHG emissions.

GHG-4 Be inconsistent with the state's ability to achieve the 2030 reduction target of SB 32 and 2045 reduction goal of AB 1279.

4.8.4 Environmental Impacts and Mitigation Measures

GHG-1 DIRECTLY OR INDIRECTLY RESULT IN AN INCREASE IN GHG EMISSIONS COMPARED TO EXISTING CONDITIONS (2022)

Analysis Methodology

This analysis is based on the *2022 GHG Inventory and Projections for the San Diego Region* report prepared by SANDAG (Appendix E: Appendix G to the Regional Plan). This report provides an estimate of 2022 GHG emissions for the San Diego region and GHG projections for the years 2035 and 2050. This analysis compares regional GHG emissions projections for 2035 and 2050 to 2022 baseline regional GHG emissions to determine whether implementation of the proposed Plan would directly or indirectly result in an increase in GHG emissions compared to existing conditions (2022). The 2022 GHG inventory and projections report uses EMFAC2017 to estimate emissions for passenger cars and light-duty vehicles. EMFAC 2017 was used to maintain consistency with the 2025 Regional Plan air quality conformity analysis. Notably, as discussed in Section 4.8.2, "Regulatory Setting," several federal actions have been taken to retroactively rescind waivers issued by EPA under the CAA to allow the state to implement the ACC II program and the Advanced Clean Trucks and Low NO_X Omnibus regulations. EMFAC2017 does not account for the ACC II program or Advanced Clean Trucks regulatory mechanism, an EMFAC2017 post-processing adjustment factor assumes implementation of the Low NO_X rule. EIR mobile source emissions were calculated prior to the disapproval of the low NO_X rule. The federal disapproval is currently the subject of legal challenge and CARB had not provided guidance on how to address this issue in EMFAC modeling at the time of EIR preparation. EMFAC2017 also accounts for the GHG emission standards for passenger cars, light trucks, and medium-duty vehicles that were in effect at the time of its development (discussed above under Section 4.8.2,

"Regulatory Setting"). While EPA has proposed to repeal the Endangerment Finding (i.e., EPA's capacity to regulate GHG emissions under the CAA), as of the writing of this EIR, EPA has not adopted this proposal (EPA 2025b), and CARB has provided no guidance on how to address this issue in emissions modeling. Therefore, emissions factors have not been adjusted in this analysis.

The 2022 GHG inventory and projections report includes 14 emissions categories calculated based on the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* (ICLEI 2019) and CARB statewide GHG inventory methodology. The projections take into account the forecast regional growth and land use changes and planned transportation network improvements and programs of the proposed Plan, and the effect of existing federal and state regulations and regional policies to reduce GHG emissions. The report includes a summary of the methodologies and data used to calculate baseline emissions and emissions projections for each of the emissions categories. The 2022 inventory and projections report takes into account existing laws, regulations, programs, and policies in effect as of April 2025 to project future GHG emissions out to 2035 and 2050. In general, the level of uncertainty regarding future emissions increases as the projections get closer to 2050. The 2022 inventory and projections report does not and cannot account for several factors that are unknown at this time but will affect future GHG emissions in the San Diego region: future changes in local, state, and federal laws, regulations, and public policy; local, state, national, and global economic conditions; multinational or global agreements; investments and decision-making by private sector actors, including local, national, and global businesses; and personal and group behavior.

Notably, the 2022 GHG inventory and projections report accounts for GHG emissions attributable to construction activities within the region, including those related to implementation of the proposed Plan. Thus, impacts from construction-related GHG emissions are considered in the following analysis.

For the purpose of evaluating impacts under Impact GHG-1, regional growth and land use change and the transportation network improvements and programs of the proposed Plan are evaluated together because total annual regional GHG emissions are influenced by the combined effects of these two Plan components (among other factors).

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. Under implementation of the proposed Plan, total GHG emissions in the San Diego region are projected to be approximately 16.67 $MMTCO_2e$ in 2035, or about 25% less than total GHG emissions in 2022 (Table 4.8-7).

Table 4.8-7 Total Greenhouse Gas Emissions in the San Diego Region, 2022 to 2035

Emissions Category	2022 ($MMTCO_2e$/year)	2035 ($MMTCO_2e$/year)
Passenger Cars and Light Duty Vehicles	7.80	5.68
Electricity	4.03	0.85
Natural Gas	3.01	3.02
Industrial	2.40	2.54
Heavy Duty Trucks and Other Vehicles	2.28	2.14
Other Fuels	0.86	0.87

Emissions Category	2022 ($MMTCO_2e$/year)	2035 ($MMTCO_2e$/year)
Off-Road Vehicles	0.62	0.61
Solid Waste	0.32	0.08
Aviation	0.31	0.43
Water	0.25	0.05
Agriculture	0.18	0.20
Marine Vessels	0.11	0.13
Wastewater	0.05	0.05
Rail	0.03	0.01
Total	**22.25**	**16.67**
Change from 2022 to 2035		**- 5.58 $MMTCO_2e$ (-25%)**

Notes: $MMTCO_2e$ – million metric tons of carbon dioxide-equivalent. The GHG emissions projections include the impact of existing federal and state regulations and regional policies and programs to reduce GHG emissions.

Source: Modeled by the Energy Policy Initiatives Center, University of San Diego in 2025 (Appendix E).

While the San Diego region is forecasted to experience population, employment, and housing growth by 2035, overall GHG emissions are anticipated to decrease compared to 2022 levels due to the implementation of a series of regulations combined with the land use planning strategies and transportation network improvement programs. Given the state's emphasis on VMT reduction as a crucial strategy in the effort to achieve statewide reduction targets, the projected land use pattern under the proposed Plan supports high density, transit-oriented development throughout the Plan area.

For instance, due to anticipated growth in population, total VMT in the San Diego region is projected to increase from the 2022 baseline of 71,244,124 miles per weekday to 73,453,955 miles per weekday by 2035 (see Tables G.4 and G.5 of Appendix E). Despite this increase, transportation-related GHG emissions (see Table 4.8-7) and per capita VMT (see Section 4.16, Transportation) in 2035 would be less than in 2022. This would occur as a result of implementation of statewide fuel efficiency programs coupled with the dense, compact development and increasingly efficient, diversified transportation network improvement projects under the proposed Plan. Investments in transportation-related policies and projects that would directly reduce per capita VMT include funding for transit (e.g., light and commuter rail, bus rapid transit); managed high-occupancy vehicle (HOV), carpool, and high-occupancy toll lanes; and regional bike networks, which would combine to create a more complete transportation network within the San Diego region. Additional policies, such as parking management, microtransit, and deployment of electric bikes and scooters promote flexibility within the transportation network and would divert potential single-occupancy vehicle trips on a per capita basis.

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 in Section 2.0, "Project Description," for a full list of proposed projects by subregion. These transportation strategies, among others, combine with demographic (e.g., aging population) and economic (e.g., fuel prices) factors that would result in decreased VMT per capita over the lifespan of the proposed Plan.

The GHG emissions associated with the electricity and natural gas sectors reflect CEC's latest California Energy Demand 2023-2040 Revised Forecast in the SDG&E service area (CEC 2024d) and account for the improved electricity efficiency and increased renewable energy capacity from photovoltaics (PV) and non-PV electricity generation, behind-the-meter storage[2], current electricity rate structure, and the appliance and building energy efficiency of the California Energy Code up to 2022. Emissions also account for the statutory requirements of SB 100, SB 1020, and the RPS, which require utilities to procure a greater percentage of their electricity supplies from renewable resources by certain benchmark years, including 90% of retail sales by 2035 and 100% of retail sales by 2045.

Notably, as the California Energy Code continues to be updated on a triennial basis, future iterations of the California Code will likely become more energy efficient than the current 2022 code and include restrictions on the use of on-site natural gas consumption as the building sector trends towards decarbonization. For example, according to CEC, the 2025 California Energy Code is projected to reduce statewide GHGs by about 4 million metric tons, which would likely be the code in place at or shortly after the time the proposed Plan is adopted (CEC 2024b). Updates to the California Building Standards Code have historically increased the energy efficiency of buildings. However, AB 130 imposed a moratorium on updates to residential development standards in the California Building Standards Code from October 1, 2025, to June 1, 2031. This moratorium prohibits the CEC from imposing more restrictive residential development standards in the 2028 California Building Standards Code update. Such standards may have otherwise furthered GHG emissions reductions through measures to reduce electricity demand, such as improved efficiency, renewable energy design features, and promotion of on-site renewable energy generation. Further reductions to GHG emissions, beyond those achieved by the 2025 code, would likely continue with the 2031 update to the California Building Standards Code, based on historic trends. Overall, the exact level of energy efficiency and allowed on-site natural gas associated with future versions of the California Energy Code are unknown at this time because the specific requirements of such future code versions are not known; therefore, emissions from building energy consumption in 2035 may be overestimated.

The land use pattern and transportation network improvements of the proposed Plan, combined with the implementation of federal and state regulations that would result in reduced GHG emissions from activities in the San Diego region, would lead to lower total GHG emissions in 2035 as compared to 2022. Notably, regional GHG emissions reductions would likely still occur in a scenario where the proposed Plan is not implemented. This is due to the implementation of as state and local regulations regarding GHG reductions across all sectors which have created a statewide downward trend in GHG emissions. Thus, it is foreseeable that regional GHG emissions decrease as a result of statewide and local regulations.

2035 Conclusion

As shown in Table 4.8-7, implementation of the proposed Plan would not directly or indirectly result in an increase in GHG emissions compared to existing conditions because total annual regional emissions would be approximately 25% lower in 2035 relative to 2022. Therefore, this impact (GHG-1) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Under implementation of the proposed Plan, total GHG emissions in the San Diego region are projected to be approximately 16.40 $MMTCO_2e$ in 2050, or about 1.62% less than total GHG emissions in 2036 (Table 4.8-8).

[2] Behind-the-meter storage refers to an energy storage system that powers a house or building without passing through an electric meter.

Table 4.8-8 Total Greenhouse Gas Emissions in the San Diego Region, 2022, 2036, and 2050

Emissions Category	2022 ($MMTCO_2e$/year)	2036 ($MMTCO_2e$/year)[1]	2050 ($MMTCO_2e$/year)
Passenger Cars and Light Duty Vehicles	7.80	5.68	5.32
Electricity	4.03	0.85	0.44
Natural Gas	3.01	3.02	3.01
Industrial	2.40	2.54	2.79
Heavy Duty Trucks and Other Vehicles	2.28	2.14	2.17
Other Fuels	0.86	0.87	1.06
Off-Road Vehicles	0.62	0.61	0.63
Solid Waste	0.32	0.08	0.08
Aviation	0.31	0.43	0.46
Water	0.25	0.05	0.00
Agriculture	0.18	0.20	0.2
Marine Vessels	0.11	0.13	0.18
Wastewater	0.05	0.05	0.05
Rail	0.03	0.01	0.00
Total	**22.25**	**16.67**	**16.40**
Change from 2022 to 2050	**- 5.58 $MMTCO_2e$ (-25%)**		
Change from 2036 to 2050	**- 0.27 $MMTCO_2e$ (-1.62%)**		

Notes: $MMTCO_2e$ – million metric tons of carbon dioxide-equivalent. The GHG emissions projections include the impact of federal and state regulations and regional policies and programs to reduce GHG emissions.

[1] Forecasted emissions for 2035 were used to characterize emissions for 2036, as included in Table 4.8-7 and Appendix E. A separate 2036 forecast was not available; however, emissions for 2036 are anticipated to be relatively similar to those modeled for 2035, with the expectation that 2036 emissions would be slightly less than those reported in 2035 based on increased reliance on renewable energy and the transition to electric vehicles from internal combustion engines driven by regulatory mechanisms.

Source: Modeled by the Energy Policy Initiatives Center, University of San Diego in 2025 (Appendix E).

As a result of decreased population, total VMT in the San Diego region is projected to decrease from 2035 of 73,453,955 miles per weekday to 73,313,426 miles per weekday by 2050 (see Tables G.4 and G.5 of Appendix E; separate forecasts for 2036 were not available). While the San Diego region is forecasted to experience population, employment, and housing growth by 2050, overall GHG emissions are anticipated to decrease compared to 2036 levels due to the implementation of a series of regulations combined with the land use planning strategies and transportation network improvement programs. These programs include implementation of SB 100 and SB 1020, energy efficiency standards for nonresidential buildings, continued growth in solar photovoltaic installations, water conservation measures, solid waste diversion, refrigerant programs, and emission standards for off-road equipment. The discussion of regulations and programs provided above for 2035 would also apply to emissions in 2050.

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. These projects, in combination with demographic (e.g., aging population) and economic (e.g., fuel prices) factors would decrease per capita VMT and would result in decreased VMT per capita over the lifespan of the proposed Plan.

The GHG emissions associated with the electricity and natural gas sectors reflect CEC's latest state energy projections made in the California Energy Demand 2023–2040 Revised Forecast, which projects electricity sales in the SDG&E planning area (service area) through 2040. As no forecast is available after 2040, the modeling used the 2036–2040 average annual electricity sales increase, 1.6%, to project sales beyond 2040. Emissions also account for the statutory requirements of SB 100, SB 1020, and the RPS, which require utilities to procure a greater percentage of their electricity supplies from renewable resources by certain benchmark years, including 100% of retail sales by 2045. Thus, all retail energy procured after 2045 is assumed to be carbon-free.

As the California Energy Code continues to be updated on a triennial basis, future iterations of the California Code will likely become more energy efficient than the current 2022 code as well as include restrictions on the use of on-site natural gas consumption as the building sector trends towards decarbonization. For example, according to CEC, the 2025 California Energy Code is projected to reduce statewide GHGs by about 4 million metric tons, which would likely be the code in place during or shortly after the proposed Plan is adopted (CEC 2024b). However, the level of energy efficiency and allowed on-site natural gas associated with future versions of the California Energy Code are unknown at this time because the specific requirements of such future code versions are not known; therefore, emissions from building energy consumption in 2050 may be overestimated. Additionally, as stated above, AB 130 enacts restrictions on modifications to future iterations of the California Building Standards Code for residential development until 2031. As discussed above, AB 130's moratorium on updating the California Building Standards Code for residential development until 2031 would affect the GHG reductions associated with the previously anticipated future iterations of the California Building Standards Code. Energy efficiency and renewable energy design features to reduce electricity demand and promote on-site renewable energy would not be realized for residential development beyond what is required by the 2025 version of the code until the next update in 2031.

The land use pattern and transportation network improvements of the proposed Plan, combined with the implementation of federal and state regulations that would result in reduced GHG emissions from activities in the San Diego region, would lead to lower total GHG emissions in 2050 as compared to 2022, and less than those in 2036. Notably, regional GHG emissions reductions would likely still occur in a scenario where the proposed Plan is not implemented. This is due to the implementation of as state and local regulations regarding GHG reductions across all sectors which have created a statewide downward trend in GHG emissions. Thus, it is foreseeable that regional GHG emissions would continue to decrease by 2050 as a result of statewide and local regulations.

2050 Conclusion

As shown in Table 4.8-8, implementation of the proposed Plan would not directly or indirectly result in an increase in GHG emissions compared to 2036 because total annual regional emissions would be approximately 1.6% lower in 2050 relative to 2036. As emissions are shown to decrease from 2022 to 2035 (discussed above), this decrease in emissions between 2036 and 2050 demonstrates that GHG emissions would be less in 2050 as compared to a 2022 baseline inventory. Therefore, this impact (GHG-1) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

GHG-2 CONFLICT WITH THE SANDAG REGION'S ACHIEVEMENT OF SB 375 GHG EMISSIONS REDUCTION TARGETS FOR 2035

Analysis Methodology

The analysis evaluates whether the proposed Plan would conflict with the SB 375 GHG emission reduction target for 2035. SB 375 requires CARB to develop and update regional GHG emission reduction targets compared to 2005 emissions for passenger vehicles for 2020 and 2035. The updated targets established for SANDAG by CARB in 2018 are to reduce per capita CO_2 emissions to 15% below 2005 levels by 2020, and to 19% below 2005 levels by 2035. At this time, CARB has not developed or adopted any post-2035 SB 375 targets (CARB 2024c).

The San Diego region reduced emissions below the 2020 target because by 2020 it had reduced per capita CO_2 emissions from passenger cars and light-duty trucks to 17% below 2005 levels. Because the proposed Plan is

anticipated to be adopted in 2025, its implementation is unrelated to SANDAG's compliance with the 2020 target as the target year has passed. Therefore, compliance with the 2020 target is not addressed herein. SANDAG's methodology for measuring 2020 target achievement is provided in the SCS documentation prepared for the proposed Plan and has been submitted to CARB for review (included as Appendix B of the proposed Plan).

Because SB 375 does not establish 2050 GHG emissions reduction targets, this EIR does not present a 2050 analysis of conflicts with SB 375 emissions reduction targets.

The SB 375-related GHG emissions reductions in 2035 from implementation of the proposed Plan were calculated by SANDAG using the CARB model EMissions FACtor (EMFAC) 2014 and adjustment factors provided by CARB to account for differences in emissions rates between EMFAC2007 (used to set the 2005 baseline and original targets in 2010) and EMFAC2014. Off-model calculators were used to calculate emission reductions associated with vanpool and carshare strategies that are not accounted for in SANDAG travel demand modeling tools. Appendix B to the proposed Plan contains detailed descriptions of the vanpool and carshare off-model assumptions and methodologies. Refer to Appendix B to the proposed Plan for discussion of the CARB methodology that SANDAG is required to use when performing SB 375 calculations; use of the EMFAC2014 model with adjustment factors was stipulated by CARB. SANDAG used EMFAC2014 in the 2021 Regional Plan amendment and the same version (with adjustment factors) for the 2025 Regional Plan to standardize the results of the SB 375 GHG reductions calculations. As stated above in the regulatory setting, EMFAC2014 remains the most appropriate methodology for the EIR to use to estimate GHG impacts under GHG-2, despite federal removals of California CAA waivers and the proposed rescission of certain federal GHG emissions standards.

For the purpose of evaluating impacts under Impact GHG-2, regional growth and land use change and the transportation network improvements and programs of the proposed Plan are evaluated together because the per capita CO_2 emissions from passenger cars and light-duty trucks addressed by SB 375 targets are influenced by the combined effects of these two Plan components (among other factors).

Impact Analysis

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

CARB requires SANDAG to reduce per capita CO_2 emissions from passenger cars and light-duty trucks to 19% below 2005 levels by 2035. Table 4.8-9 summarizes the CO_2 per capita reductions from on-model and off-model strategies after accounting for the EMFAC adjustment factor and induced demand adjustment factor. As shown in Table 4.8-9, implementation of the proposed Plan would reduce per capita CO_2 emissions from passenger cars and light-duty trucks to 19.3% below 2005 levels by 2035. Therefore, implementation of regional growth and land use change and transportation network improvements and programs would not conflict with SB 375 GHG emission reduction targets.

Table 4.8-9 SB 375 GHG-Reduction Targets and GHG Emissions under the Proposed Plan from Passenger Vehicles and Light-Duty Trucks, 2035

	Per Capita Reductions from 2005 Levels
Per Capita Reduction under the Proposed Plan (On-Model Results Only)	-21.57%
Per Capita Reduction under the Proposed Plan (Off-Model Results Only)	-0.23%
CARB Adjustment Factor for EMFAC (2007–2014)[1]	+1.7%
Induced Demand Adjustment Factor[2]	+0.775%
Per Capita Reductions	-19.32%
CARB Target	-19%

[1] The GHG reductions for the 2025 Regional Plan were calculated using the CARB model EMFAC 2014 and adjustment factors provided by CARB to account for differences in emissions rates between EMFAC 2007 (used to set the original targets in 2010) and EMFAC 2014.

[2] The induced demand adjustment factor methodology is described in Appendix B to the Regional Plan.

Source: Modeled by SANDAG in 2025.

Notably, the North and East County Subregions contain a significant portion of the region's population and represent a higher-than-average VMT per capita. To address this, the proposed Plan includes projects within the North and East County Subregions tailored towards reducing per capita VMT, and thus transportation-related GHG emissions, attributable to these Subregions.

For example, to provide more convenient and reliable transit options, the plan includes enhancements to the SPRINTER and COASTER, including additional double-tracking and grade separations to allow for double the frequencies on specified sections of both routes during the peak and midday time periods (see Attachment A2 of Appendix A to the proposed Plan). A total of 16 Rapid routes are identified for North County, including Rapid 483 connecting San Marcos to Riverside County. Connections between rural communities will be improved by establishing Rapid 277 between Sabre Springs and Ramona and upgrading existing rural routes to have more trips throughout the week. See Table A.1 in Appendix A to the Regional Plan for a full list of transportation projects planned and ongoing in the North County Subregion.

Additionally, in the North County Subregion, with some segments currently under construction, the North Coast Bike Trail and Coastal Rail Trail are proposed for full implementation under the proposed Plan, with some segments due to be completed by 2035, and others by 2050. Other critical east-west connections like the Inland Rail Trail: Oceanside segment are due to be completed by 2035.

In the East County Subregion, numerous projects are planned to expand bike routes east to west and to minimize the number of bike routes that are mixed with vehicular traffic on high-speed roads. The La Mesa Corridor to East County Northern Loop (2035) and SR 125 – Grossmont College to Santee – El Cajon Corridor (2035) will offer on-street bike routes to safely connect riders around the Eastern Subregion. By 2035, the Lemon Grove to La Mesa Connector will support an on-street bikeway to advance a critical east-to-west connection. Additionally, to better connect the rural communities, the proposed Plan identifies a new Rapid 277 connection between Sabre Springs and Ramona, as well as upgrades to existing rural routes to provide more trips throughout the week. Lastly, East County projects include operational improvements along I-8 and substantial safety improvements for SR 94, SR 76, SR-67, and SR 79 and other state routes. Physical safety improvements are realized through a variety of projects including shoulder widening and curve straightening. See Table A.2 in Appendix A to the Regional Plan for a full list of transportation projects planned and ongoing in the East County Subregion.

As the North and East County Subregions support a considerable portion of the region's population and experience higher-than-average VMT per capita, a critical component of the proposed Plan is to facilitate projects which result in improved existing transit infrastructure, increased mass transit trip frequency, construction of new infrastructure such as additional line connections, expanded active transportation infrastructure, and increased transportation safety. As shown in Table 4.8-9, these projects would collectively reduce per capita VMT and, as a result, reduce per capita GHG emissions in these high-population subregions.

2035 Conclusion

Implementation of the proposed Plan would not conflict with SB 375 emission reduction targets for 2035 because it would result in a 19.3% reduction in per capita CO_2 emissions from passenger cars and light-duty trucks from 2005 levels by 2035, which exceeds the 2035 target of a 19% reduction for the SANDAG region. Therefore, this impact (GHG-2) in the year 2035 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

GHG-3 CONFLICT WITH OR IMPEDE THE IMPLEMENTATION OF LOCAL PLANS ADOPTED FOR THE PURPOSE OF REDUCING GHG EMISSIONS

Analysis Methodology

Section 4.8.2, "Regulatory Setting," describes adopted CAPs, GHG reduction plans, or sustainability plans relevant to the proposed Plan. Eighteen of SANDAG's nineteen member jurisdictions have adopted CAPs, GHG reduction

plans, or sustainability plans that set goals and targets for the reduction of GHG emissions, and outline policies or measures to achieve those goals and targets. Generally, these local targets are developed in consideration of the state's long-term GHG-reduction goals by legislatively significant benchmark years (i.e., 2030 and 2045). There are two primary types of GHG reduction plans: plans that serve as policy documents, and plans that are qualified for tiering under CEQA. For purposes of this EIR, all plans developed by SANDAG member agencies related to GHG reductions are evaluated.

As discussed in Section 4.8.2, "Regulatory Setting," Section 15183.5(b) of the CEQA Guidelines directs that agencies should tier the environmental analyses which they prepare for separate, but related, projects, such as in the cases of general plans, CAPs, zoning changes, and development projects. According to the CEQA guidelines, tiering may be used when the sequence of analysis is from an EIR prepared for a general plan, CAP, policy, or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site-specific EIR or negative declaration (14 CCR Section 15152[b]). Notably, CEQA Guidelines Section 15183 (14 CCR Section 15183) provides an exemption from additional environmental review for projects that are consistent with the development density established by existing zoning, community plan, CAP, or general plan policies for which an EIR was certified, except as might be necessary to examine whether there are project-specific significant effects which are peculiar to the project or its site. Section 15183(c) further specifies that if an impact is not peculiar to the parcel or to the proposed Plan, has been addressed as a significant effect in the prior EIR, or can be substantially mitigated by the imposition of uniformly applied development policies or standards, then an additional EIR need not be prepared for that project solely on the basis of that impact.

The proposed Plan is generally evaluated against the goals, measures, and implementing actions of local CAPs and GHG-reduction plans to determine any conflicts in this analysis. A detailed CAP consistency analysis by jurisdiction is provided in Appendix E: Appendix G to the Regional Plan. The analysis of the proposed Plan and local CAPs is provided for 2035 and 2050. Several adopted local CAPs and GHG-reduction plans address the 2045 statewide carbon neutrality goal. This analysis addresses potential conflicts between the proposed Plan and such adopted plans in 2050 because 2050 constitutes the horizon year of the proposed Plan. This comparison is appropriate because adopted CAPs and GHGRPs that include 2045 targets align with AB 1279 and plan for a more ambitious target based on the goals of AB 1279. As discussed above, AB 1279 requires achieving carbon neutrality no later than 2045 and negative emissions thereafter, and an 85% reduction in 1990 anthropogenic emissions level by 2045. The implementation of the proposed transportation improvement projects and land use development pattern of the proposed Plan would achieve GHG reductions over time; these components of the proposed Plan would not interfere with local jurisdictions implementing their identified measures to reduce local GHG emissions (as detailed in Appendix E: Appendix G to the Regional Plan). Because the local CAPs establish goals, objectives, and policy measures for both regional growth and land use change and transportation network improvements, the analysis of conflicts with local climate action plans does not separate the two categories. The impact assessment addresses both forecast regional growth and land use change and the planned transportation network improvements and programs.

Impact Analysis

2035 and 2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

An analysis of whether the proposed Plan would conflict with the policies, measures, and actions of adopted plans is provided in Appendix E: Appendix G to the Regional Plan. Typically, CAPs include various measures and actions to reduce GHG emissions by sector including, but not limited to, transportation, energy, solid waste, water and wastewater, and carbon sequestration. Common measures to reduce emissions from the transportation sector include the promotion of near-zero and zero-emission vehicles and associated infrastructure, the deployment of TDM strategies such as iCommute and commuter benefits programs, and the development of Complete Streets that include pedestrian and bicycle programs, among others. A major objective of the proposed Plan is to reduce GHG emissions from passenger cars and light-duty trucks. Therefore, many transportation network improvements and programs that would be implemented under the proposed Plan would complement these existing and future local efforts to reduce GHG emissions from the on-road transportation sector.

Other examples of local CAP measures that reduce GHG emissions include energy efficiency renovations of existing buildings, deployment of solar PV to existing and new residential and nonresidential buildings, additional waste diversion goals exceeding statewide requirements, capture and control of landfill emissions, improved water efficiency in existing and new residential and nonresidential development, and tree planting to increase carbon sequestration. These implementing actions would be outside of the scope of the proposed Plan and SANDAG's direct authority; - their implementation would not be impeded or obstructed by implementation of the regional growth and land use changes and transportation network improvements and programs included in the proposed Plan.

2035 and 2050 Conclusion

As shown in the CAP consistency analysis included in Appendix E: Appendix G to the Regional Plan, implementation of regional growth and land use change and transportation network improvements and programs under the proposed Plan would not conflict with or impede the implementation of adopted CAPs, GHG reduction plans, and/or sustainability plans. Therefore, this impact (GHG-4) in the years 2035 and 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

GHG-4 BE INCONSISTENT WITH THE STATE'S ABILITY TO ACHIEVE THE 2030 REDUCTION TARGET OF SB 32 AND 2045 REDUCTION GOAL OF AB 1279

Analysis Methodology

This analysis evaluates whether the proposed Plan would be inconsistent with the state's ability to achieve the SB 32 target of reducing statewide GHG emissions to 40% below the 1990 levels by 2030 and the AB 1279 goal of achieving net zero emissions as soon as possible as well as reducing anthropogenic emissions at least 85% below 1990 levels by 2045. The consistency analysis was also extended to 2050, to be consistent with other 2050 impact analyses in this EIR.

To perform this analysis, SANDAG identified estimated emissions reduction reference points for the region for 2030 and 2045 based on the target levels and dates from SB 32 and AB 1279. Emissions for 2050 have also been included for informational purposes to demonstrate the SANDAG region's projected emissions. The GHG emissions results for 2030 and 2045 were interpolated using data from the 2022 GHG inventory and projections prepared for the Regional Plan (Appendix E: Appendix G to the Regional Plan) and then compared to the reference points. The 2050 emissions presented are taken verbatim from Appendix G of the Regional Plan. Note that there is no requirement that the SANDAG region's emissions be reduced by the same percentage ("equal share") as the statewide percentage in order for the state to achieve the goals of SB 32 and AB 1279. For purposes of this EIR, the proposed Plan's impacts nevertheless are considered significant if total emissions in the SANDAG region exceed the estimated 2030 and 2045 GHG reduction reference points.

Because there is not an available 1990 emissions inventory for the San Diego region that is comparable to the regional inventory and projections prepared for the proposed Plan, reference points were developed for this analysis to show the level of GHG reductions needed between 2022 (the baseline year of the inventory and proposed Plan) and future years of 2030 and 2045 that would be equivalent to level of reductions needed when measured against 1990.[3]

In 2022, total statewide emissions equaled 371 million metric tons of carbon dioxide equivalent ($MMTCO_2e$), which was 60 $MMTCO_2e$ (approximately 14%) lower than the statewide 1990 emissions level of 431 $MMTCO_2e$ (CARB 2025b). CARB's emission limit for 2030 is 260 $MMTCO_2e$, which is 40% below 1990 emissions levels and 30% below the 2022 inventory levels. CARB's emissions limit for 2045 is approximately 65 $MMTCO_2e$, which is approximately 85% below 1990 levels and 83% below the 2022 inventory levels (CARB 2022a).

[3] The 2012 inventory report prepared for the 2015 Regional Plan included an estimated 1990 emissions level for the San Diego region, but it was prepared using data sources and methods that do not allow for a direct comparison with the GHG emissions projections provided in the 2022 GHG Inventory and Projections report prepared for the proposed Plan.

In summary, the statewide target for 2030 is equivalent to 30% below 2022 levels, and the statewide target for 2045 is equivalent to 83% below 2022 levels. Therefore, to identify the reference point for 2030, a 30% reduction was applied to the total regional emissions in 2022, which results in a 2030 reference point of 15.6 $MMTCO_2e$. Similarly, to identify the reference point for 2045, an 83% reduction was applied to the total regional emissions in 2022, which results in a 2045 reference point of 3.9 $MMTCO_2e$. Stated otherwise, the level of regional emissions needed to meet SB 32 targets is 15.6 $MMTCO_2e$ in 2030, and the level of regional emissions needed to meet AB 1279 targets is 3.9 $MMTCO_2e$ in 2045. The 15.6 $MMTCO_2e$ and 3.9 $MMTCO_2e$ reference points for 2030 and 2045 represent the levels of regional emissions needed to achieve the SB 32 and AB 1279 targets for each year, respectively. As there is no statewide goal for 2050 (AB 1279 superseded the 2050 target enumerated in EO S-3-05), no reference point has been developed for 2050. Notably, there is no requirement that the SANDAG region's emissions be reduced by the same percentage ("fair share") as the percentage to achieve the statewide goals of SB 32 and AB 1279; however, these goals can be used as informational reference points in this analysis for 2030 and 2045 to gauge the proposed Plan's consistency with these target years. In the absence of local targets, SANDAG is relying on these reference points derived from statewide data to evaluate how the SANDAG region is performing compared to the statewide targets under SB 32 and AB 1279.

For purposes of evaluating impacts under Impact GHG-4, because the SB 32 and AB 1279 targets and regional reference points reflect GHG emissions from the proposed Plan's regional growth and land use change and the planned transportation network improvements and programs, the analysis does not separate the two categories. Emissions for 2050 are similarly grouped together. The impact assessment includes both forecasted regional growth and land use change and planned transportation network improvements and programs.

Impact Analysis

2030, 2045, and 2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Implementation of the proposed land use pattern and transportation infrastructure improvements under the proposed Plan would result in long-term operational emissions of GHGs associated with the combustion of fossil fuels for transportation, operation of landscape maintenance equipment, consumption of electricity and natural gas, water-related energy consumption associated with water use and the conveyance and treatment of wastewater, and waste-generated emissions from the transport and disposal of solid waste. The sources from which a project would emit GHGs as well as the quantity of operational emissions emitted by a project are dependent on project-level design components. Whether individual projects implemented under the Regional Plan would result in significant levels of GHG emissions would depend on various parameters (e.g., project size, location, design, energy efficiency) that are not known at this time and therefore cannot be quantified on an individual basis.

In addition to area, energy, transportation, water, and solid waste emissions, the land uses under the proposed Plan could also accommodate stationary sources of pollutants that would be required to obtain permits to operate in compliance with SDAPCD rules. These sources could include, but are not limited to, diesel engine or gas turbine generators for emergency power generation; central heating boilers for commercial, industrial, or large residential buildings; process equipment for light industrial uses; kitchen equipment at restaurants and schools; service station equipment; and dry-cleaning equipment. With respect to stationary source emissions, levels can vary greatly depending on the exact operations and processes involved. Specific information is not available for this program level analysis to reliably estimate these emissions. Notably, some stationary source emissions are captured within the "industrial" emissions category shown in Tables 4.8-7 and 4.8-8. However, this category may not capture all regional emissions from stationary sources, as specifics regarding project–design-dependent sources such as emergency generators used in the building sector are not known at this time. The permit process would ensure that these sources would be equipped with the required emission controls, and that individually these sources would not produce substantial emissions.

The change in regional GHG emissions from 2022 to 2030, from 2022 to 2045, and from 2022 to 2050, including implementation of the entire land use pattern and transportation improvement projects of the proposed Plan,

while also accounting for the emissions benefits achieved from statewide regulatory mechanisms, have been estimated for the purposes of evaluating the proposed Plan against the long-term statewide GHG reduction targets of SB 32 and AB 1279. As stated previously and discussed throughout this analysis, Appendix E includes an inventory of SANDAG's emissions for 2035 and 2050. To assess the proposed Plan's consistency with SB 32 and AB 1279, the emissions estimates from Appendix E have been interpolated to align with these target years assuming growth projections within the SANDAG region. These calculations of operational GHG emissions, as described below, represent a general estimate of the net change in emissions that could result from the growth accommodated by the proposed Plan.

Table 4.8-10 Reference Point and GHG Emissions under the Proposed Plan, 2030, 2045, and 2050

	Annual Emissions ($MMTCO_2e$)[1]
GHG Emissions in the San Diego Region in 2022	22.25
GHG emissions in the San Diego Region in 2030	18.82
2030 Reference Point (30% below 2022 levels)	15.59
GHG emissions in the San Diego Region in 2045	16.49
2045 reference point (83% below 2022 levels)	3.90
GHG emissions in the San Diego Region in 2050[2]	16.40

Notes: GHG = greenhouse gas; $MMTCO_2e$ = million metric tons of carbon dioxide equivalent.

[1] Annual emissions are presented to the nearest hundredth of a decimal. Sum totals may not align due to rounding.

[2] There is no reference point for 2050 as the state has not codified a target for this year. Executive Order S-3-05 established an 80 percent reduction from 1990 statewide emissions inventory by 2050; however, this target has been superseded by Assembly Bill 1279.

Source: Appendix E, Data compiled by Ascent Environmental in 2025 (Appendix H).

As shown in Table 4.8-10, total annual emissions in the San Diego region would be reduced by approximately 3.4, 5.8, and 5.9 $MMTCO_2e$/year in 2030, 2045, and 2050, respectively, relative to the 2022 baseline year. The total emissions in the San Diego region of 18.8 $MMTCO_2e$ in 2030 would exceed the regional 2030 GHG reference point of 15.6 $MMTCO_2e$ (which is based on SB 32 targets for 2030); therefore, the proposed Plan's 2030 GHG emissions would be inconsistent with the state's ability to achieve the goals of SB 32. Additionally, because the total emissions in the San Diego region of 16.49 $MMTCO_2e$ in 2045 would exceed the regional 2045 GHG reference point of 3.9 $MMTCO_2e$ (which is based on AB 1279 targets for 2045), the proposed Plan's 2045 GHG emissions would be inconsistent with the state's ability to achieve the goals of AB 1279. These inconsistencies would persist through 2050.

Notably, some GHG emissions reductions would occur even in a "no-project" scenario where the proposed Plan is not implemented, as state and local regulations regarding GHG reductions across all sectors have created a statewide downward trend in GHG emissions in accordance with the reduction goals and implementing regulations under SB 32 and AB 1279. The proposed Plan would support statewide GHG emissions reduction goals through dense, compact development that, coupled with an efficient and diversified transportation network, would improve transportation efficiency and reduce overall and per capita GHG emissions.

It is important to note that as the proposed Plan is implemented, project-level analysis of GHGs would be required as appropriate by the CEQA lead agency. Because of the programmatic nature of the proposed Plan, individual land uses and associated emissions may be different than what was projected at the plan level due to unknowns regarding the specific land use type and size of individual land use development and transportation infrastructure improvement projects under the proposed Plan.

The proposed Plan is specifically designed to reduce regional VMT and use of fossil fuel consumption in the transportation and building sectors. Because the 2022 Scoping Plan encourages local agencies to take action to reduce VMT, increase ZEV usage, and decarbonize buildings, and therefore contribute to achieving statewide GHG reduction targets, the 2022 Scoping Plan is a GHG reduction plan applicable to the project. The 2022 Scoping Plan outlines the primary strategies California intends to implement to achieve the legislative GHG emission target for

2030 and provide a pathway towards the state's 2045 climate goals. The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector including transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste. The 2022 Scoping Plan lays out the pathway to achieve the state's carbon neutrality goal and reduce anthropogenic GHG emissions by 85% below 1990 levels no later than 2045.

The Local Actions Appendix (Appendix D) to the 2022 Scoping Plan includes various recommendations that local governments can implement to align their planning and development review processes with the state's climate goals. Appendix D recommends that local governments focus on transportation electrification, VMT reduction, and building decarbonization (CARB 2022a). As detailed above, the proposed Plan was specifically designed to reduce regional VMT and was prepared pursuant to SB 375. SB 375 seeks to reduce GHG emissions from the passenger-vehicle sector by reducing VMT within developed areas and areas planned for development within the jurisdictions of the state's 18 MPOs. Compliance with the reduction goals of SB 375 is identified in the 2022 Scoping Plan as a necessary component to achieving the short-term goal of reducing statewide GHG emissions to 40% below 1990 levels by 2030 as mandated by SB 32.

CARB adopted the most current SB 375 regional GHG reduction targets in March of 2018. This includes the SANDAG region's target for GHG emissions reductions as a 19% decrease in per capita passenger-vehicle GHG emissions as compared to 2005 levels by 2035 (CARB 2018b). This reduction target adds to the GHG reductions achieved through the implementation of other statewide programs (e.g., Cap-and-Trade, RPS).

While the proposed Plan would meet the region's SB 375 target of reducing vehicle emissions by 19% by 2035 relative to 2005 levels (see Impact GHG-2, above), recent reports on the state's climate goals suggest that the regional 2035 GHG emissions reduction targets under SB 375 are not adequate to fully meet the GHG reduction goals of SB 32 (CARB 2022b) (see Section 4.8.2, "Regulatory Setting," above). CARB anticipates that the state would need to achieve a 25% reduction in per capita GHG emissions by 2035, which exceeds SANDAG's 19% target.

Additional reductions would be needed in the transportation sector and all other GHG sectors to achieve the goals of SB 32 and AB 1279. The other sectors include how energy is sourced, generated, and used; how solid waste is generated, managed, and disposed of; treatment, conveyance, and uses of water supply and wastewater; energy sources and feedstocks for industrial processes and activities; management of natural and working lands; and uses of high-GWP gases. Achieving GHG reductions from these sectors at the scale required to meet the goals of AB 32 and AB 1279 would require major changes to government regulation, private sector activity, consumer behavior, and other facets of life throughout California and beyond.

In the 2022 Scoping Plan, CARB identifies several pathways for each sector to close the reduction gap needed to achieve the targets of AB 1279. These would be achieved through building decarbonization, reducing the cap of the Cap-and-Trade Program, investing in the health of the state's natural and working lands, and ultimately reliance on carbon capture and sequestration technologies to eliminate residual emissions from those sectors CARB cannot independently regulate or control. The reductions achieved through SB 375 and the efforts of MPOs would contribute to the overall goal of carbon neutrality; however, this regulation is one component of many GHG reduction plans, policies, and actions taken by the state to reduce statewide emissions.

Through competitive funding distribution, SANDAG is able to advance the projects and programs that best implement the proposed Plan. Collectively, SANDAG funding programs have supported projects that both reduce VMT and increase EV utilization. Thus, GHG emissions related to the combustion of fossil fuel used for transportation are reduced by funding from SANDAG which supports building transportation infrastructure or campaigns/programs to incentivize infill development, connecting people to community destinations with walking and biking facilities, adding and improving EV charging infrastructure, facilitating ZEV incentive programs, and exploring new options to decrease VMT.

2030, 2045, and 2050 Conclusion

Because the total emissions in the San Diego region of 18.8 $MMTCO_2e$ in 2030 would exceed the regional 2030 GHG reference point of 15.6 $MMTCO_2e$ (which is based on SB 32 targets for 2030), the proposed Plan's 2030 GHG emissions would be inconsistent with the state's ability to achieve the goals of SB 32. Additionally, because the

total emissions in the San Diego region of 16.49 $MMTCO_2e$ in 2045 would exceed the regional 2045 GHG reference point of 3.9 $MMTCO_2e$ (which is based on AB 1279 targets for 2045), the proposed Plan's 2045 GHG emissions would be inconsistent with the state's ability to achieve the goals of AB 1279. Further, given the evidence put forth by CARB and in the documents prepared by CARB related to the SB 375 target setting finalized in March 2018, more must be done to reduce emissions from the transportation sector to achieve the state's climate goals. Therefore, the proposed Plan's measures alone would not be sufficient to achieve the state's GHG reduction goals outlined in the 2022 Scoping Plan (i.e., 40% below 1990 emissions by 2030 [SB 32] and 85% below 1990 anthropogenic emissions by 2045 [AB 1279]), and, this impact would be significant. These inconsistencies would persist through 2050.

Mitigation Measures

Basis for Selection of GHG Mitigation Measures

Overview

Many features currently included in the proposed Plan (e.g., the SCS, increased transit, and active transportation investments) have the effect of reducing GHG emissions that might otherwise occur. Mitigation measures presented in this section are additional feasible GHG reduction measures not included in the proposed Plan that SANDAG has committed to implement for its projects and which other transportation project sponsors can and should implement for their projects. Presented below are three types of feasible GHG reduction mitigation measures presented later in this section:

- Plan- and policy-level mitigation measures SANDAG has committed to implement.
- Mitigation measures for transportation network improvements and programs which SANDAG has committed to implement for its projects and which other transportation project sponsors can and should implement for their projects.
- Mitigation measures for development projects implementing regional growth and land use changes, which local jurisdictions can and should implement.

While SANDAG has the authority to implement the mitigation measures it has committed to, it has no legal or jurisdictional authority to require other transportation project sponsors or local jurisdictions to implement mitigation measures for specific projects for which those entities have responsibility and jurisdiction. As explained in the Analysis Methodology under Chapter 4, mitigation can include measures that are within the responsibility and jurisdiction of another public agency. SANDAG, in its CEQA findings, may find that those measures assigned to other agencies can and should be adopted by those other agencies (CEQA Guidelines Section 15091(a)(2)). Additional Plan-level measures to reduce GHG emissions are included as components of the project alternatives in Chapter 6, rather than as individual mitigation measures in this section. These include still more compact land use patterns; concentrated growth in multimodal transportation areas; policies to reduce transit fares or provide free transit, and managed lane pricing and increased parking prices.

To provide context for the EIR's proposed GHG mitigation measures, it is important to first understand the state's strategies for achieving statewide GHG reductions under SB 32 and AB 1279. It is also important to understand what GHG reduction measures are included in the proposed Plan, what GHG reductions are being achieved as a result of past and ongoing implementation of the 2021 Regional Plan EIR's mitigation measures, and what other SANDAG GHG reduction plans and programs already exist. This information is provided below, following which the proposed Plan EIR GHG mitigation measures are presented.

Background

Background: State Strategy and Measures for Achieving Statewide Targets

The 2022 Scoping Plan traces the state's pathway to achieve its goals of achieving a 40 percent reduction from 1990 GHG levels in 2030 as well as carbon neutrality and an 85% reduction in emissions by 2045 relative to 1990 levels, as codified by AB 1279. These targets are in line with scientifically established levels to limit the rise in global

temperature to no more than 2°C, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5°C (United Nations 2015). The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile-source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals. The 2022 Scoping Plan details a multitude of strategies for reducing GHG emissions in each of these sectors.

Background: Conclusion Regarding State Strategy and Measures

Full implementation of the measures identified in the 2022 Scoping Plan that could result in a 40% reduction of GHG emissions below 1990 levels by 2030 would require major changes in clean technologies utilization; markets; and local, state, and federal policies and regulations. Achieving AB 1279's goal of carbon neutrality no later than 2045 and negative emissions thereafter, and an 85% percent reduction in 1990 anthropogenic emissions level by 2045, would require the decarbonization of the state's electrical sector, decarbonization of existing buildings and new construction, electrification of the entire transportation sector, investments in healthy soils, sustainable solid waste and wastewater management, and carbon dioxide removal strategies, such as land-based carbon sequestration and direct air capture of CO_2. The required GHG reductions from the aforementioned sectors can only be achieved through a coordinated effort by, at minimum, state, regional, and local agencies, organizations, and stakeholders, and is well beyond the ability and jurisdiction of SANDAG alone.

Background: Role of SANDAG in Planning for GHG Emissions Reductions

As an MPO and Council of Governments (COG) with a mission of promoting quality of life in the region, SANDAG has engaged in climate planning efforts for over a decade, leveraging the agency's position as a bridge between local and state governments and building upon its statutory requirements under SB 375. The agency has prepared a wide range of climate-related plans and programs. Some have been explicitly connected to climate change, while others are more indirectly related and result in GHG reductions or carbon emissions removal that is incidental to their primary purpose (e.g., the Smart Growth Incentive Program supports land development and infrastructure improvements that also contribute to lower VMT and associated GHG emissions; the Environmental Mitigation Program conserves and restores native habitats to compensate for the loss of habitat resulting from transportation capital projects, which can retain carbon stored in soils and vegetation on the region's natural lands and contribute to removal of emissions from the atmosphere).

The following discussion describes SANDAG's many activities for achieving GHG emissions reductions, including the proposed Plan strategies to reduce GHG emissions as required by SB 375, the GHG mitigation measures previously adopted by SANDAG as part of its 2021 Regional Plan, and other plans and programs that SANDAG proactively prepares and implements that are not required by state or federal law or regulation.

Background: Proposed Plan Strategies and Actions to Reduce GHG Emissions

SANDAG has direct responsibility for planning for achieving passenger vehicle GHG reduction targets through the development and implementation of an SCS pursuant to SB 375. The proposed Plan includes an SCS and demonstrates that, if the proposed Plan is implemented, the San Diego region would achieve its SB 375 target for 2035. Analysis performed by SANDAG and included in the SCS documentation for the proposed Plan demonstrates that the San Diego region has achieved its SB 375 target for 2020 (Appendix B to the Regional Plan).

The proposed Plan includes many strategies that contribute to GHG reductions under SB 375 and identifies implementation actions that SANDAG will take to realize these reductions. The strategies can be broadly categorized as transportation system infrastructure and operations, demand management, land use, and zero-emission vehicles.

The proposed Plan incorporates several transportation system infrastructure and operational strategies, including investments in:

- Active Transportation
- Transit

- Transportation System Management
- Complete Corridors
- Flexible Fleets

The proposed Plan also includes several implementation actions that would implement the above strategies, including:

- Near Term Action A: Develop the remaining three Comprehensive Multimodal Corridor Plans (CMCP) in partnership with Caltrans, agency partners, and local governments
- Near Term Action C: Develop a phased implementation strategy for the regional Managed Lanes system in partnership with Caltrans
- Near Term Action N: Complete regional bike projects in active construction
- Near Term Action Y: Continue implementing LOSSAN Rail Corridor improvement projects

See Chapter 3, "Implementation Actions," of the Regional Plan for a comprehensive list of implementation actions.

The proposed Plan also addresses the reduction of GHG emissions beyond passenger vehicle sources. For example, relative to existing land use plans, the proposed Plan's compact land use pattern preserves more of the region's natural and working lands instead of converting these lands to urban or developed uses. As a result, more carbon would remain stored in soil and vegetation rather than being released into the atmosphere.

Background: Summary and Status of Previously Adopted GHG Mitigation Measures

The 2021 EIR included several mitigation measures to reduce GHG emissions. These are summarized below to provide context for more recent efforts undertaken by SANDAG to reduce GHGs within the San Diego region.

- GHG-5a, *Allocate Competitive Grant Funding to Projects that Reduce GHG Emissions and for Updates to CAPs or GHG Reduction Plans,* directed SANDAG to implement a grant program(s) that allocate(s) funding on a competitive basis to underfunded GHG-reducing projects that implement the stated strategies or measures in local jurisdiction CAPs or GHG reduction plans. The new and/or revised grant program(s) was intended to: (1) achieve additional annual GHG emissions reductions during the proposed Plan horizon by implementing projects that would not otherwise occur due to insufficient funding, and (2) achieve additional cumulative GHG emissions reductions under the proposed Plan planning horizon by implementing projects ahead of schedule and realizing GHG reductions earlier than they would otherwise occur due to timing of funding availability. Reducing total annual and cumulative GHG emissions under the 2021 Regional Plan planning horizon reduces the 2021 Regional Plan's contribution to climate change. In 2022, SANDAG released Cycle 5 of its Smart Growth Incentive Program (SGIP) which included $3 million for planning projects. CAPs were required for local jurisdictions to be eligible for receiving grant funds pursuant to the 2021 EIR. SANDAG funded 5 projects for a total of $1.9 million. In 2024, SANDAG revised the SGIP to include a project category for CAPs and CAP updates. In 2025, SANDAG released its SGIP Cycle 6 Call for Projects with a total of $45 million made available to local jurisdictions. In addition to the CAP category, projects identified in local CAPs could apply for funding in the capital and planning categories for funding. Performance measures were included for each category of projects.
- GHG-5b, *Establish New Funding Programs for Zero-Emissions Vehicles and Infrastructure,* directed SANDAG to reduce regional GHG emissions by allocating funds for infrastructure such as EV charging equipment and hydrogen fueling stations, as well as zero-emissions goods movement vehicles (e.g., medium- and/or heavy-duty trucks) and infrastructure; zero-emissions fleet vehicles; electric micromobility (e.g., personal electric bikes, cargo delivery electric bikes, neighborhood electric vehicles) and associated infrastructure. Increasing the amount of vehicle miles traveled by zero emissions vehicles under the proposed Plan horizon reduces the 2021 Regional Plan's inconsistencies with the State's ability to achieve long-term climate goals. SANDAG launched a pilot e-bike program in 2022 that ran for 2 years. Data from the pilot will be used to develop a regional program. SANDAG also completed two ZEV-related goods movement planning strategies identified

in the 2021 EIR that were necessary to inform future regional incentive program options (the California Energy Commission-funded Medium Duty/Heavy (MDHD) Duty EV Blueprint grant for San Diego Region, in partnership with the Port of San Diego, and the Caltrans-funded San Diego and Imperial Counties Sustainable Freight Implementation Strategy). SANDAG also applied for a federal grant to fund a ZEV fleet program and a truck charger program in 2024 but was not awarded the grant.

- GHG-5c, *Implement Nature-Based Climate Solutions to Remove Carbon Dioxide from the Atmosphere,* directed SANDAG to establish a Nature-Based Climate Solutions (NbS) Program to restore or enhance natural infrastructure that uses or mimics natural processes to benefit people and wildlife. Through this program SANDAG would implement, or provide funding to implement, projects that restore or enhance native habitats to increase rates of carbon sequestration over baseline conditions. SANDAG determined it needed to develop a program framework for NbS before establishing a program. SANDAG twice applied for funding from the State to accomplish this but was not successful in receiving an award.
- GHG-5d, *Develop and Implement Regional Digital Equity Strategy and Action Plan to Advance Smart Cities and Close the Digital Divide.* SANDAG adopted a Regional Digital Equity Strategy and Action Plan in 2022 to expand access to affordable, high-quality broadband service. This plan intends to address significant inequities in digital infrastructure while allowing for remote education, telemedicine, work from home, and the potential for other remote access opportunities that reduce car travel and the associated GHG emissions. This Strategy now informs agency-wide initiatives, including the $32 million Next OS program, which supports a connected digital infrastructure backbone that enables a real-time, data-driven, and fully accessible multimodal transportation network. SANDAG is also advancing digital infrastructure through key regional projects, including a Local Agency Technical Assistance (LATA) grant project that is designing expanded internet infrastructure on tribal reservations and Zito Media's Federal Funding Account (FFA) grant project which will expand broadband deployment in underserved areas of rural San Diego. These efforts are critical to connecting historically underinvested communities, minimizing the need for long-distance travel to access essential services, and ensuring that the entirety of the region has an accessible, sustainable, digitally connected network.
- GHG-5g, *Prepare/Develop a Regional Climate Action Plan,* directed SANDAG to prepare a regional Priority Climate Action Plan (PCAP) and a CCAP that include measures to reduce GHG emissions and help achieve the 2045 targets established by California AB 1279 and CARB's Final 2022 Scoping Plan Update. SANDAG completed the PCAP in March 2024 and is completing its CCAP, the Roadmap, by December 1, 2025.

Background: Other SANDAG Plans and Programs to Address GHG Emissions Reductions.
This section describes SANDAG plans and programs that support GHG emissions reductions that are in addition to those that would occur as a result of proposed Plan strategies or the GHG mitigation measures previously adopted in the 2021 Regional Plan.

Final Program Budget for Fiscal Year (FY) 2026
Outside of the proposed Plan, SANDAG's Final Program Budget for Fiscal Year (FY) 2026 includes funding for SANDAG's Regional Habitat Conservation Fund, a component of the TransNet Environmental Mitigation program (EMP) (Work Element 1200300), wherein contracts are awarded to land managers to assist with regional management and monitoring needs to promote regional habitat conservation. The FY 2026 budget also allocates funding to prepare a draft and final long-term regional climate vision called the Climate Action Roadmap (Work Element 3202000). It also allocates funding for climate adaptation planning in the form of regional shoreline management planning (Work Element 3200200) and a cross-border resiliency plan (Work Element 3402101).

Regional Climate Action Planning Framework (ReCAP)
Nearly all of the San Diego region's 19 local jurisdictions have adopted a CAP or are in the process of developing one (see Table 4.8-5 for a list of all adopted and in-progress CAPs in the region). Local agency staff members and elected officials communicated that ongoing efforts to adopt, update, and monitor the implementation of CAPs would benefit from regionally consistent approaches, methodologies, and data sources. In response, SANDAG collaborated with local agency staff and leading climate planning experts to prepare the ReCAP, which identifies best

practices and guidance for preparing CAPs and monitoring implementation over time. In 2018, the ReCAP established a technical framework consistent with state goals and policies while preserving local policy flexibility for the unique needs and circumstances of each local jurisdiction. SANDAG, in coordination with many local jurisdictions, prepared local CAP monitoring reports called ReCAP snapshots for the monitoring years 2018, 2020, and 2022.

Climate Action Data Portal

The Climate Action Data Portal is an online resource for climate planning data for the San Diego region. The portal is an online resource for climate planning data for the San Diego region. It includes annual miles of bike lanes, gas and electricity usage, and other GHG data. The portal also provides online access to local jurisdiction ReCAP Snapshots (SANDAG 2025c).

Energy Roadmaps and Energy Engineering Services

From 2010 to 2020, SANDAG had a Local Government Partnership (LGP) with SDG&E. The SANDAG LGP was one of five in the region and established the SANDAG Energy Roadmap Program. Initially, the Roadmap Program focused on providing no-cost energy engineering technical support to SANDAG member agencies' municipal operations and in the community. In 2016, SANDAG expanded the technical support to include climate action planning, leveraging LGP funding in conjunction with other resources to ensure delivery of comprehensive climate planning services. In addition, SANDAG coordinated with SDG&E, the County of San Diego, the Port of San Diego, and the cities of San Diego and Chula Vista on regional energy efficiency and climate programs through the San Diego Regional Energy Partnership and establishment of the San Diego Regional Climate Collaborative.

The SANDAG Regional Energy Strategy (RES), which serves as the energy policy blueprint for the San Diego region through 2050, prioritizes use of the SANDAG-SDG&E Local Government Partnership to implement the RES at the local level (SANDAG 2014).

Environmental Mitigation Program

Using revenues from the half-cent sales tax for local projects created under the TransNet program, SANDAG purchases, conserves, and restores native habitat to offset potential impacts from the development of transportation projects. It provides large-scale acquisition and management of critical habitat areas and creates a reliable approach for funding required mitigation for future transportation improvements. It goes beyond traditional mitigation for transportation projects by allocating funding for habitat acquisition, management, and monitoring activities, as needed, to help implement the Multiple Species Conservation Program and the Multiple Habitat Conservation Program. The program has supported nearly 100 grants to local organizations and jurisdictions for land acquisition and land management efforts, such as invasive species removal. The program also provides funds for the regional management and monitoring of natural habitats and sensitive species. The lands conserved and restored under this program retain carbon stored in soils and vegetation on the region's natural lands and contribute to removal of emissions from the atmosphere. In FY 2024 (the most recent year for which actual allocations are available), the TransNet Environmental Mitigation Program (EMP) awarded $7.3 million through a competitive grant program to support land management throughout the region and anticipates a FY 2026 budget of approximately $6.3 million (SANDAG 2025d).

Proposed Mitigation Measures to Address the Significant GHG Emissions Impact of the Proposed Plan

The following mitigation measures would help reduce regional GHG emissions by reducing VMT, increasing use of zero-emission fuels, and other measures; they would reduce inconsistency of the proposed Plan's GHG emissions with the state's ability to achieve the SB 32 and AB 1279 GHG reduction goals. However, full implementation of the changes required to achieve these goals is beyond SANDAG's and local agencies' current jurisdiction and authority. Program level mitigation measures have not been quantified as their effectiveness would be determined by the specific nature, scale, and timing of funded projects. Project level mitigation measures have similarly not been quantified as the reductions achieved from implementation of these measures are contingent upon action taken by local decision makers not within SANDAG's purview. As discussed in further detail in Sections 4.3, Air Quality, 4.16, Transportation, and Section 4.18, Water Quality, the following mitigation measures would also reduce emissions of GHGs by decreasing overall pollutant emissions from equipment, vehicles, and water consumption.

- AQ-3b. *Reduce Diesel Emissions During Construction From Off-Road Equipment.*
- AQ-3c. *Reduce Diesel Emissions During Construction From On-Road Vehicles.*
- TRA-2. *Achieve Further VMT Reductions for Transportation and Development Projects.*
- WS-1a. *Implement Water Conservation Measures for Transportation Network Improvements.*
- WS-1b. *Implement Water Conservation Measures for Development Projects.*

Program Level Mitigation

The following measures summarize programs that SANDAG has committed to fund and oversee to reduce emissions in the proposed Plan area. These measures require direct oversight by SANDAG and are within SANDAG's authority to implement.

GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions

SANDAG shall implement a grant program(s) that allocate(s) funding to underfunded GHG-reducing projects that implement the stated strategies or measures in local jurisdiction CAPs or GHG reduction plans. Examples of such projects to reduce GHG emissions include activities at the local level that reduce VMT such as transit-oriented development (TOD) projects, microtransit shuttles, neighborhood electric vehicle (NEVs), bikeways, and walkways.

The grant program(s) shall (1) achieve additional annual GHG emissions reductions during the proposed Plan horizon by implementing projects that would not otherwise occur due to insufficient funding, and/or (2) achieve additional cumulative GHG emissions reductions under the proposed Plan planning horizon by implementing projects ahead of schedule and realizing GHG reductions earlier than they would otherwise occur due to timing of funding availability. Reducing total annual and cumulative GHG emissions under the proposed Plan planning horizon would reduce the proposed Plan's contribution to climate change.

To be eligible for grant funding, local jurisdictions would be required to have a CAP or GHG reduction plan adopted by the agency's elected decision-making body. Any jurisdiction without a local CAP could work with SANDAG's Climate Planning Services for member agencies (mitigation measure GHG-4b) so long as the CAP or GHG reduction plan is completed prior to project implementation being started. Applications should include estimated GHG emissions reductions or other details that estimate the climate benefits from the project, which shall be prepared using established methods or protocols approved by SANDAG. The grant program(s) shall be structured (e.g., using evaluation criteria and/or weighting of evaluation criteria) to prioritize the allocation of funds to projects based on the amount of measurable progress towards achieving the GHG emissions reductions targets identified in that jurisdiction's adopted CAP or GHG reduction plan.

To implement this measure SANDAG shall:

- Continue to require locally adopted CAPs or GHG reduction plans as prerequisites to be eligible for grant funding in future cycles of the TransNet Smart Growth Incentive (SGIP) and Active Transportation Grant Programs.
- Document and report to the SANDAG Transportation Committee on the activities funded by this grant program and the estimated GHG emissions reductions on an annual basis once implemented.

GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans

SANDAG, in coordination with the local air district, shall establish Climate Planning Services for member agencies to facilitate and expedite the adoption, updating, and monitoring of climate action plans (CAPs) or GHG reduction plans, develop GHG-reducing planning policies, and/or support local implementation of GHG-reducing initiatives that align with the San Diego Regional Climate Action Roadmap.

Providing centralized Climate Planning Services through SANDAG will allow local jurisdictions to access technical climate planning experts, which will enhance interregional coordination, facilitate consistent GHG inventories across the region, provide access to the latest climate research, support best practices, standardize GHG reduction

measures across reduction plans, enable regional data collection and performance monitoring, and reduce administrative contract burden.

The Climate Planning Services will enable member agencies to adopt or update GHG reduction plans and GHG-reduction initiatives that would not otherwise occur due to insufficient funding, staff capacity and/or administrative burdens. These efforts will support more effective decision making and help jurisdictions implement GHG-reducing projects under the proposed Plan planning horizon ahead of schedule and realize GHG reductions earlier than they would otherwise occur.

To support monitoring and implementation of local CAPs, GHG reduction plans, and the San Diego Regional Climate Action Roadmap, SANDAG shall coordinate and collaborate with the local jurisdictions within the county to compile, monitor, and share progress on climate action through its publicly available Climate Action Data Portal. The portal will be updated with new data and functions to enable jurisdictions to track progress, identify gaps, and adjust strategies over time in response to evolving conditions. This will accelerate the implementation of GHG-reducing projects.

From 2016-2020, SANDAG had provided similar services to its member agencies. SANDAG would reestablish the program to provide member agencies with no-cost consultant services for climate action planning assistance. This measure will enable local jurisdictions to prepare regionally consistent CAPs and participate in regional CAP monitoring efforts. These centralized services have been requested by SANDAG's members agencies during the development of the Climate Action Roadmap.

To implement this measure SANDAG shall allocate an estimated $10 million over the next 5 years to:

- Host and facilitate Climate Action Taskforce meetings with local governments on a quarterly basis to inform development of the Climate Planning Services procurement and to help guide the timely collection and analysis of climate action data.
- Release a competitive procurement for climate planning services through a Request for Proposal process in FY 2026.
- Enter a four-year contract beginning in FY 2027 with the winning solicitation to allow local jurisdictions access to the firm's or firms' services via a task order at no direct cost to the local jurisdiction.
- Report out on the utilization of the services each year as part of SANDAG's budget monitoring process.
- Collect data on GHG reduction measures on a biannual basis from local jurisdictions in the region and update the SANDAG Data Portal with information for use by federal, state and local governments, researchers, non-profit entities, and the general public.
- Prepare local GHG inventories for member agencies every 4 years after RTP adoptions.

GHG-4c. Allocate Funding for Zero-Emission Vehicle Infrastructure.

Since October 2020, SANDAG has partnered with the San Diego County Air Pollution Control District and the California Energy Commission on the California Electric Vehicle Infrastructure Project (CALeVIP). The San Diego County portion of CALeVIP 1.0 has provided $21.7 million to fund workplace and public charging stations at businesses, multifamily residences, school districts, and local government buildings in the region. This program will end in December 2025 without additional investment.

SANDAG shall continue to allocate funding for one or more programs that offer incentives to support and encourage the purchase and installation of electric vehicle (EV) charging infrastructure, also known as electric vehicle supply equipment (EVSE), within San Diego County. Increased installation of EVSE would facilitate increased use of zero-emission rideshare vehicles, microtransit shuttles, neighborhood electric vehicle (NEV) shuttles, and personal vehicles.

Beginning in FY 2026, SANDAG shall identify programs and projects for which to provide EVSE funding. Programs could include but not be limited to SANDAG's Flex Fleet Program to address the costs for EVSE purchase and installation for projects that choose to use zero-emission vehicles.

The lack of existing EV chargers in some flex fleet pilot service areas, and a lack of funding for EV chargers within existing Flexible Fleet pilots hinders implementation of these pilot projects in the region. SANDAG has identified multiple "charging deserts" in the region that coincide with low-income communities and areas where some flexible fleet pilot projects are being considered. Focus groups with Community-Based Organizations (CBOs) and community members identified the lack of access to EV charging as a top barrier to considering the purchase of an electric vehicle (SANDAG 2024).

To implement this measure SANDAG shall:

- In FY 2026, begin integration of an EV charging component into the Flexible Fleets Pilot Grant Program.
- Identify other regional projects that received CARB Clean Mobility Options (CMO) awards to implement local rideshare projects and identify where EV charging infrastructure can be supplemented to enhance rideshare success.
- In FY 2026, seek partnerships with state and local agencies to collaborate on the next iteration of a regional EV infrastructure incentive program.
- Allocate up to $3 million dollars over the next four years to implement this incentive program.

Project Level Mitigation

The mitigation measures summarized below represent feasible strategies that can be applied to future projects constructed and operated under the proposed Plan.

GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects.

During the planning, design, project-level CEQA review, construction, operation, and maintenance of transportation network improvements, SANDAG shall, and transportation project sponsors can and should, implement measures to reduce GHG emissions and achieve zero-net energy, including but not limited to applicable transportation project measures from Chapter 3, "*Measures to Reduce GHG Emissions*" of the California Air Pollution Control Officers Association's (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA 2024) and the Center for Resource Efficient Communities and the Center for the Built Environment's *Zero-Carbon Buildings in California Feasibility Study* (Center for Resource Efficient Communities and the Center for the Built Environment 2021). These GHG reduction measures include, but are not limited to, the following.

- Implement sustainable construction measures through construction bid specifications, including the following:
  - use energy and fuel-efficient vehicles and equipment and/or use alternative fuel vehicles and equipment, where applicable.
  - use cleaner-fuel equipment
  - limit heavy-duty vehicle idling.
- Use lighter-colored pavement, binding agents that are less GHG-intensive than Portland cement, and less-GHG intensive asphalt pavements.
- Use building materials that are locally sourced and processed (i.e., close to the project site, as opposed to in another state or country)
- Recycle construction and demolition waste.
- Install efficient lighting (including LEDs) for traffic, street, and other outdoor lighting.
- Install Energy Star (or equivalent) cool roofing systems on all buildings.
- Design project site to include areas where motor vehicles are prohibited, such as paseos, bikeways, etc.
- Contribute to the provision of synchronized traffic signals on roadways affected by the project and as deemed necessary by the local public works department.

- Require commuters to pay for parking on-site.
- Include bus shelters at transit access points where deemed appropriate by local public transit operator in large residential, commercial, and industrial projects.
- Build low stress bicycle networks including bike trails and connections, lanes, parking, and end of trip facilities.
- Subsidize transit service expansion by increasing service hours, decreasing fares, and adding additional transit fleets.
- Provide transit-enhancing infrastructure that includes bus turnouts or bulbs, passenger benches, street lighting, route signs and displays, and shelters as demand and service routes warrant, subject to review and approval by local transportation planning agencies.
- Provide preferential parking spaces for carpool and vanpool vehicles, implement parking fees for single-occupancy vehicle commuters, and implement parking cash-out program for employees.
- Contribute to traffic-flow improvements (e.g., right-of-way, capital improvements) that reduce traffic congestion and do not substantially increase roadway capacity.
- Provide pedestrian-enhancing infrastructure that includes sidewalks and pedestrian paths, direct pedestrian connections, street trees to shade sidewalks, pedestrian safety designs and infrastructure, street furniture and artwork, street lighting, pedestrian signalization and signage, and/or access between bus service and major transportation points within the project.
- Increase the sidewalk coverage to improve pedestrian access.
- Include neighborhood park(s) or other recreational options, such as trails, within the development to minimize vehicle travel to off-site recreational and/or commercial uses;
- Incorporate infrastructure electrification into project design (e.g., EV charging; charging for electric bikes) above minimum code requirements.
- Measures to plan, design and construct all new, upgraded, and regularly maintained infrastructure which uses electricity shall demonstrate how such infrastructure will achieve zero-net energy using onsite innovative technologies (e.g., photovoltaic system, battery storage, energy efficiency) or offsite solutions.
- Incorporate and increase electric vehicle charging equipment and preferred EV parking spots into projects that include commuter parking areas.
- Provide short-term and long-term bicycle parking near rail stations, transit stops, and freeway access points where there are commuter or rapid bus lines.
- Install park-and-ride lots near transit stops and high occupancy vehicle lanes.
- Include design measures (e.g., curb management strategies) to accommodate flexible fleets.
- Install solar photovoltaic canopies over parking areas.
- Construct buildings to Leadership in Energy and Environmental Design (LEED) certified standards or equivalent standards.
- Design measures to reduce water consumption, such as drought-resistant landscaping, smart irrigation systems, and other measures, including those listed in mitigation measures WS-1a and WS-1b in Section 4.18, "Water Supply."
- Design measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.
- Increase sidewalk coverage to improve pedestrian access.
- Funding for those measures that SANDAG selects would be included in individual project budgets.

GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.
During the planning, design, project-level CEQA review, construction, and operation of development projects, the County of San Diego and cities can and should implement measures to reduce GHG emissions and achieve zero-net energy, including but not limited to, applicable land use measures from Chapter 3, "*Measures to Reduce GHG Emissions*" of the California Air Pollution Control Officers Association's (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA 2024) and the Center for Resource Efficient Communities and the Center for the Built Environment's *Zero-Carbon Buildings in California Feasibility Study* (Center for Resource Efficient Communities and the Center for the Built Environment 2021). These GHG reduction measures include, but are not limited to, the following:

- Measures that reduce VMT by increasing transit use, carpooling, bike-share and car-share programs, and active transportation, including the following:
  - Building or funding a major transit stop within or near development, in coordination with transit agencies.
  - Developing car-sharing and bike-sharing programs.
  - Providing pedestrian network improvements and a comprehensive bicycle network.
  - Providing traffic calming measures.
  - Providing transit incentives, including transit passes for Metropolitan/North County Transit District buses and trolleys.
  - Consistent with the Regional Bike Plan, incorporating bicycle and pedestrian facilities into project designs, maintaining these facilities, and providing amenities incentivizing their use; and planning for and building local bicycle projects that connect with the regional network.
  - Implementing Complete Streets consistent with the SANDAG Regional Complete Streets Policy, including adopting local Complete Streets policies.
  - Implementing Mobility Hubs consistent with the Regional Mobility Hub Strategy.
  - Improving transit access to bus and trolley routes through incentives for constructing transit facilities within developments, and/or providing dedicated shuttle service to trolley and transit stations.
  - Implementing measures to increase transit use through service frequency and affordability as identified through community engagement activities, including but not limited to input from local residents, stakeholders, and Community-Based Organizations.
  - Building low stress bicycle networks including bike trails and connections, lanes, paring, and end of trip facilities.
  - Subsidizing transit service expansion by increasing service hours, decreasing fares, and adding additional transit fleets.
  - Implementing employer trip reduction measures to reduce employee trips and VMT such as vanpool and carpool programs, providing end-of-trip facilities, telecommuting, teleconferencing, and alternative work schedule programs.
  - Incorporating ride hailing and autonomous vehicle innovations.
  - Including design measures (e.g., curb management strategies) to accommodate flexible fleets.
  - Implementing a school bus program in areas currently not served by school buses.
- Measures to plan, design, and build all new, renovated, and upgraded development and infrastructure with electricity demand to achieve zero-net energy using onsite innovative technologies (e.g., photovoltaic system, battery storage, energy efficiency) or offsite solutions.

- Orient buildings to take advantage of solar heating and natural cooling, and use passive solar designs (residential, commercial, and industrial).
- Incorporate mixed uses, where permitted by local development regulations, to achieve a balance of commercial, employment, and housing options on the project site.
- Measures that reduce VMT through Transportation Systems Management (TSM).
- Measures that increase vehicle efficiency or reduce the carbon content of fuels, including constructing EV charging infrastructure, alternative fueling infrastructure, or neighborhood electric vehicle networks or charging infrastructure for electric bicycles consistent with SANDAG's regional readiness planning for alternative fuels.
- Build on a project site within 1/2 mile of a major transit station that includes service from a mode with dedicated right-of-way.
- Include neighborhood park(s) or other recreational options, such as trails, within the development to minimize vehicle travel to off-site recreational and/or commercial uses.
- Measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.
- Measures to reduce water consumption, including those listed in mitigation measure WS-1a and WS-1b in Section 4.18, *Water Supply*.
- Land use siting and design measures that reduce GHG emissions, including the following:
  - Focus development on infill and brownfields sites.
  - Building high density and mixed-use developments near transit.
  - Developing within areas with high jobs gravity to increase destination accessibility.
  - Orienting development towards transit or an active transport corridor.
- Retaining onsite mature trees and vegetation, and planting new trees. Provide energy-efficient windows (double pane and/or Low-E) and awnings or other shading mechanisms for windows, porches, patios, and walkways.
- Install Energy Star (or equivalent) cool roofing systems on all buildings.
- Include passive solar cooling and heating features in designs, as well as ceiling and whole house fans.
- Include programmable thermostats in the design of heating and cooling systems.
- Use day lighting systems, such as skylights, light shelves, and interior transom windows.
- Provide ancillary services (e.g., cafeterias, health clubs, automatic tellers, and post offices) within walking distance of proposed development (no further than 1,500 feet) as appropriate and in compliance with local development regulations.

SIGNIFICANCE AFTER MITIGATION

2030, 2045, and 2050

Mitigation measures GHG-4a and 4b would reduce total regional GHG emissions in two ways: (1) allocating funding to under-funded GHG reducing projects that implement and monitor local jurisdiction CAPs or GHG reduction plans and (2) allocating funding for local jurisdictions to prepare and update CAPs and GHG reduction plans that keep pace with future longer-term State targets and goals for GHG emissions reductions. Providing funding for these projects and plans would achieve additional annual GHG emissions reductions by implementing projects that would not otherwise occur due to insufficient funding. Reducing total annual and cumulative GHG

emissions under the proposed Plan planning horizon would reduce the proposed Plan's inconsistencies with the state's ability to achieve long-term climate goals.

Mitigation measure GHG-4c would reduce total regional GHG emissions by allocating funding for EV charging infrastructure (e.g., electric vehicle charging equipment and/or hydrogen fueling stations), removing a key barrier to adoption of EVs. Increasing the amount of VMT by zero emissions vehicles under the proposed Plan horizon would reduce the proposed Plan's inconsistencies with the state's ability to achieve long-term climate goals.

Project-level mitigation measure GHG-4d shall be implemented by SANDAG and can and should be implemented by transportation project sponsors to reduce GHG emissions associated with transportation projects. The effectiveness of the actions included in this measure has been demonstrated by CAPCOA and the Center for Resource Efficient Communities and the Center for the Built Environment (CAPCOA 2024, Center for Resource Efficient Communities and the Center for the Built Environment 2021). SANDAG's implementation of this measure during transportation project implementation will reduce total GHG emissions under the proposed Plan. Implementation of this measure by other transportation project sponsors will also reduce total GHG emissions under the proposed Plan; however, SANDAG does not have the authority to require other agencies to implement this measure. It is the responsibility and jurisdiction of the implementing agency to determine and adopt project-specific mitigation measures.

Similarly, project-level mitigation measure GHG-4e can and should be implemented by the County of San Diego and cities with the SANDAG region to reduce GHG emissions from development projects that implement the proposed Plan. The effectiveness of the actions included in this measure has been demonstrated by CAPCOA and the Center for Resource Efficient Communities and the Center for the Built Environment (CAPCOA 2024, Center for Resource Efficient Communities and the Center for the Built Environment 2021). Implementation of this measure by the County of San Diego and cities will also reduce total GHG emissions under the proposed Plan, however, SANDAG does not have the authority to require other agencies to implement this measure. It is the responsibility and jurisdiction of the implementing agency to determine and adopt project-specific mitigation measures.

Implementation of mitigation measures GHG-4a through GHG-4e, as well as mitigation measures AQ-3b, AQ-3c, TRA-2, WS-1a, and WS-1b, would substantially lessen the amount of proposed Plan GHG emissions in 2030 and 2050. These mitigation measures would achieve GHG emissions reductions within the SANDAG region. However, even full implementation of all identified mitigation measures would not be sufficient to reduce the proposed Plan's GHG emissions to below the regional 2030 and 2045 reference points based on SB 32 and AB 1279 targets.

As described in the introduction to mitigation section, the 2022 Scoping Plan traces the state's pathway to achieve its goals of carbon neutrality and an 85% reduction in anthropogenic emissions by 2045 relative to 1990 levels, as codified by AB 1279 in September 2022. The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector (e.g., transportation [including off-road mobile-source emissions], industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals. The 2022 Scoping Plan details a multitude of strategies for reducing GHG emissions in each of these sectors. Available research and reports indicate that achieving statewide GHG reduction goals will require major shifts or even fundamental transformations in the economic, social, technological, and political fabric of life in California and beyond, including the development of new technologies, large-scale deployment of new and existing technologies, the roles of local, State, and the federal government in regulating economic activities, and personal behaviors that affect GHG emissions. Achieving carbon neutrality no later than 2045 would require the decarbonization of the state's electrical sector, decarbonization of existing buildings and new construction, electrification of the entire transportation sector, investments in healthy soils, sustainable solid waste and wastewater management, and carbon dioxide removal strategies, such as land-based carbon sequestration and direct air capture of CO_2. The required GHG reductions from the aforementioned sectors will be achieved through a coordinated effort by, at minimum, State, regional, and local agencies, organizations, and stakeholders, and is well beyond the scope and jurisdiction of SANDAG alone.

While Mitigation Measures GHG-4a through GHG-4e, as well as mitigation measures AQ-3b, AQ-3c, TRA-2, WS-1a, and WS-1b would reduce GHG emissions throughout the Plan area, the actual reductions achieved are uncertain at this time. If SANDAG and the implementing agencies other than SANDAG adopt those mitigation

measures (i.e., Mitigation Measures GHG-4d and GHG-4e), Impact GHG-4 may be reduced, but not to a less-than-significant level. However, SANDAG cannot require implementing agencies other than SANDAG to adopt mitigation measures where SANDAG is not the lead agency, and it is ultimately the responsibility and jurisdiction of the implementing agency to determine and adopt project-specific mitigation. Because the proposed Plan's 2030,and 2045 GHG emissions would remain inconsistent with the State's ability to achieve its 2030, and 2045 GHG reduction goals, Impact GHG-4 is significant and unavoidable. These impacts would persist through 2050.

4.8.5 Cumulative Impacts Analysis

C-GHG-1 MAKE A CUMULATIVELY CONTRIBUTION TO ADVERSE EFFECTS RELATED TO GHG EMISSIONS

Climate change is a global problem and GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Thus, the area of geographic consideration for cumulative impacts of GHG emissions is global. From the standpoint of CEQA, GHG impacts related to climate change are inherently cumulative on a statewide level. Nevertheless, this analysis discloses the proposed Plan's GHG emissions in the context of State and global GHG emissions.

The projection approach to GHGs considers forecasted GHG emissions on a global scale, which is a significant cumulative impact, as well as a state and local-level analysis of GHGs. In the SANDAG region, the transportation sector is the largest contributor of GHG emissions. Thus, this analysis takes into consideration the cumulative GHG impacts resulting from the overall future transportation improvements, future increases in population, and planned regional development tied to the proposed Plan. From the standpoint of CEQA, GHG impacts to climate change are inherently cumulative on a statewide level. Significant cumulative impacts would occur if the proposed Plan were to directly or indirectly result in an increase in GHG emissions compared to existing project conditions; conflict with SB 375 GHG emission reduction targets for 2035, Local Climate Action Plans; or be inconsistent with the state's ability to achieve the 2030 reduction target of SB 32 and long-term 2045 reduction goals of AB 1279. This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan, the 2022 GHG Inventory and Projections for the San Diego Region, SB 375, and the CARB 2022 Scoping Plan.

Impacts of the Proposed Plan

The proposed Plan's regional growth and land use change and transportation network improvements would create additional sources of GHG emissions. The proposed Plan supports sustainable growth through creating a compact development pattern with growth focused in existing urban areas where transit and infrastructure are already in place. Locating people and jobs near each other and near transit encourages use of transit, carpooling, and active transportation options, thereby reducing transportation-related GHG emissions. Additionally, the proposed Plan encourages GHG emissions reductions through alternative transit improvements including pedestrian network improvements, safe routes to schools strategies, bicycle network facilities, vanpools, carpools, and buspools. GHG emissions in 2035 and 2050 would be lower than in 2022. Because the proposed Plan would not directly or indirectly result in an increase in GHG emissions compared to existing conditions, this is a less than significant impact in all forecasted years.

As detailed above, the proposed Plan was specifically designed to reduce regional VMT and was prepared pursuant to SB 375. Compliance with the reduction goals of SB 375 is identified in the 2022 Scoping Plan as a necessary component to achieving the short-term goal of reducing statewide GHG emissions to 40% below 1990 levels by 2030 as mandated by SB 32. The proposed Plan would not conflict with SB 375 emission reduction targets because it would result in reductions of per capita CO_2 emissions that exceed the 19% target set by CARB. In addition, implementation of regional growth and land use change and transportation network improvements and programs under the proposed Plan would not conflict with or impede the implementation of adopted CAPs, GHG reduction plans, and/or sustainability plans for 2035 and 2050 (Impacts GHG-2 and GHG-3). However, because total GHG emissions in the San Diego region in 2030 would exceed the 2030 regional GHG reduction reference point of 15.6 $MMTCO_2e$, which is based on the SB 32 target for 2030, the proposed Plan's GHG emissions would be inconsistent with state's ability to achieve the goals of SB 32 and these impacts would be significant in 2030. In addition, because total regional GHG emissions in 2045 would exceed the 2045 reference

point of 3.9 MMTCO2e, the proposed Plan's GHG emissions in 2045 would be inconsistent with the state's ability to achieve the goals of AB 1279 detailed in the 2022 Scoping Plan. Therefore, this impact would be significant in 2030 and 2045 (Impact GHG-4).

Impacts of Projections in Adopted Plans

The 2022 Scoping Plan outlines the primary strategies California has committed to implementing to achieve the legislated GHG emission target for 2030 and chart a pathway toward the state's 2045 climate goals. The 2022 Scoping Plan identifies the reductions needed by each GHG emission sector including transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste. The Scoping Plan identifies that planning on a longer time frame to achieve the goals of AB 1279 requires accelerated reductions by 2030 to be on track to achieve AB 1279's 2045 target.

In the *2022 Progress Report California's Sustainable Communities and Climate Protection Act*, CARB states that an RTP/SCS that meets the applicable SB 375 targets alone will not result in the GHG emissions reductions necessary to meet state climate goals in 2030 nor in 2045 (CARB 2022b). Collectively, CARB determined that if the state's 18 MPOs' all met the SB 375 GHG emission reduction targets set by CARB in 2018, a 19% reduction in per capita VMT would be achieved by 2035. In the target setting report, CARB expressed that to meet the statewide reduction goals set forth by SB 32, the state would need to reduce per capita GHG emissions by 25% by 2035, resulting in a 6% gap between the 19% emissions reductions targets set for the regions (averaged for the 18 MPOs and compared to a baseline year of 2005). Thus, even if all MPOs in the state were to meet their legislatively mandated SB 375 GHG emissions reduction targets a 6% gap compared to the state's 25% reduction need would remain.

The 2022 Scoping Plan identifies that the necessary reductions to close gap between projected statewide GHG reductions and the targets outlined in SB 32 and AB 1279 may be achieved through modifications to the state's Cap-and-Trade program. However, such an expansion of that program is speculative at the time of writing this Draft EIR.

Locally, GHG emissions projections and reduction are addressed in various plans and policies, including local jurisdictions' individual Climate Action Plans. However, while the state is currently on target for achieving GHG emission reductions compared to existing conditions, as described above, the 2022 Scoping Plan identifies that greater statewide GHG reductions are needed to achieve the accelerated 2030 target in order to put the state on track to achieve carbon neutrality no later than 2045 and negative emissions thereafter, and an 85% reduction in 1990 emissions level by 2045.

Cumulative Impacts and Impact Conclusions

2030 and 2035

As shown in Impact GHG-1, implementation of the proposed Plan in 2035 in combination with reductions attributable to statewide legislative reductions would decrease GHG emissions from 2022 levels. Moreover, the proposed Plan would not conflict with SB 375 emission reduction targets for 2035 because it would result in a 19.3% reduction in per capita CO_2 emissions from passenger cars and light duty trucks from 2005 levels by 2035, which is greater than the 2035 target of a 19% reduction for the SANDAG.

As shown in Impact GHG-4, total emissions in the San Diego region in 2030 exceed the regional 2030 GHG reduction reference point based on SB 32 and thus the proposed Plan's 2030 GHG emissions would be inconsistent with state's ability to achieve the SB 32 GHG reduction target of 40% below 1990 emissions by 2030. This would be a significant impact.

Because cumulative GHG impacts on a global basis would be significant when considering statewide and global emissions, and because the proposed Plan's incremental GHG impacts are significant, the proposed Plan's incremental GHG impacts in 2030 would also be cumulatively considerable.

2045 and 2050

As shown in Impact GHG-4, total emissions in the San Diego region in 2045 exceed the regional 2045 GHG reduction reference point based on AB 1279 and thus the proposed Plan's 2045 GHG emissions would be

inconsistent with state's ability to achieve the AB 1279 GHG reduction goal of an 85% reduction in 1990 anthropogenic emissions by 2045. This would persist through 2050. This would be a significant impact.

Because cumulative GHG impacts on a global basis would be significant when considering statewide and global emissions, and because the proposed Plan's incremental GHG impacts are significant, the proposed Plan's incremental GHG impacts in 2045 and 2050 would also be cumulatively considerable.

MITIGATION MEASURES

C-GHG-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO GHG EMISSIONS

Implementation of Mitigation Measures GHG-4a through GHG-4e would reduce direct and indirect GHG emissions associated with the proposed Plan. These mitigation measures include actions such as competitive grant funding for GHG-reducing projects, allocation of additional funding for electric vehicle-charging infrastructure and incentives, and measures to reduce GHG emissions from transportation and development projects. Additional mitigation measures that would reduce GHG emissions are presented in the air quality, energy, and water supply sections.

While Mitigation Measures GHG-4a through GHG-4e, as well as mitigation measures AQ-3b, AQ-3c, TRA-2, WS-1a, and WS-1b would reduce GHG emissions throughout the Plan area, the actual reductions achieved are uncertain at this time. If SANDAG and the implementing agencies other than SANDAG adopt those mitigation measures (i.e., Mitigation Measures GHG-4d and GHG-4e), Impact GHG-4 may be reduced, but not to a less-than-significant level. However, SANDAG cannot require the implementing agencies other than SANDAG to adopt mitigation measures where SANDAG is not the lead agency, and it is ultimately the responsibility of the implementing agency to determine and adopt project-specific mitigation.

As described above, even full implementation of all identified mitigation measures would not be sufficient to reduce the proposed Plan's GHG emissions below the regional 2030 and 2045 GHG reduction reference points based on SB 32 and AB 1279. Mitigation measures GHG-4a through GHG-4e would reduce regional GHG emissions by reducing VMT, increasing use of alternative fuels, and other measures; they would reduce inconsistency of the proposed Plan's GHG emissions with the state's ability to achieve the SB 32 and AB 1279 GHG reduction goals. However, full implementation of changes required to achieve the SB 32 and AB 1279 goals is beyond SANDAG's or local agencies' current ability to implement. Because the proposed Plan's 2030 and 2045 GHG emissions would remain inconsistent with the state's current ability to achieve the state's GHG reduction goals, and these impacts would persist until through 2050, this impact remains cumulatively considerable post-mitigation.

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4.9 HAZARDS AND HAZARDOUS MATERIALS

This section evaluates the hazards and hazardous materials impacts of the proposed Plan. Refer to Section 4.19, "Wildfire," for impacts related to wildfire hazards.

4.9.1 Existing Conditions

HAZARDOUS MATERIALS AND WASTES

Hazardous materials and wastes are defined and regulated in the United States by federal, state, and local agencies, including those administered by the US Environmental Protection Agency (EPA), the California Environmental Protection Agency (CalEPA), the US Occupational Safety and Health Administration (OSHA), the US Department of Transportation (USDOT), the US Nuclear Regulatory Commission, and others. Health and Safety Code (HSC) Section 25501(n) defines hazardous material as follows:

> (1) "Hazardous material" means a material listed in paragraph (2) that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment, or a material specified in an ordinance adopted pursuant to paragraph (3).
>
> (2) Hazardous materials include all of the following:
>
> > (A) A substance or product for which the manufacturer or producer is required to prepare a material safety data sheet pursuant to the Hazardous Substances Information and Training Act (Chapter 2.5 (commencing with Section 6360) of Part 1 of Division 5 of the Labor Code) or pursuant to any applicable federal law or regulation.
> >
> > (B) A substance listed as a radioactive material in Appendix B of Part 30 (commencing with Section 30.1) of Title 10 of the Code of Federal Regulations, as maintained and updated by the Nuclear Regulatory Commission.
> >
> > (C) A substance listed pursuant to Title 49 of the Code of Federal Regulations.
> >
> > (D) A substance listed in Section 339 of Title 8 of the California Code of Regulations.
> >
> > (E) A material listed as a hazardous waste, as defined by [HSC] Sections 25115, 25117, and 25316.
>
> (3) The governing body of a unified program agency may adopt an ordinance that provides that, within the jurisdiction of the unified program agency, a material not listed in paragraph (2) is a hazardous material for purposes of this article if a handler has a reasonable basis for believing that the material would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment, and requests the governing body of the unified program agency to adopt that ordinance, or if the governing body of the unified program agency has a reasonable basis for believing that the material would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. The handler or the unified program agency shall notify the secretary no later than 30 days after the date an ordinance is adopted pursuant to this paragraph.

"Hazardous wastes" can be liquids, solids, or contained gases. They can be the by-products of manufacturing processes, discarded used materials, or discarded unused commercial products, such as cleaning fluids (solvents) or pesticides.

Generation, Use, Transport, and Disposal of Hazardous Materials

Businesses that use, store, handle, or generate hazardous materials within the San Diego region are monitored by EPA, the California Department of Toxic Substances Control (DTSC), the San Diego Regional Water Quality Control

Board (RWQCB), the County of San Diego Department of Environmental Health and Quality (DEHQ) Hazardous Materials Division (HMD), County of San Diego Local Enforcement Agency (LEA) programs, and the County of San Diego Air Pollution Control District (SDAPCD). Several federal laws, regulations, plans, and policies control the storage, use, handling, disposal, and transport of hazardous materials and waste in order to protect public health and the environment. Federal regulations are also in place to protect workers and to facilitate emergency and evacuation procedures. Select regulations applicable to the proposed Plan are discussed in this section.

A hazardous waste generator is any person or facility that produces a hazardous waste that is listed or characterized in the Code of Federal Regulations (CFR), Title 40, Section 261 (EPA 2024a). Registered generators of hazardous waste fall into three categories: large-quantity generators (LQGs), small-quantity generators (SQGs), and very small-quantity generators (VSQGs). An LQG is defined as a person or facility that generates more than 1,000 kilograms of hazardous waste per month. An SQG is defined as a person or facility that generates greater than 100 kilograms and less than 1,000 kilograms of hazardous waste per month. A VSQG is defined as a person or facility that generates 100 kilograms or less of hazardous waste per month (EPA 2024a).

LQGs must comply with the full set of federal hazardous waste generator regulations, which are found in 40 CFR 262. Specifically, LQGs must identify all hazardous waste generated, determine the generator category, obtain an EPA identification number for each site that generates hazardous waste, manage hazardous waste on-site, prepare hazardous waste for shipment off-site, track hazardous waste shipments using a Uniform Hazardous Waste Manifest, comply with reporting and recordkeeping requirements, adhere to land disposal restrictions, and comply with export and import requirements (EPA 2020a). The regulatory requirements for SQGs are less stringent than the requirements for LQGs. However, SQGs are still required to obtain an EPA identification number to monitor and track hazardous waste activities (EPA 2019). VSQGs are required to comply with the following basic waste management requirements: (1) identify all hazardous waste generated, (2) store less than 1,000 kilograms of hazardous waste or 1 kilogram of acute hazardous waste on site at any time, and (3) ensure that delivery of hazardous waste to an off-site treatment or disposal facility meets specified requirements (EPA 2020b).

According to 40 CFR 262, all such generators must register with EPA for record keeping and recording. The EPA Unified Hazardous Waste and Hazardous Materials Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs related to hazardous materials and hazardous waste. The state agencies responsible for these programs set the standards for their program while local governments implement the standards. CalEPA oversees the implementation of the program as a whole.

Historical and present-day activities in the San Diego region have involved the generation, use, transport, and disposal of hazardous materials and wastes. Hazardous materials are commonly used in commercial, industrial, agricultural, and (less frequently) residential activities. Documented existing and past generators of hazardous materials throughout the region include commercial uses, such as painters, dry cleaners, and printers, and industrial uses, such as automotive service stations, automotive mechanics, sheet metal works, metal scrap yards, truck yards, cement warehouses, battery manufacturers, aircraft manufacturers, and electrical substations (SWRCB 2025). Structures built prior to 1973 were commonly manufactured using asbestos-containing materials (ACM) and prior to 1987, lead-based paint (LBP). Land throughout the region has historically been used for agricultural purposes, and pesticides were commonly used. In addition, multiple closed and active landfills and former and active military sites are located in the San Diego region. Multiple facilities are permitted to generate, handle, transport, or dispose of hazardous materials and wastes.

The following common types of chemicals (among others) are present in the San Diego region:

- total petroleum hydrocarbons,
- chlorinated volatile organic compounds,
- pesticides,
- lead and other metals, and
- asbestos.

Although not listed above and not studied historically, contaminants of emerging concern (CECs) may be important in the future because their risk to human health and the environment is not yet fully understood. Recent studies have shown that some CECs can act as endocrine disruptors, which are compounds that alter the normal functions of hormones, resulting in a variety of health effects (EPA 2024b). CECs that are being analyzed with more frequency in the San Diego region include bis-phenol-A, phthalates, arsenic, perchlorate, nonylphenols, synthetic musks and other personal care product ingredients, nitrosodimethylamine, brominated flame retardants, nanoparticles, pharmaceutical wastes, and industrial chemical additives, stabilizers, and adjuvants. A description of CECs and their associated effects on health and the environment can be found on the EPA website (EPA 2025a).

Transportation of hazardous materials and wastes in the San Diego region occurs through a variety of modes: truck, rail, air, and pipeline. Several gas transmission pipelines and hazardous liquid pipelines are located in the western portion of the San Diego region and traverse from the United States–Mexico border to as far north as Orange and Riverside Counties and as far east as the community of Alpine. Two types of lines are owned by San Diego Gas and Electric: gas transmission pipelines, which are generally large-diameter pipelines that operate at pressures above 200 pounds per square inch (psi) and transport gas from supply points to the gas distribution system, and high-pressure distribution mains, which operate at pressures above 60 psi and deliver gas in smaller volumes to the medium-pressure distribution system (PHMSA 2025; SDGE n.d.).

According to the USDOT Pipeline and Hazardous Materials Safety Administration's Office of Hazardous Materials Safety 2019-2020 Biennial Report, highway transportation accounts for the largest share of incidents, deaths, and injuries associated with hazardous materials transportation in the United States. Air transportation accounts for the next largest portion, followed by rail and water modes of transport (PHMSA 2023).

As of January 2025, 46 active hazardous waste transporters were registered in San Diego County (DTSC 2025a). Shipments of hazardous materials and wastes include a wide variety of chemicals, such as petroleum products, medical waste, and radioactive materials. Aside from rail and pipeline, hazardous materials are transported within the San Diego region along the same freeways, arterials, and local streets as other traffic.

Identification of Contaminated Sites and Hazardous Materials Release Sites

The Hazardous Waste and Substances Sites List, also known as the Cortese List, is a planning document used by the State, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code section 65962.5 requires CalEPA to compile and update this list as appropriate, but at least annually. DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information. The following data resources provide information regarding facilities or sites identified as meeting Government Code section 65962.5 requirements (CalEPA 2025a):

- DTSC's list of hazardous waste and substances sites from the EnviroStor database
- State Water Resource Control Board's (SWRCB's) list of leaking underground storage tank (LUST) sites from the GeoTracker database,
- SWRCB's list of solid waste disposal sites that have waste constituents above hazardous waste levels outside the waste management unit,
- SWRCB's list of Active Cease and Desist Orders (CDOs) and Cleanup and Abatement Orders (CAOs), and
- DTSC's list of hazardous waste facilities subject to corrective action pursuant to HSC Section 25187.5.

Other data resources that identify sites where hazardous substances may have been released include the following:

- The California Department of Resources Recycling and Recovery (CalRecycle's) Solid Waste Inventory System (SWIS) database, which consists of active and closed solid waste sites;
- EPA's Resource Conservation and Recovery Information System (RCRIS) database of Resource Conservation and Recovery Act (RCRA) facilities;
- EPA's Toxics Release Inventory (TRI) Toxics Tracker; and

- US Army Corps of Engineers (USACE) list of formerly used defense sites (FUDS).

The data resources that identify contaminated sites and sites where hazardous substances may have been released in San Diego County are discussed in more detail below.

DTSC EnviroStor Database

EnviroStor is the DTSC data management system for tracking state cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known contamination or sites that potentially require further investigation. Government Code Section 65962.5 requires CalEPA to prepare an annual Hazardous Waste and Substances List, commonly referred to as the Cortese List. The Cortese List includes contaminated sites and facilities that process or transfer toxic waste. Sites include federally designated sites, state response sites, military sites, school sites, and voluntary cleanup sites. The DTSC EnviroStor database identifies 8 hazardous waste and substances sites within the San Diego region, which are listed in Table 4.9-1 and shown in Figure 4.9-1 (DTSC 2025b).

Table 4.9-1 EnviroStor Hazardous Waste and Substances Sites in the San Diego Region

Facility Name	Facility Type	Cleanup Status	Address/Location
Borrego Sites (J09CA701100 and J09CA701800 and other Anza Borrego Impact Areas)	State response	Active	Anza Borrego Desert State Park, Borrego Springs 92004
Camp Elliott-(J09CA0067)	State response	Active	Northern portion of San Diego 92103
Carrizo Impact Area	State response	Active	Anza Borrego Desert State Park, Borrego Springs 92004
Chatham Brothers Barrel Yard	State response	Active	2257 Bernardo Avenue, Escondido 92029
Ketema Aerospace & Electronics	State response	Certified/operation & maintenance[1]	790 Greenfield Drive, El Cajon 92021
Magnolia Elementary School	State response	Active	650 Greenfield Drive, El Cajon 92021
Sunflower Properties Inc.	State response	Active	9755 Distribution Avenue, San Diego 92121
Tri-City Plating, Incorporated	State response	Active	1307 South Coast Highway, Oceanside 92054

Notes:

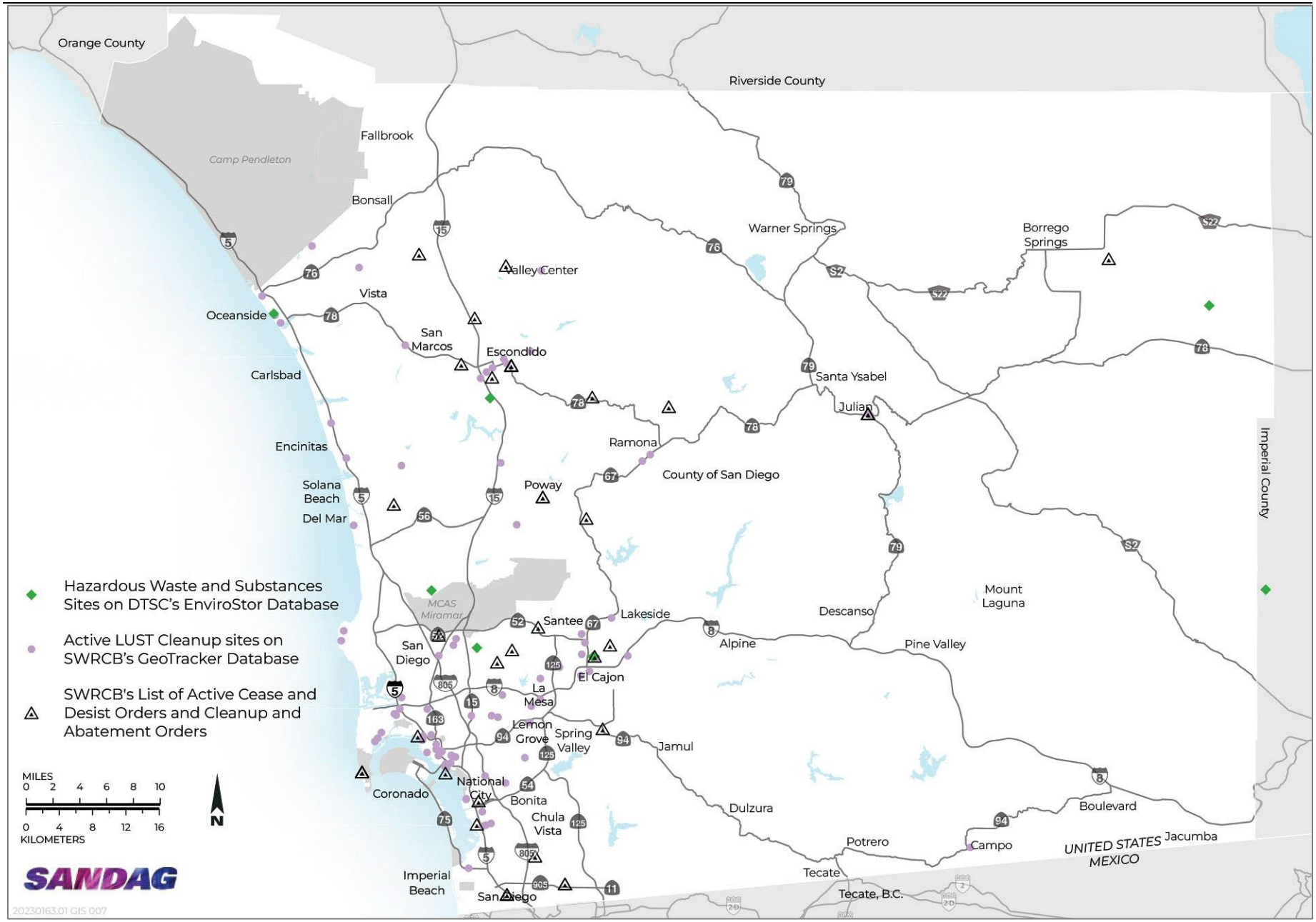
[1] A cleanup status of certified/operation & maintenance applies to sites that have undergone remediation efforts and are now certified as meeting environmental standards but still require ongoing monitoring and maintenance to ensure continued compliance.

Source: DTSC 2025b.

State Water Resources Control Board GeoTracker Database

GeoTracker is SWRCB's data management system for sites that affect, or have the potential to affect, water quality in California, with emphasis on groundwater. GeoTracker contains records for sites that require cleanup, such as LUST sites, US Department of Defense (DOD) sites, and cleanup program sites. GeoTracker also contains records for various unregulated projects and permitted facilities, including irrigated lands, oil and gas production, operating permitted underground storage tanks (USTs), and land disposal sites. As of January 2025, 6,081 cleanup sites in the San Diego region are listed in the GeoTracker database, of which 3,133 are LUST cleanup sites (SWRCB 2025). Many of these sites have been remediated to the satisfaction of the respective oversight agency; however, regulations and cleanup levels may have changed since the case closure was received, and many cases were closed based on specific land use at the time of closure and may need to be reopened if land use changes. A total of 84 LUST cleanup sites remain open for assessment and remediation (SWRCB 2025). The full list of active LUST cleanup sites in the San Diego region is included in Appendix I and their locations are shown on Figure 4.9-1.

GeoTracker identifies site location, remediation status, chemicals of concern, potential media affected, regulatory activities, and reports that include data submitted to the oversight agency, such as contaminant concentrations in monitoring wells. The LUST database also includes sites that fall under the jurisdiction of the RWQCB or local oversight program for unauthorized releases by the County DEHQ.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.9-1 Hazardous Waste and Substances Sites (Cortese List Sites) in the San Diego Region

State Water Resources Control Board Solid Waste Disposal Sites

SWRCB maintains a list of sites with waste constituents above hazardous waste levels outside the waste management unit (CalEPA 2016). The list identifies 25 sites within Butte, Contra Costa, Del Norte, Fresno, Inyo, Kings, Los Angeles, Merced, Monterey, Orange, Riverside, Sacramento, San Joaquin, Santa Barbara, Solano, and Tulare counties. None of the sites are within San Diego County.

Department of Toxic Substances Control List of Hazardous Waste Facilities Subject to Corrective Action

DTSC maintains a list of hazardous waste facilities subject to corrective action pursuant to HSC Section 25187.5 (CalEPA 2025b). The hazardous waste facilities identified in HSC Section 25187.5 are those facilities where DTSC has taken or contracted for corrective action because a facility owner/operator failed to comply with a date for taking corrective action in an order issued under HSC Section 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment. There are currently two facilities included on this list, and neither are in San Diego County; both facilities are in Los Angeles County.

State Water Resources Control Board CDO and CAO Database

The list of active CDOs and CAOs from SWRCB is a compilation of "all cease and desist orders issued after January 1, 1986, pursuant to Section 13301 of the Water Code, and all cleanup or abatement orders issued after January 1, 1986, pursuant to Section 13304 of the Water Code, that concern the discharge of wastes that are hazardous materials." (Govt. Code § 65962.5(c)(3).) The orders that are "active," meaning the necessary actions have not yet been completed, are on this list. The list contains many CDOs and CAOs that do not concern the discharge of wastes that are hazardous materials, but SWRCB's database does not distinguish between these types or orders. SWRCB updates this list by deleting sites when there is no longer any discharge of wastes or where the necessary cleanup or abatement actions were taken. As of January 2025, 47 "active" CDO and/or CAO listings are in the San Diego region (some facilities have multiple listings) (CalEPA 2025c). The full list of active CDO and CAO sites in the San Diego region is included in Appendix I and their locations are shown on Figure 4.9-1.

Solid Waste Information System Facility Database

CalRecycle's SWIS facility database contains information on solid waste facilities, operations, and disposal sites throughout California. The types of facilities found in this database include landfills, closed disposal sites, transfer stations, materials recovery facilities, composting sites, transformation facilities, waste tire sites, and disposal sites, which include construction, demolition, and inert debris facilities and operations. For each facility, the database contains information about location, owner, operator, facility type, regulatory and operational status, authorized waste types, local enforcement agency, and inspection and enforcement records. As of January 2025, 194 facility/site listings within the San Diego region are under the jurisdiction of the County LEA, of which 120 have achieved regulatory closure (CalRecycle 2025).

Resource Conservation and Recovery Act Facilities

As discussed further in Section 4.9.2, "Regulatory Setting," RCRA gives EPA the authority to control hazardous waste from "cradle to grave," such as during the generation, transportation, treatment, storage, and disposal of hazardous waste. EPA's RCRIS database provides an inventory system containing information about hazardous waste handlers subject to RCRA requirements. The database provides information about these hazardous waste handlers, including identification and location data, permit and closure status, compliance with federal and state regulations, and cleanup activities. As of January 2025, 16,335 active facilities are in the San Diego region (EPA 2025b).

Toxics Release Inventory Toxics Tracker

EPA's TRI Program tracks the waste management of certain toxic chemicals that may pose a threat to human health and the environment. These toxic chemicals include those that may cause cancer or other chronic human health effects, significant adverse acute human health effects, or significant adverse environmental effects. Under the TRI Program, facilities must report annually how much of each toxic chemical they release into the environment. Facilities that report to TRI are typically larger facilities involved in manufacturing, metal mining, electric power generation, chemical manufacturing, and hazardous waste treatment (EPA 2025c).

The TRI Toxics Tracker is a tool for monitoring toxic chemical releases and waste management activities in the United States. For the most recent reporting year (2023), the TRI Toxics Tracker identified 75 facilities that manufacture, process, or otherwise use TRI toxic chemicals in amounts above established levels in the San Diego region. Together, these facilities reported releases for 50 toxic chemicals (EPA 2023).

Formerly Used Defense Sites

Under the FUDS program, the USACE executes environmental cleanup on eligible properties that were formerly owned by, leased to, or otherwise possessed by DOD. The FUDS program only applies to properties that DOD transferred from its control before October 17, 1986. The type of remediation required under the FUDS program varies from property to property, and can include cleaning up hazardous, toxic and radioactive waste sites; removing munitions and explosives of concern and munitions constituents; and conducting building demolition and debris removal (USACE 2025a).

There are 114 FUDS in the San Diego region (USACE 2025b). Many FUDS have potential hazardous waste contamination issues, such as disposal areas and leaking underground fuel tanks. Other FUDS facilities were used for training that involved practice rounds and, in some cases, for the testing of live munitions and explosives. The live munitions that were fired but did not detonate are known as unexploded ordnance (UXO). The UXO that remain on FUDS properties today pose the greatest safety hazard to the public if they are disturbed (County of San Diego 2007a). Many FUDS in San Diego County are under investigation by USACE to identify and remediate potential hazards (USACE 2025b).

SCHOOLS

Public Resources Code (PRC) Section 21151.4 requires lead agencies to consider whether a project would result in significant environmental effects associated with the handling or emission of hazardous materials within one-quarter mile of existing and proposed schools. The public school system in the San Diego region has roughly 49 school districts and approximately 758 schools (Ed-Data 2025). In addition to the primary and secondary schools, the region has numerous community colleges, three public higher education institutions, and private education schools at all education levels. Almost all land uses have the potential to use, store, transport, and dispose of hazardous materials. Even schools and day care operations may use and dispose of hazardous materials, such as cleaning products or laboratory chemicals, that potentially pose a risk to human health and the environment. In addition, schools are considered sensitive receptors for exposure to hazardous materials.

AIRPORTS

PRC Section 21096 requires lead agencies to consider whether a project located within an airport land use plan or within two miles of a public airport would result in safety hazards or excessive noise for project occupants. In the San Diego region, the San Diego County Regional Airport Authority (SDCRAA) has three main responsibilities: operate the San Diego International Airport, plan for the future air transportation needs of the region, and serve as the region’s airport land use commission (ALUC). The ALUC is tasked with creating and updating the airport land use compatibility plans (ALUCPs) for the region's 12 public-use and 4 military airports in accordance with applicable state and federal laws (Figure 4.9-2). The purpose of ALUCPs is to ensure compatibility between airport operations and surrounding land uses to protect public health and safety. ALUCPs include land use measures, restrictions, and standards to minimize risks associated with aircraft operations and accidents, reduce exposure to excessive noise levels from aircraft operations, and ensure that new development does not create hazards within navigable airspace.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.9-2 Airport Location

ALUCPs have been adopted for all 16 public-use and military airports in the region. Those airports and the year of adoption of their latest ALUCP are listed below (SDCRAA 2025a).

- Agua Caliente Springs Airport (2022),
- Borrego Valley Airport (2022),
- Brown Field Municipal Airport (2010),
- Fallbrook Community Airpark (2022),
- Gillespie Field (2010),
- Jacumba Airport (2022),
- Marine Corps Air Station Camp Pendleton (2008),
- Marine Corps Air Station Miramar (2011),
- McClellan-Palomar Airport (2011),
- Montgomery Field (2010),
- Naval Air Station North Island (2020),
- Naval Outlying Landing Field Imperial Beach (2015),
- Oceanside Municipal Airport (2010),
- Ocotillo Airport (2022),
- Ramona Airport (2022), and
- San Diego International Airport (2014).

EMERGENCY RESPONSE AND EVACUATION

Potential disasters for which emergency response or evacuations are necessary include earthquakes, floods, pandemics, nuclear accidents (e.g., at the now-inactive San Onofre Nuclear Generating Station or at an active military installation where nuclear materials may be stored or in transit), acts of terrorism, tsunamis, and wildland fires. Any of these disasters could involve emergency response or evacuation of affected areas. Emergency response plans contain elements to protect life and property, and maintain continuity of government, emergency functions of governmental agencies, mobilization and application of resources, mutual aid, and public information. Emergency response plans are maintained at the federal, state, and local levels for all types of disasters, human-made and natural. The government is responsible for undertaking an ongoing comprehensive approach to emergency management in order to avoid or minimize the effects of hazardous events. Local governments have the primary responsibility for preparedness and response activities. Laws and regulations governing emergency response and evacuation are discussed below in Section 4.9.2, "Regulatory Setting."

In the San Diego region, the County of San Diego Office of Emergency Services (OES) and the Unified Disaster Council (UDC) play a central role in the preparation and execution of emergency response and evacuation plans. OES alerts and notifies appropriate agencies when disaster strikes, coordinates all responding agencies, ensures resources are available and mobilized, develops plans and procedures for response and recovery, and develops and provides preparedness materials for the public (County of San Diego 2025g). The UDC is the governing body of the Unified San Diego County Emergency Services Organization. The UDC is composed of the Chair of the County of San Diego Board of Supervisors, who serves as Chair of the UDC, and representatives from the 18 incorporated cities (County of San Diego 2025h). The primary purpose of the UDC and the County OES is to coordinate the plans and programs designed for the protection of life and property in the San Diego region.

If evacuation is required, local jurisdictions work with the Operational Area Emergency Operations Center (OAEOC), operated by OES law enforcement officials, Caltrans, the California Highway Patrol (CHP), the County's Department of Public Works, and other applicable agencies and departments to identify evacuation points and transportation routes. In addition, transportation points are identified to collect and transport people without transportation resources to evacuation points. Response is coordinated by the OAEOC (USDCESO and County of San Diego 2022).

Any large-scale response to an incident, including incidents resulting in the evacuation of more than two impacted communities, is coordinated through the OAEOC operating under a unified command (USDCESO and County of San Diego 2022). The coordinator of emergency services manages the overall multijurisdictional evacuation effort, and the operational area law enforcement coordinator is responsible for coordinating operational, area-wide evacuation activities. Evacuation operations in the field are conducted by law enforcement agencies, highway/road/street departments, and public and private transportation providers. The following interstates and state highways are identified in the San Diego County Operational Area Emergency Operations Plan (EOP) as the primary transportation routes for an evacuation effort in the San Diego region: I-5, I-8, I-15, I-805, SR 52, SR 54, SR 56, SR 67, SR 75, SR 76, SR 78, SR 94, SR 125, SR 163, and SR 905 (USDCESO and County of San Diego 2022) (Figure 4.9-3). Emergency response plans are discussed further in Section 4.9.2, "Regulatory Setting."



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.9-3 Primary Emergency Evacuation Routes in the San Diego Region

4.9.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Hazardous Materials and Wastes

Toxic Substances Control Act of 1976

The Toxic Substances Control Act of 1976 (United States Code [USC], Title 15, Section 2601 et seq.) addresses the production, importation, use, and disposal of polychlorinated biphenyls (PCBs), asbestos, ACMs, and LBP. Sections of the act provide EPA with the authority to require reporting, recordkeeping, and testing and to implement restrictions relating to chemical substances and mixtures. Certain substances are generally excluded from the act, such as food, drugs, cosmetics, and pesticides, among others.

Asbestos Hazard Emergency Response Act

The Asbestos Hazard Emergency Response Act (15 USC Section 2641 et seq.) requires local schools to inspect buildings for ACM, prepare asbestos management plans, and implement response actions to reduce and prevent asbestos hazards.

Resource Conservation and Recovery Act of 1976

The Resource Conservation and Recovery Act (RCRA) (42 USC Section 6991 et seq.) establishes a framework for EPA to manage the generation, treatment, and disposal of solid and hazardous wastes. The statute also addresses program administration; implementation and delegation to the states; enforcement provisions and responsibilities; and research, training, and grant funding. Provisions are established for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing generator recordkeeping, labeling, shipping paper management, placarding, emergency response information, training, and security plans. The Hazardous and Solid Waste Amendments of 1984 amended RCRA to phase out land disposal of hazardous waste, require corrective action for releases, set stringent hazardous waste management standards, and establish a comprehensive underground storage tank program. In California, DTSC is responsible for RCRA program implementation. CFR, Title 40, Sections 239–259 contain regulations pertaining to non-hazardous solid waste. Regulations governing identification, classification, generation, management, and disposal of hazardous waste are described in 40 CFR 260–273. Regulations governing management of used oil and USTs can be found in 40 CFR 279–282.

Oil Pollution Prevention

Oil pollution prevention regulations (40 CFR 112) establish procedures, methods, and other requirements to prevent the discharge of oil from nontransportation-related facilities. The regulations require the preparation of a Spill Prevention, Control, and Countermeasure (SPCC) plan if oil is stored in excess of 1,320 gallons aboveground in containers with a capacity of 55 gallons or more (or have a buried capacity of 42,000 gallons). SPCC regulations also place restrictions on the management of petroleum materials.

Clean Air Act Amendments Risk Management Rule

Section 112(r) of the 1990 Clean Air Act Amendments requires EPA to publish regulations and guidance for chemical accident prevention at facilities that use extremely hazardous substances. These regulations and guidance are contained in the Risk Management Plan (RMP) rule (40 CFR 68), which requires companies using more than a threshold amount of specified regulated substances to develop an RMP. RMPs are required to include the potential effects of an accidental release, identify safety and prevention programs, and describe emergency response procedures in the event of an accidental release. They must be revised and resubmitted to EPA every 5 years. 40 CFR 68.130 provides a list of the 77 regulated toxic substances and threshold quantities for accidental release prevention.

The California Accidental Release Prevention (CalARP) program is the program for preventing accidental releases of substances that can cause serious harm to the public and the environment, minimizing the damage if releases do occur, and satisfying community right-to-know laws in California. State oversight authority and responsibility for the CalARP program is with the OES (formerly called the California Emergency Management Agency) (DTSC 2019).

National Emission Standards for Hazardous Air Pollutants, Subpart M — National Emission Standard for Asbestos

EPA has established National Emission Standards for Hazardous Air Pollutants, including ACM (49 CFR 61.140 et seq.). The use, removal, and disposal of ACM are regulated by EPA, which requires notification of friable (easily crumbled or crushed) ACM removal prior to a proposed demolition project.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 (42 USC Section 116 et seq.) was created to help communities plan for chemical emergencies and requires facilities to report on the storage, use, and release of hazardous materials and wastes. The act provides public access to information about chemical hazards. The EPCRA and its regulations (40 CFR 350–372) establish four types of reporting obligations for facilities that store or manage chemicals: emergency planning, emergency release notification, hazardous chemical storage reporting requirements, and toxic chemical release inventory. As discussed in Section 4.9.1, "Existing Conditions," EPA's TRI Program provides information on reportable releases to the environment.

Comprehensive Environmental Response, Compensation, and Liability Act

Thousands of contaminated sites exist nationally due to hazardous waste being dumped, left out in the open, or otherwise improperly managed. These sites include manufacturing facilities, processing plants, landfills, and mining sites. The Comprehensive Environmental Response, Compensation, and Liability Act (42 USC Section 9601 et seq.), also known as the Superfund program, established a program to clean up uncontrolled or abandoned hazardous waste sites, as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. EPA cleans up orphan sites when potentially responsible parties cannot be identified or located or when they fail to act. EPA developed risk-based "regional screening levels" for chemical contaminants at Superfund sites. Regional screening levels are concentrations of hazardous constituents that are considered to be protective for humans (including sensitive groups) over a lifetime. Generally, no further action or study is warranted under the Superfund program at sites where contaminant concentrations fall below regional screening levels (EPA 2024c). In California, site identification, monitoring, and response activities are coordinated through DTSC.

Occupational Safety and Health Act

Under the Occupational Safety and Health Act (29 USC Section 651 et seq.) (OSHA) and its regulations (29 CFR 1910.1220 et seq.), facilities that use, store, manufacture, handle, process, or transport hazardous materials are required to conduct employee safety training, inventory safety equipment relevant to potential hazards, have knowledge about safety equipment use, prepare an illness prevention program, provide hazardous substance exposure warnings, prepare an emergency response plan, and prepare a fire prevention plan.

OSHA standards (29 CFR 1910) require employee training; personal protective equipment; safety equipment; and written procedures, programs, and plans for ensuring worker safety when working with hazardous materials or in hazardous work environments during construction activities, including renovations and demolition projects, and when handling, storing, and using of explosives. These standards also provide rules for the removal and disposal of hazardous materials including ACM, LBP, and other lead-containing materials.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act (49 USC Section 100 et seq.) regulates the transportation of hazardous materials under the authority of the Secretary of Transportation. A material is designated as hazardous when the Secretary of Transportation determines that "transporting the material in commerce in a particular amount and form may pose an unreasonable risk to health and safety or property" (49 USC Section 5103[a]).

The Act governs the safe transportation of hazardous materials by various transportation modes, including trucks, rail, air, and water, and transport by pipeline. USDOT regulations that govern the transportation of hazardous

materials are applicable to any person who transports, ships, causes to be transported or shipped, or is involved in any way with the manufacture or testing of hazardous materials, packaging, or containers (49 CFR Parts 100-185). In addition, USDOT is responsible for developing curriculum for emergency response training and administers grants to states and Indian tribes for ensuring the proper training of emergency responders (FMCSA 2024).

Federal Insecticide, Fungicide, and Rodenticide Act

The use of pesticides is regulated by EPA under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC Section 136 et seq.), which creates the foundation for the regulation, sale, distribution, and use of pesticides in the United States. Section 3 of FIFRA provides EPA the authority to review and register pesticides for particular uses. In addition, Section 6(c) of FIFRA provides EPA authority to suspend or cancel the registration of a pesticide if research shows continued use would create an unreasonable risk.

Airport Safety

Federal Aviation Regulations

The Federal Aviation Administration (FAA) regulations (14 CFR Section 77) impose height restrictions to prevent obstructions to navigable airspace to protect flights and surrounding structures. These regulations establish requirements for notifying the FAA of certain construction activities and alterations to existing structures to ensure there are no obstructions to navigable airspace. In certain cases, FAA should be notified of proposed development. The notification of proposed development provides a basis for the following activities:

- evaluating the effect of the construction or alteration on operational procedures and proposed operational procedures;
- determining the possible hazardous effect of the proposed construction or alteration on air navigation;
- recommending ways to identify the construction or alteration in accordance with current FAA Advisory Circular AC 70/7460-1M, Obstruction Marking and Lighting, issued November 16, 2020;
- determining other measures to be applied for continued safety of air navigation;
- charting and other notification to airmen of the construction or alteration; and
- providing regulations for small unmanned aircraft (drones).

Certain projects that may affect public and military airports require FAA notification. Individual jurisdictions can request an FAA evaluation of proposed development when certain features appear to be potentially hazardous.

US Department of Defense Air Installations Compatible Use Zone Program

DOD Instruction 4165.57 establishes the Air Installations Compatible Use Zone (AICUZ) program, which defines safety compatibility criteria for US military air bases. The objective of this program is to encourage compatible uses of public and private lands proximate to military air installations through the local communities' comprehensive planning process. DOD creates AICUZ plans for all major military air installations. The plans recommend land uses that may be compatible with air installations noise levels and report accident potential and flight clearance requirements associated with military airfield operations. AICUZ plans generally contain three safety zones: clear zones and two accident potential zones (APZs). A clear zone is the area immediately beyond the end of the runway, which has the highest potential for accidents. These zones are typically acquired by the government in fee and kept clear of obstructions to flight. APZ-1 is the area immediately beyond the clear zone that possesses a significant potential for accidents. APZ-2 is the area beyond APZ-1 that still has a measurable potential for accidents. AICUZ descriptions of these three zones are intended to be guidelines for compatible land use planning. Because military installations often lack land use authority over the extent of an AICUZ, it is the responsibility of the relevant jurisdictions for ensuring that incompatible uses are either not permitted or are properly regulated (NAVFAC 2014).

Natural Disaster

Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (Public Law 106-390) provides the legal basis for Federal Emergency Management Agency (FEMA) mitigation planning requirements for State, local, and tribal governments as a condition of mitigation grant assistance. A State mitigation plan is required as a condition of disaster assistance, adding incentives for increased coordination and integration of mitigation activities at the State level.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (42 USC Section 5121) is designed to assist the efforts of the affected states in expediting the rendering of aid, assistance, and emergency services, and the reconstruction and rehabilitation of devastated areas. The act provides the statutory and regulatory framework for most federal disaster response activities especially as they pertain to FEMA and FEMA programs, and allows for a presidential declaration of an emergency or a declaration of a major disaster, which in turn allows for a wide range of federal resources to be made available to assist in dealing with an emergency or major disaster.

Mitigation Planning Regulations and Local Mitigation Planning Handbook

44 CFR Part 201 provides information on the policies and procedures for hazard mitigation planning. This regulation provides the framework for State, local, and tribal governments to identify the natural hazards that affect them, identify actions and activities to reduce any losses from those hazards, and establish a coordinated process to implement hazard mitigation.

FEMA's Local Mitigation Planning Handbook provides guidance to local governments, including special districts, for developing and updating hazard mitigation plans for reducing risks from natural disasters. The handbook is intended to help local governments meet the requirements in the Local Mitigation Planning Policy Guide and CFR Title 44 so that local governments may apply for FEMA hazard mitigation assistance.

Bipartisan Infrastructure Law and Five-Year Wildfire Monitoring, Maintenance, and Treatment Plan

The Bipartisan Infrastructure Law (BIL) provides over $5 billion in funding for the US Department of Agriculture (USDA) and US Department of the Interior (DOI) to reduce the risk of catastrophic wildfires through implementing hazardous-fuels management and post-wildfire restoration activities across forests, rangelands, and grasslands in the United States (DOI 2022). On January 20, 2025, Executive Order (EO) 14154, "Unleashing American Energy," directed agencies to pause the disbursement of funds appropriated under the BIL until the Director of the Office of Management and Budget and Assistant to the President for Economic Policy have determined that such disbursements are consistent with any review recommendations they have chosen to adopt (The White House 2025).

Section 40803(j)(1) of the BIL directed USDA and DOI to establish a Five-Year Wildfire Monitoring, Maintenance, and Treatment Plan (Five-Year Plan) that reduces severe fire risk on 10 million acres of federal land, Tribal forest lands, and rangeland that pose a high wildfire hazard. The Five-Year Plan, released in April 2022, develops a process for prioritizing treatments in areas and communities with the highest risk of catastrophic wildfire in partnership with State and local entities and affected stakeholders (DOI 2022).

10-Year Wildfire Crisis Strategy

Along with the Five-Year Plan, USDA released the US Forest Service's (USFS) 10-Year Wildfire Crisis Strategy (Wildfire Crisis Strategy), which provides a roadmap for increasing fuels and forest health treatments in the western United States (USFS 2022). The Wildfire Crisis Strategy outlines USFS's plans to:

- treat up to an additional 20 million acres of National Forest System lands in fireshed areas, which are primarily forested landscapes that pose serious wildfire risks to homes, communities, and infrastructure;
- treat up to an additional 30 million acres of other federal, State, Tribal, and private lands; and
- develop a plan for long-term maintenance beyond the 10 years.

The Wildfire Crisis Strategy established 21 landscapes across the western United States to focus initial wildfire risk reduction efforts. These landscapes represent areas with the highest wildfire risk, and most vulnerable communities and critical infrastructure. Each landscape includes a mix of land jurisdictions, including National Forest System lands, other federal lands, Tribal lands, State lands, municipal lands, and privately owned lands (USFS 2022). As of January 2025, USFS invested in the treatment of 1.86 million acres within the 21 landscapes since the landscapes were established in 2022 and 2023 (USFS 2025). The Southern California Fireshed Risk Reduction Strategy Landscape is a priority landscape within the Wildfire Crisis Strategy that encompasses over 4 million acres in southern California. Within this landscape, USFS identified 75 at-risk communities, 220 miles of transmission lines, 231 watersheds, and 21,169 acres treated in 2024 (USFS 2025).

On June 12, 2025, EO 14308, "Empowering Commonsense Wildfire Prevention and Response," ordered the federal government to empower State and local leaders by streamlining federal wildfire capabilities to improve their effectiveness and promoting commonsense, technology-enabled local strategies for land management and wildfire response and mitigation. EO 14308 directs the Secretary of the Interior and the Secretary of Agriculture to consolidate their wildland fire programs to achieve the most efficient and effective use of wildland fire offices, coordinating bodies, programs, budgets, procurement processes, and research and, as necessary, recommend additional measures to advance this objective (The White House 2025).

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

Hazardous Materials

California Hazardous Waste Control Law of 1972

The California Hazardous Waste Control Law of 1972 (HSC Section 25100 et seq.) created the framework under which hazardous wastes must be managed in California. It provides for the development of a State hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards that are equal to or, in some cases, more stringent than, federal requirements. Under the Hazardous Waste Control Law, DTSC is responsible for implementing permitting, inspection, compliance, and corrective action programs to ensure that hazardous wastes are managed in compliance with state and federal requirements.

Under the Hazardous Wate Control Law, the DTSC Enforcement and Emergency Response Division (EERD) oversees multiple programs to provide statewide response to actual and potential releases of hazardous materials that pose an acute threat to public health or the environment. EERD conducts inspections and takes enforcement action at facilities for which permits have been issued by DTSC, including transporters, some generators of hazardous waste, and electronic waste handlers (DTSC 2025c).

The EERD administers implementation of the state's Unified Program to ensure that hazardous waste control laws are consistent statewide, conform to standards, and deliver quality environmental protection at the local level. Each Certified Unified Program Agency (CUPA) is responsible for implementing some elements of the law at the local level. The County of San Diego is the designated CUPA for all local jurisdictions within the Plan area. Under the CUPA program, DTSC has delegated enforcement authority to the County of San Diego for State laws that regulate hazardous waste producers or generators (HSC Section 25404.1).

Environmental Health Standards for the Management of Hazardous Waste

The Environmental Health Standards for the Management of Hazardous Waste regulations (California Code of Regulations [CCR], Title 22, Division 4.5) establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with federal requirements, waste generators must determine whether their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers, prepare manifests before transporting waste off site, and use only permitted treatment, storage, and disposal facilities (CCR Title 22, Division 4.5). Standards also include requirements for recordkeeping, reporting, packaging, and

labeling. In addition, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters.

In addition, these regulations require that generators of 12,000 kilograms per year of typical, operational hazardous waste evaluate their waste streams every 4 years and, as applicable, select and implement viable source reduction alternatives (HSC Section 25244.12 et. seq). The California Hazardous Waste Control Act does not apply to nontypical hazardous waste, such as ACM and PCBs.

California Environmental Protection Agency: Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program [HSC Section 25404 et seq.]) governs administrative requirements, permits, inspections, and enforcement in California. Under CalEPA, DTSC's Enforcement and Emergency Response Program administers the technical implementation of the Unified Program, which consolidates the administration, permit, inspection, and enforcement activities of several environmental and emergency management programs at the local level (CalEPA 2025d). CUPAs implement the hazardous waste and materials standards. The following programs make up the Unified Program:

- Aboveground Petroleum Storage Act Program,
- Area Plans for Hazardous Materials Emergencies,
- CalARP Program,
- Hazardous Materials Release Response Plans and Inventories/Hazardous Materials Business Plans,
- Hazardous Material Management Plan and Hazardous Material Inventory Statements,
- Hazardous Waste Generator and On Site Hazardous Waste Treatment (Tiered Permitting) Program, and
- Underground Storage Tank Program.

The San Diego County DEHQ HMD has been certified by CalEPA as the local CUPA (County of San Diego 2025a). Thus, the DEHQ HMD is responsible for implementing the federal and State laws and regulations for all jurisdictions within the San Diego region.

Carpenter-Presley-Tanner Hazardous Substance Account Act

The Carpenter-Presley-Tanner Hazardous Substance Account Act (HSC Section 25300 et seq.) establishes a state Superfund program to clean up contaminated sites not listed on the National Priorities List. The Act authorizes DTSC to initiate remedial and removal actions and to enter into enforceable agreements with potentially responsible parties to investigate and remediate contamination (HSC Code sections 25358.3[a] and 25355.5[a][1]).

Proposition 65

Proposition 65 (HSC Section 25249.5 et seq.; 22 CCR Section 12000 et seq.), also known as the Safe Drinking Water and Toxic Enforcement Act of 1986, requires that regulated businesses not expose people to significant concentrations of carcinogens or reproductive toxicants without providing a "clear and reasonable" warning (HSC Section 25249.6). In addition, regulated businesses must not discharge or release any listed carcinogens or reproductive toxicants that potentially may contact a source or potential source of drinking water (HSC Section 25249.5).

California Accidental Release Prevention Program

In California, the accidental release RMP program is the CalARP program (HSC Sections 25531–25543.3). The program addresses facilities that contain specified hazardous materials, known as "regulated substances," that, if involved in an accidental release, could result in adverse off-site consequences. The CalARP program is implemented at the local government level by CUPAs. The CalARP program is designed to allow these agencies work directly with the regulated businesses. The CUPAs determine the level of detail in the RMPs, review the RMPs, conduct facility inspections, and provide public access to most of the information (CalEPA 2025e).

Toxicity Criteria Rule for Human Health Risk Assessments

DTSC's Toxicity Criteria Rule for Human Health Risk Assessments was enacted to protect human health by ensuring that human health risk assessments, risk-based screening levels, and risk-based remediation goals for hazardous waste and hazardous substance cleanup sites in California use the appropriate toxicity criteria specified in section 69021 of the rule. Toxicity criteria are chemical-specific numerical values that describe the potency of a chemical or contaminant. The Toxicity Criteria Rule defines cancer and noncancer risk-based screening levels of contaminants in a manner that is consistent with federal guidance. Cancer toxicity criteria are health-protective values used to predict the increased cancer risk from a lifetime exposure to a chemical or contaminant of concern. Cancer risks for contaminants are set at one in a million. The noncancer toxicity value is the amount of a chemical or contaminant that a person can ingest or breathe every day for a lifetime without any expected adverse health effects. Noncancer risks are set using a hazard index of 1. A hazard index of 1 or lower means estimated exposure to the contaminant at the screening level over a lifetime is not expected to cause harmful, noncancer health effects (DTSC 2025d).

Hazardous Materials Business Plan Program

The objective of the Hazardous Materials Business Plan Program (HSC Sections 25500–25519) is to provide necessary information to first responders in order to prevent or minimize damage to public health and safety and the environment from a release or threatened release of hazardous materials. The program does so by requiring businesses that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity to inventory their hazardous materials, develop a site map, develop an emergency plan, and implement a training program for employees. This program implements the reporting requirements of the federal EPCRA (CalEPA 2025f; County of San Diego 2025b).

Aboveground Petroleum Storage Act

The Aboveground Petroleum Storage Act (HSC Section 25270 et seq.) applies to owners and operators with a total storage capacity of 1,320 gallons or more. The act transfers the authority and responsibility of aboveground storage tanks from SWRCB and the RWQCB to the CUPAs (HSC Sections 25270 through 25270.13), and requires owner/operators of a regulated tank facility to prepare and implement an SPCC plan (HSC Section 25270.4.5). The CUPA is required to conduct inspections at regulated tank facilities with an aggregate storage capacity greater than or equal to 10,000 gallons of petroleum at least every 3 years (HSC Section 25270.5).

California Land Environmental Restoration and Reuse Act

The California Human Health Screening Levels (CHHSLs) were developed as a tool to assist in the evaluation of contaminated sites for potential adverse threats to human health. The CHHSLs are concentrations of 54 hazardous chemicals in soil or soil gas that are below CalEPA's thresholds of concern for risks to human health. The CHHSLs were developed by the Office of Environmental Health Hazard Assessment (OEHHA) and can be found in the OEHHA report *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil* (Hristov et al. 2005). The thresholds of concern used to develop the CHHSLs are an excess lifetime cancer risk of one in one million and a hazard quotient of 1.0 for noncancerous health effects. The CHHSLs were developed using standard exposure assumptions and chemical toxicity values published by EPA and CalEPA. The CHHSLs can be used to screen sites for potential human health concerns where releases of hazardous chemicals to soils have occurred. Under most circumstances, the presence of a chemical in soil, soil gas, or indoor air at concentrations below the corresponding CHHSLs can be assumed to not pose a significant human health risk (OEHHA 2025).

Emergency Response to Hazardous Materials Incident

California's State Emergency Plan provides an overview of how the State prepares for, mitigates, responds to, and recovers from emergencies in California (Cal OES 2023a). The California Governor's Office of Emergency Services (Cal OES) administers the plan, which describes the methods for conducting emergency operations, rendering mutual aid, emergency response capabilities of state agencies, resource mobilization, public information, and continuity of government during an emergency or disaster. Cal OES also coordinates the response of other agencies, including CalEPA, CHP, the California Department of Fish and Wildlife, the RWQCBs, SDAPCD, the City of San Diego Fire Department, and the DEHQ Hazardous Incident Response Team.

Underground Storage Tank Act

The UST monitoring and response program is required under HSC Section 5280 et seq. and CCR Title 22, Section 2630. The program ensures that facilities meet regulatory requirements for design, monitoring, maintenance, and emergency response when operating or owning USTs. The County of San Diego DEHQ is the local administering agency for this program (County of San Diego 2025c).

Standards Applicable to the Transportation of Hazardous Materials

The State of California has adopted DOT regulations for the movement of hazardous materials originating within the state and passing through the state; state regulations are contained in Title 26 of the CCR. CHP and Caltrans have primary responsibility for enforcing these regulations and responding to hazardous materials transportation emergencies (Sections 2403 and 40800 of the California Vehicle Code). CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provides detailed information to cleanup crews in the event of an incident. CHP also oversees vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation. CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Caltrans has emergency chemical spill identification teams at locations throughout the State. Hazardous waste must be regularly removed from generating sites by licensed hazardous waste transporters. Unless specifically exempted, it is unlawful in California for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC, which maintains a list of active registered hazardous waste transporters throughout California. Transported hazardous waste must be accompanied by hazardous waste manifests (22 CCR Section 66263.10 et seq.).

Schools

Public Resources Code Section 21151.4

PRC Section 21151.4 states that an environmental impact report (EIR) shall not be certified or a negative declaration (ND) shall not be approved for projects involving the construction or alteration of a facility within one-quarter mile of a school that may emit hazardous air emissions, or that would handle extremely hazardous substances in quantities equal to or greater than the State threshold quantity specified in HSC Section 25532(m), which may pose a health or safety hazard to students or employees of the school. An exception applies if both of the following conditions are met:

1. The lead agency preparing the EIR or ND consulted with the school district having jurisdiction regarding the potential impact of the project on the school.
2. The school district provided written notification of the project not less than 30 days prior to the proposed certification of the EIR or approval of the ND.

California Education Code

The California Education Code (EDC) addresses school site selection, including considerations for potential hazards. EDC Section 17210 et seq. requires California school districts to prepare a Phase I Environmental Site Assessment (ESA) or Preliminary Environmental Assessment (PEA) to identify and evaluate recognized environmental conditions (RECs) for proposed new or expanding school properties that will be financed using state bonds. Under the Education Code, DTSC is responsible for reviewing Phase I ESAs for the purpose of identifying RECs at prospective school sites in accordance with EDC requirements and determining whether further investigation is necessary prior to DTSC's approval of sites for future school use (DTSC 2025e). EDC Section 17210.1 requires school districts to notify residents in the immediate area of a proposed school site before starting field work for a Phase I ESA or PEA.

EDC Section 17213 prohibits school districts from acquiring sites that are hazardous waste disposal sites, hazardous substance release sites, or contain pipelines carrying hazardous substances. Where a PEA discloses the presence of a hazardous materials release or threatened release, or the presence of naturally occurring hazardous materials at concentrations that could pose a significant risk to children or adults, EDC Section 17213.2 requires school districts to enter into an agreement with DTSC to oversee response action at the site and take response

action. EDC Section 17213.2 also requires school districts to cease all construction activities, notify DTSC, and take corrective actions if a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered during construction at a school site.

Airport Safety

State Aeronautics Act

The State Aeronautics Act (Public Utilities Code Section 21675) requires each ALUC establish an ALUCP to provide for the orderly growth of each public airport and the surrounding area within the jurisdiction of the commission. An ALUCP focuses on a defined area around each airport, known as the Airport Influence Area (AIA). In addition, airport safety zones are established for all public airports as part of the ALUCP, and land use restrictions within safety zones are established to protect people and property on the ground and in the air. The AIA is composed of noise, safety, airspace protection, and overflight factors, in accordance with guidance from the *California Airport Land Use Planning Handbook* published by the Caltrans Division of Aeronautics (Caltrans 2011).

The ALUC reviews land use plans, development proposals, and certain airport development plans for consistency with adopted ALUCPs. ALUCPs provide guidance on appropriate land uses surrounding airports to protect the health and safety of people and property within the vicinity of an airport, as well as the public in general. The ALUC has no jurisdiction over the operation of airports or over existing land uses, regardless of whether such uses are incompatible with airport activities. Once ALUCPs have been adopted by the ALUC, local agencies with land located within the AIA boundary for any of the airports must amend their planning documents to conform to the applicable ALUCP, unless they follow certain procedures to overrule the ALUCP (Government Code Section 65302.3).

The four compatibility factors considered in an ALUCP as identified in the *California Airport Land Use Planning Handbook* are noise, safety, airspace protection, and overflight. The objectives of planning for each of these factors are summarized below:

- **Noise:** Avoid introducing new noise-sensitive land uses in the vicinity of an airport that would be exposed to significant levels of aircraft noise, taking into account the characteristics of the airport and the communities surrounding the airport.
- **Safety:** Minimize the risks associated with potential off-airport aircraft accidents and emergency landings. This objective has two components:
  - **Safety on the ground:** Provide for the safety of people and property on the ground in the event of an aircraft accident near an airport.
  - **Safety of aircraft occupants:** Enhance the chances of survival of the occupants of an aircraft involved in an accident beyond the immediate runway area.
- **Airspace protection:** Avoid the development of land use conditions that, by posing hazards to flight, can increase the risk of an accident occurring. The following hazards are of particular concern:
  - airspace obstructions;
  - wildlife hazards, particularly bird strikes; and
  - land use characteristics that pose other potential hazards to flight by creating visual or electronic interference with air navigation.
- **Overflight:** Avoid, to the extent possible, new land use development that would be disrupted by overflight activity and might lead to annoyance and complaints; notify people about the presence of aircraft overflights near airports so they can make informed decisions regarding acquisition or lease of property.

Caltrans Division of Aeronautics

The Caltrans Division of Aeronautics issues permits for and annually inspects hospital heliports and public-use airports, makes recommendations regarding proposed school sites within 2 miles of an airport runway, and

authorizes helicopter landing sites at and near schools. If Caltrans does not support a proposed school site, the school district or charter school may not acquire or lease the site, and no state or local funds can be used to acquire the site or construct the school (EDC Section 17215).

Disaster Recovery/Natural Disasters

This section describes the regulatory setting that pertains to disaster recovery and natural disasters. Wildfire-related plans and guidance are discussed in Section 4.19, "Wildfire."

State Hazard Mitigation Plan

The State Hazard Mitigation Plan is California's primary hazard mitigation guidance document and provides an updated and comprehensive description of the State's historical and current hazard analysis, mitigation strategies, goals, and objectives (Cal OES 2023b). Approved by FEMA on August 30, 2023, as an enhanced state mitigation plan, the State Hazard Mitigation Plan continues to build upon California's commitment to reduce or eliminate the impacts of disasters caused by natural, technological, accidental, and adversarial/human-caused hazards, and further identifies and documents progress made in hazard mitigation efforts, new or revised state and federal statutes and regulations, and emerging hazard conditions and risks that affect the State of California.

California Emergency Services Act

The California Emergency Services Act (Government Code Section 8550 et seq.) provides the basic authority for conducting emergency operations following a proclamation of emergency by the governor or appropriate local authorities. Local government and district emergency plans are considered extensions of the State Emergency Plan, which was established in accordance with the Emergency Services Act.

California Disaster Assistance Act

The California Disaster Assistance Act (Government Code Sections 8680–8692) authorizes the director of Cal OES to administer a disaster assistance program that provides financial assistance from the state for costs incurred by local governments as a result of a disaster event. Funding for the repair, restoration, or replacement of public real property damaged or destroyed by a disaster is made available when the Director concurs with a local emergency proclamation requesting state disaster assistance. The program also provides for the reimbursement of local government costs associated with certain emergency activities undertaken in response to a state of emergency proclaimed by the governor. In addition, the program may provide matching fund assistance for cost sharing required under federal public assistance programs in response to a Presidential Major Disaster or Emergency Declaration.

California Catastrophic Incident Base Plan

The California Catastrophic Incident Base Plan establishes the concept of operations for how State and federal officials will coordinate for all types of catastrophic disasters. The concept of operations defines the joint State and federal organization and operations that support the affected local governments and other entities in an incident area. The purpose of the document is to describe the integration of federal resources into the State-led response to a catastrophic incident to achieve unity of effort. The concept of operations applies to the response and recovery phases of an incident; it does not address preparedness, prevention, mitigation, or long-term recovery operations (DHS, FEMA, and OES 2008).

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

Hazardous Materials

County of San Diego Department of Environmental Health and Quality

The County of San Diego DEHQ HMD has been the CUPA for San Diego County since 1996. All inspections in the CUPA program are performed by trained environmental health specialists who take part in a continuous education program to ensure consistency and uniformity during inspections. These inspections determine compliance with the following regulations:

- Hazardous Waste Control, Aboveground Storage of Petroleum, Underground Storage of Hazardous Substances, Hazardous Materials Release Response Plans and Inventory (HSC Chapters 6.5, 6.67, 6.7, and 6.95, respectively);
- Medical Waste Management Act (Division 104, Part 14);
- Public Safety and Underground Storage Tank Regulations (CCR Titles 19 and 23, respectively); and
- San Diego County Code of Regulatory Ordinances governing sewage and solid waste disposal (Title 6; Division 8; Chapters 9, 10, 11, and 12) (County of San Diego 2025a).

County of San Diego Site Assessment and Mitigation Program

The primary goal of the San Diego County DEHQ Site Assessment and Mitigation (SAM) Program is to protect human health, water resources, and the environment in San Diego County by providing oversight of assessments and cleanups in accordance with the HSC and CCR (County of San Diego 2025d).

The DEHQ Voluntary Assistance Program (VAP), a key program of the SAM Program, is a voluntary option for project oversight, staff consultation, and technical report evaluation for projects on properties with hazardous substance contamination. Through the VAP, members of the SAM team at the DEHQ provide consultation and oversight, and report concurrence on projects involving properties suspected or known to be contaminated with hazardous substances. The SAM Program uses current guidelines and policies of the DEHQ and RWQCB to reach site assessment and cleanup goals at sites under the VAP. Assistance is customized to meet the needs of the applicant. The objective of the VAP is to allow rapid and cost-effective resolution of contamination problems. The most commonly submitted documents are work plans, Phase I ESA reports, Phase II ESA reports, and health risk evaluations (County of San Diego 2025e).

County of San Diego Underground Storage Tank Program

The DEHQ regulates construction, operation, repair, and removal of UST systems with the goal of protecting public health, the environment, and groundwater. The DEHQ HMD is the lead agency for permitting installations of new UST systems, UST repairs, and UST removals. In addition, the DEHQ HMD is the lead enforcement agency for violations of UST laws and regulations in HSC Chapter 6.7 of Division 20 and CCR Title 23, Division 3. The DEHQ HMD ensures that businesses and facilities with ongoing UST operations are properly permitted and meet the monitoring requirements applicable to their type of equipment through (1) conducting annual inspections of all fuel facilities in San Diego County as required by state law and (2) reviewing and approving all electronic submissions regarding UST installations, repairs, upgrades, and removals through the California Environmental Reporting System (County of San Diego 2025f).

San Diego County Hazardous Materials Area Plan

The San Diego County Operational Area Hazardous Materials Area Plan (HAZMAT Area Plan) describes the system currently being used in San Diego County for managing hazardous materials emergencies. The HAZMAT Area Plan coordinates the activities carried out by the HMD, Hazardous Materials Incident Response Team (HIRT), and the County of San Diego Office of Emergency Services. The HAZMAT Area Plan is designed to integrate the operational activities of the Unified San Diego County Emergency Services Organization HIRT into the on-scene operational procedures for the local, state, or federal agency that has primary responsibility for a hazardous chemical emergency in the jurisdiction (County of San Diego 2020).

Airport and Flight Safety

San Diego County Regional Airport Authority

SDCRAA was established under state law as an independent agency to manage the day-to-day operations of San Diego International Airport and to address the region's long-term air transportation needs (SDCRAA 2025b). As the ALUC for San Diego County, SDCRAA is responsible for creating or updating the region's ALUCPs (California Public Utilities Code Section 21670, 21674, and 21675).

In addition to the public and military airports, there are numerous private airports, airstrips, and helipads in the region. The majority of these private airports have not adopted ALUCPs.

Requirements for Notice to Military

PRC Section 21098 requires lead agencies to submit a notice to the military service that would be affected by a proposed General Plan Amendment; a project of statewide, regional, or area-wide significance; or a project that must be referred to the ALUC when the project is located within specific boundaries of a low-level flight path, military impact zone, or special use airspace. Noticing is required when a Notice of Preparation of an EIR is issued and when environmental documents are released for public review. Government Code Section 65352 requires that, prior to action by a legislative body to adopt or substantially amend a general plan, the lead agency shall refer the proposed action to various entities, including the branches of the US military that have provided the Governor's Office of Land Use and Climate Innovation with a mailing address, when the proposed action is:

- located within 1,000 feet of a military installation,
- located beneath a low-level flight path, and
- within special use airspace as defined in PRC Section 21098.

Disaster Recovery and Assistance/Natural Disasters

San Diego County Operational Area Emergency Operations Plan

The San Diego County Operational Area EOP was adopted by the UDC and County OES and is subject to update every four years. The purpose of the EOP is to outline the Operational Area's comprehensive emergency management system, which provides for a planned response to disaster situations. The Operational Area consists of the county and each of its local jurisdictions, including cities and special districts. The EOP is intended to be used by the county and all cities within the county to respond to major emergencies and disasters. The cities within the county are encouraged to adopt the EOP as their own, with modifications as appropriate for their city.

The EOP outlines strategies, procedures, recommendations, and organizational structures that can be used to implement a coordinated evacuation effort in the Operational Area. The EOP has 16 annexes that provide detailed guidance and specific plans for various functions and aspects of emergency response, including emergency management, fire and rescue mutual aid operations, environmental health operations, communications and warning systems, and evacuation (USDCESO and County of San Diego 2022).

Policies that are relevant to emergency management and response within the Operational Area include the following:

- Policy #8-A, "WUI -Wildland Urban Interface," requires all San Diego County fire agencies to adopt and utilize the Firescope Wildland Urban Interface Structure Protection Guidelines when operating on wildland fire incidents within San Diego County (SDCOA 2012). The purpose of this policy is to provide consistent and effective procedures when providing fire protection in the WUI. See Section 4.19, "Wildfire," for additional information on wildfire response.
- Policy #8-B, "Evacuation and Repopulation," requires San Diego County Fire Agencies to utilize standard guidelines during the evacuation and repopulation of the public due to a hazardous or potentially hazardous emergency incident. The policy states that the Joint Agency Evacuation Checklist should be followed to allow the Unified Incident Commanders to effectively manage and coordinate the evacuation process with the law enforcement agency having jurisdiction and San Diego County Evacuation and Repopulation Plan should be used during the planning and implementation of repopulation residents back into evacuated areas. The purpose of this policy is to ensure the use of standardized procedures to ensure civilian safety and responder effectiveness during evacuations and to enhance the return to normalcy during recovery (SDCOA 2022).

San Diego Operational Area Recovery Plan

The San Diego Operational Area Recovery Plan provides a comprehensive framework for countywide recovery planning and operations. It addresses the roles and responsibilities of government organizations and describes local, state, federal, and private organizations and resources that may be activated to address disaster recovery in San Diego County. The San Diego Operational Area Recovery Plan ensures consistency with current policy guidance and describes the interrelationship with other levels of government (USDCESO and County of San Diego 2019).

San Diego County Multi-Jurisdictional Hazard Mitigation Plan

The federal Disaster Mitigation Act of 2000 (Public Law 106-390) requires all local governments to create disaster plans in order to qualify for hazard mitigation funding. The Multi-Jurisdictional Hazard Mitigation Plan is a countywide plan that identifies risks and ways to minimize damage by natural and human-made disasters. The plan is a comprehensive resource document that serves many purposes, such as enhancing public awareness, creating a decision tool for management, promoting compliance with state and federal program requirements, enhancing local policies for hazard mitigation capability, and providing interjurisdictional coordination. The plan evaluates risks associated with coastal storms, erosion, tsunamis, dam failures, earthquakes, floods, rain-induced landslides, liquefaction, structure/wildland fires, and human-caused hazards. It also provides goals, objectives, and actions to reduce impacts from these hazards (County of San Diego 2025i).

The San Diego County Multi-Jurisdictional Hazard Mitigation Plan contains annexes that provide specific details and actions related to hazard mitigation for the following local jurisdictions within San Diego County: San Diego County, City of Carlsbad, City of Chula Vista, City of Coronado, City of Del Mar, City of El Cajon, City of Encinitas, City of Escondido, City of Imperial Beach, City of La Mesa, City of Lemon Grove, City of National City, City of Oceanside, City of Poway, City of San Diego, City of San Marcos, City of Santee, City of Solana Beach, City of Vista, Alpine Fire Protection District, Otay Water District, Padre Dam Municipal Water District, Rainbow Municipal Water District, San Diego County Water Authority, San Diego Unified Port District, Sweetwater Authority, and Vista Irrigation District (County of San Diego 2025i).

SANDAG Regional Intelligent Transportation Systems Architecture

SANDAG's Regional Intelligent Transportation Systems (ITS) Architecture is a roadmap for transportation systems planners and deployers in the San Diego region. The ITS Architecture provides a common framework for planning, defining, and integrating ITS; it represents a shared vision of how each agency's systems will work together in the future, sharing information and resources to provide a safer, more efficient, and more effective transportation system for travelers in the region (SANDAG 2021a).

The Regional ITS Architecture consists of service packages, which are groups of related transportation services designed to address specific needs or objectives within the region, including disaster response and evacuation. PS13, "Regional Evacuation and Reentry Management," is a planned service package intended to support evacuation of the public from a disaster area and manage subsequent reentry to the disaster area. The service package supports coordination of evacuation plans among the federal, state, and local transportation, emergency, and law enforcement agencies that may be involved in a large–scale evacuation (SANDAG 2021b). PS14, "Regional Disaster Traveler Information," uses ITS to provide disaster-related traveler information to the public, including evacuation and reentry information and other information concerning the operation of the transportation system during a disaster (SANDAG 2021c).

4.9.3 Significance Criteria

Appendix G of the State CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique nature of the proposed Plan.

Checklist questions for hazards and hazardous materials are provided in Section IX of CEQA Guidelines Appendix G. For purposes of this EIR, the Appendix G questions have been combined and modified. Specifically, HAZ-1 incorporates the questions found in Appendix G Section IX(a), IX(b), and IX(d) regarding the transport, use, disposal, or release of hazardous materials, including the release of contaminants from a Government Code Section 65962.5 hazardous materials site. HAZ-2 addresses question IX(c) addressing public hazards through the emission of hazardous materials, substances, or wastes near schools. HAZ-3 addresses air traffic hazards consistent with question IX(e) regarding public airports. The excessive noise portion of question IX(e) is addressed in criterion NOI-3 in Section 4.13, "Noise and Vibration." HAZ-4, regarding emergency response and evacuation, addresses Section IX(f) and Section XVII(d) related to transportation and Section XX(a) related to wildfire addressing emergency response and evacuation. Section IX(g), related to risk of loss, injury or death involving wildfires, is addressed in criterion WF-1 in Section 4.19, "Wildfire." For the purpose of this EIR, implementation of the proposed Plan would have a significant hazards impact if it would:

HAZ-1 Create a significant hazard to the public or the environment from the transport, use, disposal, or release of hazardous materials, including the release of contaminants from a Government Code Section 65962.5 hazardous materials site.

HAZ-2 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

HAZ-3 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.

HAZ-4 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or result in inadequate emergency access.

The analysis discloses impacts to hazards and hazardous materials. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's hazards and hazardous materials impacts would be worsened by climate change. Therefore, a climate change analysis for hazards and hazardous impacts is not included in this section.

4.9.4 Environmental Impacts and Mitigation Measures

HAZ-1 CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT FROM THE TRANSPORT, USE, DISPOSAL, OR RELEASE OF HAZARDOUS MATERIALS, INCLUDING THE RELEASE OF CONTAMINANTS FROM A GOVERNMENT CODE SECTION 65962.5 HAZARDOUS MATERIALS SITE.

Analysis Methodology

The following analysis describes the types of hazardous materials that would be encountered, used, and handled during construction and operation of development projects associated with the implementation of the proposed Plan. It analyzes whether hazardous materials encountered, used, or handled during such activities would create a significant hazard to people or the environment. The analysis compares the locations of forecast regional growth and land use change or transportation network improvements to general hazardous materials conditions—including hazardous materials sites included on the Cortese List, pursuant to Government Code Section 65962.5—that could be disturbed or encountered during these activities. This analysis also identifies applicable laws and regulations for the proper storage, containment, use, and removal of hazardous materials during construction and operation of development projects and describes how they minimize hazards and hazardous materials impacts.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Most land uses are likely to involve activities in which some form of hazardous materials would be routinely used, stored, handled, transported, and disposed of. Increased development and redevelopment would increase the use, storage, transport, and disposal of household hazardous materials. The grading, excavation, and dewatering of sites for new development and redevelopment throughout the region could expose construction workers and the public to known or potentially unknown hazardous substances present in the soil or groundwater. In the event that previously undiscovered hazardous material contamination is found in the soil or groundwater during construction activities for new development and redevelopment, such contamination could cause short- or long-term adverse health effects in people exposed to the hazardous substances.

In addition, exposure to contaminants could occur from construction-related activities that would disturb existing hazardous waste sites included on the Cortese List (e.g., demolition, soil disturbances); routine use, disposal, and storage of common hazardous materials, such as paints, solvents, and cleaning products; or accidents during the routine transport of hazardous materials. These materials would include any regulated ACM, lead-based paint, or debris characterized as hazardous waste (e.g., lead waste) from demolition of facilities constructed prior to 1978.

Construction activities associated with forecasted regional growth and land use change would disturb the subsurface in the area of some former UST sites. Disturbing residual petroleum contamination from UST sites increases the risks to human health and the environment during excavation, transportation, and disposal (EPA 2025d). Additionally, construction activities would be located on or near the sites identified in Table 4.9-1 from the DTSC database. In some cases, former uses of land, such as agriculture and industrial processes, have left residual hazardous substance contamination in the soil, which would pose an adverse risk to humans and the environment when encountered during ground-disturbance activities, such as grading or removal of soil prior to construction.

Wherever hazardous materials are used or stored or hazardous waste is generated, release of hazardous materials due to natural disasters, human error, or misuse is possible. In each situation, the hazards and the risks they would pose to people or the environment would depend on the nature and amount of the hazardous materials used, the location where the materials would be used and stored and the particular containment measures put into place, the processes and handling procedures for the materials, and the personnel dealing with the hazardous materials. The severity of potential effects varies with the activity conducted, the concentration of and type of hazardous material or wastes present, and the proximity of sensitive receptors.

As described in Section 4.9.2, "Regulatory Setting," numerous federal, state, and local regulations exist that reduce the potential for humans or the environment to be exposed to hazardous emissions or the handling of hazardous materials generated. Businesses that handle/generate hazardous materials within the region are monitored by EPA; San Diego RWQCB; DTSC; the San Diego County DEHQ HMD; LEA programs; and SDAPCD. CCR Title 22, Division 4.5 provides hazardous waste management regulations, including standards designed to avoid releases. As the local CUPA, San Diego County DEHQ HMD is required to conduct ongoing routine inspections to ensure compliance with existing laws and regulations; to identify safety hazards that could cause or contribute to an accidental spill or release; and to suggest preventative measures to minimize the risk of a spill or release of hazardous substances (County of San Diego 2025a).

Compliance with such regulations would minimize the potential for the creation of a hazard and provide planning mechanisms for prompt and effective cleanup if an accidental release did occur. Adherence to existing regulations would therefore ensure that the transport, use, disposal, or accidental release of hazardous materials (including the release of contaminants from a Government Code Section 65962.5 hazardous materials site) during

construction and operation of development projects would not create a significant hazard. Therefore, regional growth and land use change would have a less than significant impact.

Transportation Network Improvements

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

These transportation network improvements would involve the routine transport, use, or disposal of hazardous materials, particularly for highway, light rail, and arterial improvement projects. As discussed in Section 4.9.1, "Existing Conditions," numerous hazardous materials release sites included on the Cortese List were identified in San Diego County, including 8 hazardous waste and substances sites on the DTSC EnviroStor database, 84 active LUST cleanup sites on the SWRCB GeoTracker database, and 47 "active" CDO and/or CAO listings (DTSC 2025; SWRCB 2025; CalEPA 2025c) (see Figure 4.9-1). One transportation network improvement project that would be implemented by 2035 overlaps with an active LUST site. Therefore, it is possible that contamination associated with previous releases of hazardous materials could be encountered during construction activities for this project. In addition, other transportation network improvement projects could be constructed in areas with undocumented contamination (particularly those projects through urban infill areas and older structures that may contain hazardous materials). Construction activities at these sites may require the extraction and transportation of contaminated soil, groundwater, and hazardous building materials. In addition to hazardous waste that may be encountered at sites with historical chemical releases, along well-traveled transportation road corridors that existed prior to the phasing out of leaded gasoline, including the routes listed above, shallow soil adjacent to the right-of-way may have been contaminated with aerially deposited lead (ADL) caused by historical emissions from vehicle exhausts (Caltrans 2025). The lead concentrations in shallow soil may exceed state and federal hazardous waste criteria or may be at concentrations that require special handling and waste management.

The construction and maintenance of transportation facilities would likely involve the use of hazardous materials, such as fuels and other refined petroleum products, solvents, and paints and other architectural coatings. Highway improvements would increase the capacity of existing roadways, indirectly increasing the capacity of routes used to transport hazardous materials. Improvements to rail corridors would increase the capacity of goods, including hazardous materials, to be carried by freight rail throughout the region. Such improvements would increase the risk of accidents and the potential release of hazardous materials into the environment.

Existing federal, state, and local laws; regulations; and programs included in Section 4.9.2, "Regulatory Setting," that govern the use of hazard materials strictly regulate the proper handling of such materials and their containers to ensure that routine transport, use, disposal, and release of hazardous materials (including the release of contaminants from a Government Code Section 65962.5 hazardous materials site) do not create a significant hazard to the public or the environment. Compliance with these regulations would avoid or minimize the potential for accidental release of hazardous materials and wastes into the environment. Additionally, compliance with the regulations would ensure that hazardous materials would be promptly contained and remediated in the event of an accidental release. Therefore, adherence to these regulations would ensure impacts associated with routine transport, use, or disposal of hazardous materials would be less than significant.

2035 Conclusion

Regional growth, land use changes, and transportation network improvements would increase by 2035, thereby increasing the risk of hazards to the public and the environment through the routine transport, use, or disposal of hazardous materials, and their release, during construction and operations. However, adherence to existing

regulations, as discussed above, would ensure that these activities do not create a significant hazard to people or the environment. Therefore, this impact (HAZ-1) is less than significant for this period.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the Cities of San Diego (51.6%), Chula Vista (17.1%), and the unincorporated jurisdictions. As described in the 2035 analysis, the routine transport, use, or disposal of hazardous materials increases as development and redevelopment increases. The severity of potential effects varies with the activity conducted, the concentration of and type of hazardous material or wastes present, and the proximity of sensitive receptors. Additionally, construction activities would be located on or near the contaminated sites and hazardous materials release sites identified in Section 4.9.1, "Existing Conditions." In some cases, former uses of the land, such as agriculture and industrial processes, may leave residual hazardous substances in soil and groundwater, which could pose a significant risk to people or the environment. By 2050, the transport, use, and disposal of hazardous materials or hazardous waste would be greater, increasing the potential for releases to the environment.

Federal, state, and local laws; regulations; and programs described in Section 4.9.2, "Regulatory Setting," that govern the use of hazardous materials strictly regulate the proper handling of such materials and their containers to ensure that routine transport, use, disposal, and accidental release of hazardous materials (including the release of contaminants from a Government Code Section 65962.5 hazardous materials site) do not create a significant hazard to the public or the environment. Adherence to these laws, regulations, and programs would ensure that impacts associated with routine transport, use, or disposal of hazardous materials would be less than significant.

Transportation Network Improvements

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, the types of activities that would involve the routine transport, use, or disposal of hazardous materials would continue to occur into 2050 as additional transportation network improvements are implemented. The highway improvements to be implemented by 2050 involve an increase in the capacity of existing roadways, indirectly increasing the capacity of routes used to transport hazardous materials. By 2050, the expansion of rail lines discussed in Chapter 2, "Project Description," would necessitate the use and transport of hazardous materials for construction purposes. One transportation network improvement project that would be implemented by 2050 overlaps with an active LUST cleanup site (DTSC 2025b; SWRCB 2025). Therefore, it is possible that contamination associated with previous releases of hazardous materials could be encountered during construction activities for this project. Other transportation network improvement projects could be constructed in areas with undocumented contamination (particularly those projects through urban infill areas and older structures that may contain hazardous materials). As discussed in the 2035 analysis, ADL-contaminated soil could be encountered during construction along highway corridors that existed prior to the phasing out of leaded-gasoline. This soil may require special handling, management, and disposal.

The federal, state, and local laws, regulations, and programs described in Section 4.9.2, "Regulatory Setting," that govern the use of hazardous materials strictly regulate the proper handling of such materials and their containers

to ensure that routine transport, use, disposal, and accidental release of hazardous materials (including the release of contaminants from a Government Code Section 65962.5 hazardous materials site) do not create a significant hazard to the public or the environment. Adherence to these laws, regulations, and programs would ensure that impacts associated with routine transport, use, or disposal of hazardous materials would be less than significant.

2050 Conclusion

Regional growth, land use changes, and transportation network improvements would increase by 2050, thereby increasing the risk of hazards to the public and the environment through the routine transport, use, or disposal of hazardous materials, and their accidental release, during construction and operations. However, adherence to the existing regulations discussed above would ensure that these activities do not create a significant hazard to people or the environment. Therefore, this impact (HAZ-1) is less than significant for this period.

MITIGATION MEASURES

No mitigation measures are required for this impact.

HAZ-2 EMIT HAZARDOUS EMISSIONS OR HANDLE HAZARDOUS OR ACUTELY HAZARDOUS MATERIALS, SUBSTANCES, OR WASTE WITHIN ONE-QUARTER MILE OF AN EXISTING OR PROPOSED SCHOOL.

Analysis Methodology

This section analyzes impacts associated with the handling and emission of hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The possibility for new schools to be sited near locations where hazardous materials may be handled and emitted is discussed in relation to the locations of proposed development and redevelopment. In addition, the analysis considers how construction activities associated with development projects and transportation network improvements may result in the transport and release of hazardous materials within one-quarter mile of an existing or proposed school. This section also analyzes how existing regulations minimize activities involving the emission and handling of hazardous materials, substances, and waste in proximity to schools. Section 4.3, "Air Quality," addresses mobile source emissions from development projects and transportation network improvements and associated health risks.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Given the large number of existing schools located throughout the San Diego region (approximately 758 public schools), additional development and redevelopment forecasted is likely to occur within one-quarter mile of an existing school. The forecasted increase in population and development increases the risk of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

However, as stated in Section 4.9.2, "Regulatory Setting," the current regulatory environment provides a high level of protection, which is monitored and enforced at the federal, state, and local levels. The siting and construction of school facilities would be required to comply with EDC requirements described in Section 4.9.2. The code requires that, prior to commencing the acquisition of property for a new school site, an environmental site investigation be completed to determine the health and safety risks (if any) associated with a site (EDC Section 17210). In addition, the code prohibits the siting of school facilities on a hazardous waste disposal site, a hazardous substance release site, or a site with pipelines carrying hazardous substances (EDC Section 17213). Furthermore, PRC Section 21151.4

requires evaluation and notification of the locations where potential materials handling and emissions could occur within one-quarter mile of schools (existing or proposed). Therefore, adherence to existing regulations would ensure that the risk of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be minimized. Therefore, this impact (HAZ-2) is less than significant for this period.

Transportation Network Improvements

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Construction activities associated with planned transportation network improvements may result in hazardous emissions or the handling of hazardous or acutely hazardous materials. Such activities may involve the use of equipment that contains hazardous materials (e.g., diesel-fueled equipment) or the transportation of excavated soil or groundwater containing contaminants from areas that are identified as being contaminated. In addition, hazardous materials carried on the existing highways, freight rail, and arterials could affect schools via exposure of sensitive receptors to health hazards if there were to be a release or incident during transportation.

This analysis consulted SANDAG's GIS database for schools located within the San Diego region (SANDAG 2025). The transportation network improvements by 2035 were overlain on the region to identify where impacts on existing schools may occur if hazardous materials were to be accidentally released into the environment. The results of this analysis indicate that there are approximately 166 schools located within one-quarter mile of planned transportation network improvements by 2035. These schools may be impacted if hazardous materials carried on roadways or rail lines were to be released during transportation. In addition, construction of the transportation network improvements would result in the generation of certain types of emissions (e.g., petroleum hydrocarbons, fugitive dust) or the handling of hazardous substances or waste within one-quarter mile of an existing or proposed school site.

As discussed above, the federal, state, and local laws, regulations, and programs described in Section 4.9.2, "Regulatory Setting," reduce the risk of hazardous emissions and the handling of hazardous materials, substances, or waste near schools. Therefore, adherence to these regulations would ensure that the risk of hazardous emissions and the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be minimized. Therefore, this impact is less than significant.

2035 Conclusion

Regional growth, land use changes, and transportation network improvements would increase by 2035, thereby increasing the risk related to the handling and emission of hazardous materials near schools. However, adherence to existing regulations would ensure that risks associated with the handling or emissions of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be minimized. Therefore, this impact (HAZ-2) is less than significant for this period.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional

population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the Cities of San Diego (51.6%), Chula Vista (17.1%), and the unincorporated jurisdictions. As discussed above, the forecasted regional growth and land use development would increase the types and amounts of hazardous materials throughout the San Diego region relative to existing conditions and those experienced in 2035. However, as stated in Section 4.9.2, "Regulatory Setting," the current regulatory environment provides a high level of protection, which is monitored and enforced at the federal, state, and local levels. The siting and construction of school facilities would be required to comply with EDC requirements described in Section 4.9.2. The code requires that, prior to commencing the acquisition of property for a new school site, an environmental site investigation be completed to determine the health and safety risks (if any) associated with a site (EDC Section 17210). In addition, the code prohibits the siting of school facilities on a hazardous waste disposal site, a hazardous substance release site, or a site with pipelines carrying hazardous substances (EDC Section 17213). Furthermore, PRC Section 21151.4 requires evaluation and notification of the locations where potential materials handling and emissions could occur within one-quarter mile of schools (existing or proposed). Therefore, adherence to existing regulations would ensure that the risk of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be minimized. Therefore, this impact (HAZ-2) is less than significant for this period.

Transportation Network Improvements

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Construction activities associated with these transportation network improvements may result in hazardous emissions or the handling of hazardous or acutely hazardous materials, or the transportation of excavated soil or groundwater containing contaminants near schools. This analysis consulted SANDAG's GIS database for schools located within the San Diego region (SANDAG 2025). The transportation network improvements planned by 2050 were overlain on the region to identify where impacts on existing schools may occur if hazardous materials were to be accidentally released into the environment. The results of this analysis indicate that there would be approximately 279 schools located within one-quarter mile of planned transportation network improvements by 2050. In addition, hazardous materials carried on the existing highways and arterials could affect these schools via exposure of sensitive receptors to health hazards if there were to be a release or incident during transportation.

However, as discussed above, existing federal, state, and local laws, regulations, and programs described in Section 4.9.2, "Regulatory Setting," reduce the risk of hazardous emissions or the handling of hazardous near schools. Therefore, adherence to these laws, regulations, and programs would ensure impacts would be less than significant.

2050 Conclusion

Regional growth, land use changes, and transportation network improvements would increase by 2050, thereby increasing the risk related to the handling and emission of hazardous materials near schools. However, adherence to existing regulations, as discussed above, would ensure that the risks associated with the handling or emissions of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be minimized. Therefore, this impact (HAZ-2) is less than significant for this period.

MITIGATION MEASURES

No mitigation measures are required for this impact.

HAZ-3 FOR A PROJECT LOCATED WITHIN AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT, RESULT IN A SAFETY HAZARD FOR PEOPLE RESIDING OR WORKING IN THE PROJECT AREA.

Analysis Methodology

This section identifies whether implementation of the proposed Plan's growth and land use changes would result in development projects that would cause safety hazards. This evaluation compares the locations of forecast growth and land use changes to the locations of AIAs and safety zones. The ability of ALUCPs to minimize such safety hazards is described.

Transportation network improvements, including the height and location of associated structures, would be evaluated on a project-specific basis for compliance with FAA requirements so that transportation network improvements would not result in air traffic hazards and would be in compliance with any applicable, current ALUCPs and any additional applicable law or regulation for each period of evaluation (2035 and 2050); therefore, they will not be addressed further in this analysis.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). As indicated in Section 4.9.1, "Existing Conditions," there are 16 public-use and military airports in the San Diego region. The proposed Plan does not propose any land use changes or incompatible land uses within the vicinity of these airports. Nonetheless, it is possible that if an aircraft-related accident occurred, a safety hazard could be presented to individuals who reside or work within the project area. Regional growth in areas located close to other public-use or military airports or in-flight paths could expose people or structures to aircraft accidents by increasing the number of individuals who reside or work in the project area.

To prevent incompatible uses in areas of higher aircraft hazard potential, the ALUC has adopted ALUCPs with land use policies and criteria in the interest of public safety. Although the ALUCPs cannot prevent aircraft accidents from occurring, they do contain policies and criteria to limit future incompatible uses and emergency response and evacuation plans to minimize safety impacts. SDCRAA, which is the ALUC for the San Diego region, is required to assist local agencies in ensuring compatible land uses in the vicinity of existing or proposed airports; to coordinate planning at state, regional, and local levels; to prepare and adopt an airport land use plan; to review plans or regulations submitted by local agencies; and to review and make recommendations regarding the land uses, building heights, and other issues relating to air navigation safety and promotion of air commerce (Public Utilities Code Sections 21670, 21674, and 21675).

Safety compatibility zones identify areas where distinct levels of risk exist, which ALUCPs use to differentiate allowed and prohibited land uses. The shapes and sizes of the zones are largely based on accident data and other analyses prepared by FAA. Based on accident data and analyses prepared by the FAA, a higher percentage of crashes occur at each end of a runway, with a lower percentage occurring along the length of a runway. As a result, ALUCPs typically restrict land uses to a greater degree at each end of a runway (County of San Diego 2007b).

DOD Instruction 4165.57 requires military airfields to adopt AICUZ studies, which assess compatible land uses in the vicinity of a military air station in a way that's equivalent to ALUCPs. PRC Section 21098 would reduce hazards associated with development near military airports by requiring lead agencies to submit a notice to the military service that would be affected by a proposed general plan amendment or significant project located within specific boundaries of a low-level flight path, military impact zone, or special-use airspace.

Additionally, development projects would be subject to FAA evaluation (14 CFR Section 77). FAA evaluates proposed development projects for obstruction hazards and potential hazards to air safety. Obstruction standards are regulated by height and whether a proposal is distractive or hazardous to a pilot. FAA evaluation would occur where the project proposes certain components that trigger FAA notification, including projects located within a 2-mile radius around public-use and military airports that exceed a specified height, that could create electronic or visual hazards, or that could increase the attraction of wildlife around airports. FAA does have specific standards for visual or electronic hazards, and potential hazards are evaluated by FAA on a case-by-case basis (14 CFR Section 77, Subpart C).

Existing regulations, FAA procedures, ALUCPs, and AICUZ studies ensure compatibility between uses and reduce the potential for aircraft accidents. Therefore, adherence to the regulations above would ensure hazards associated with airports or air traffic would be less than significant.

Transportation Network Improvements

By 2035, the proposed Plan would include 49 bikeway, transit, and highway projects within the airport influence areas of adopted ALUCPs in the San Diego region (SanGIS 2025). As noted under "Analysis Methodology" above, transportation network improvements would be evaluated on a project-specific basis for compliance with FAA requirements so that transportation network improvements would not result in air traffic hazards and would be in compliance with any applicable, current ALUCPs and any additional regulatory document. Specifically, transportation network improvements would be subject to FAA height restrictions to prevent obstructions to navigable airspace (14 CFR Part 77, Subpart C). In addition, project applicants would be required to notify FAA of certain construction activities, alterations to existing structures, and proposed development to ensure there are no obstructions to navigable airspace (14 CFR Part 77, Section 77.13 of Subpart C). In accordance with ALUCPs, transportation network improvements would not result in the siting of land uses that would be sensitive to overflight activity (e.g., noise-sensitive land uses) in the vicinity of an airport or the development of land uses that would increase flight hazards (e.g., airspace obstructions, wildlife hazards, or visual or electronic interference).

2035 Conclusion

By 2035, increased development would occur near public-use or military airports. Adherence to the regulations described in Section 4.9.2, "Regulatory Setting," would minimize safety hazards associated with airports. Therefore, this impact (HAZ-3) is less than significant for this period.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the Cities of San Diego (51.6%), Chula Vista (17.1%), and the unincorporated jurisdictions. As described in the 2035 analysis, a portion of this growth would occur near public-use or military airports, particularly those located near existing urban development. The future development of land uses in areas subject to off-airport air-crash hazards could substantially increase the risk of loss of lives and property if those uses are incompatible with safe aircraft navigation. However, existing regulations, FAA procedures, ALUCPs, and AICUZ studies ensure compatibility between land uses and airports and reduce the potential for aircraft accidents. Therefore, adherence to these regulations and programs would ensure hazards associated with airports or air traffic would be less than significant.

Transportation Network Improvements

By 2050, the proposed Plan would include 56 bikeway, transit, and highway projects within the airport influence areas of adopted ALUCPs in the San Diego region (SanGIS 2025). As noted under "Analysis Methodology" above and described in the 2035 analysis, transportation network improvements would be evaluated on a project-specific basis

for compliance with FAA requirements so that transportation network improvements would not result in air traffic hazards and would be in compliance with any applicable, current ALUCPs and any additional regulatory document.

2050 Conclusion

By 2050, increased development would occur near public-use or military airports. Adherence to the regulations described in Section 4.9.2, "Regulatory Setting," would minimize safety hazards associated with airports. Therefore, this impact (HAZ-3) is less than significant for this period.

MITIGATION MEASURES

No mitigation measures are required for this impact.

HAZ-4 IMPAIR IMPLEMENTATION OF OR PHYSICALLY INTERFERE WITH AN ADOPTED EMERGENCY RESPONSE PLAN OR EMERGENCY EVACUATION PLAN OR RESULT IN INADEQUATE EMERGENCY ACCESS.

Analysis Methodology

Emergencies that may require evacuation of populated areas include earthquakes, tsunamis, floods, rain-induced landslides, dam failure, wildland fires, hazardous materials incidents, nuclear materials release, and terrorism. The primary emergency evacuation routes in the San Diego region shown in Figure 4.9-3 were reviewed to determine whether emergency evacuation route designations exist in any of the transportation network improvements project areas. These routes were evaluated to determine whether their effectiveness for emergency evacuation would be affected by the proposed Plan, either in the long term or in the short term during construction. For regional growth and changes in land use, a qualitative approach was used because information on emergency response and evacuation times associated with individual projects is not currently known. Impacts on routine emergency access to properties by law enforcement and fire protection personnel are also addressed.

This section describes existing response plans and the risk of interference with response plans (for example, if multiple development projects are built at the same time). Established evacuation routes are described, and the role of project-level review is discussed. Transportation network improvements affecting identified emergency response plans, emergency evacuation routes, and emergency access are described and evaluated.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). As discussed in more detail in Section 4.11, "Land Use," and Section 4.14, "Population and Housing," the land use pattern in the proposed Plan is based on adopted general plans of the local jurisdictions in the San Diego region. Overall, the proposed Plan accommodates anticipated growth consistent with local plans and would not induce unplanned growth.

As discussed in Section 4.4, "Project Characteristics," the proposed Plan encourages more compact land development patterns by emphasizing higher-density, mixed-use development around transit stations. Compact land uses are generally more efficient for emergency service responders because urban areas tend to be well served with these facilities and because the more compact land use pattern better facilitates access to specific sites. According to a 2017 study (Mell et al. 2017), the median time for emergency medical service units to arrive on scene from the time of a 911 call is 7 minutes. That median time increases to more than 14 minutes in rural

settings, with nearly one in 10 callers waiting almost 30 minutes for the arrival of emergency medical service personnel (Mell et al. 2017). Therefore, compact land uses could contribute to shorter emergency response times.

While the proposed Plan may improve emergency response times, it cannot be assured that evacuation routes would be adequate for sufficiently quick evacuation during an emergency, particularly during major catastrophic events. Development that proposes large concentrations of people (such as a job center) or that would site individuals who require special assistance (such as a hospital or senior facility) in an area with identified hazards could cause adverse effects related to the implementation of emergency plans because there would be more individuals potentially subject to these hazards. In the event of an emergency such as a wildfire, compact land development could result in more people using the same evacuation routes.

As discussed in Section 4.9.2, "Regulatory Setting," SANDAG implements Regional ITS Architecture to ensure coordinated disaster response and evacuation throughout the county. For example, PS13, "Regional Evacuation and Reentry Management," supports coordination of evacuation plans among the federal, state, and local transportation, emergency, and law enforcement agencies that may be involved in a large–scale evacuation (SANDAG 2021b). PS14, "Regional Disaster Traveler Information," uses ITS to provide disaster-related traveler information to the public, including evacuation and reentry information and other information concerning the operation of the transportation system during a disaster (SANDAG 2021c).

Further, as discussed in Section 4.9.2, "Regulatory Setting," numerous statewide, regional, and local plans provide guidance for emergency response and evacuation in the San Diego region and these plans are updated at regular intervals to ensure effectiveness in accordance with planned growth. For example, the San Diego County Operational Area EOP outlines the San Diego region's emergency management system and provides for a planned response to disaster situations. The EOP contains an Evacuation Annex that outlines strategies, procedures, recommendations, and organizational structures that can be used to implement a coordinated evacuation effort in the San Diego County Operational Area. The Evacuation Annex also estimates the number of people in each jurisdiction of the Operational Area who may need to be evacuated due to specific hazards, identifies general evacuation transportation routes and capacities, and provides hazard specific considerations. The EOP is intended to be used by the county and all cities within the county to respond to major emergencies and disasters. The cities within the county are encouraged to adopt the EOP as their own, with modifications as appropriate for their city. The EOP is updated every four years, or as necessary, to address changes in threats, population, and emergency response capabilities (USDCESO and County of San Diego 2022). The San Diego Multi-Jurisdictional Hazard Mitigation Plan, written in coordination with the EOP, also identifies evacuation strategies, routes, and locations. The San Diego County Multi-Jurisdictional Hazard Mitigation Plan must be updated and re-submitted for FEMA approval every five years to maintain eligibility for hazard mitigation assistance grants (FEMA 2023). During the update process, local governments evaluate short- and long-term development trends and potential changes in hazard vulnerabilities to consider whether hazard mitigation solutions need to be reevaluated and updated. The update process allows local governments to evaluate the adequacy of evacuation routes based on growth and development within their jurisdictions. OES periodically reviews and evaluates these plans to ensure that they align with federal and state standards and to ensure that local plans are effective in mitigating, responding to, and recovering from emergencies.

Although changes in land use would be reflected in updated emergency plans, it is not known if the changes would be sufficient to ensure adequate evacuation. Therefore, development projects associated with the proposed Plan's regional growth forecast would have potential to impair implementation of or physically interfere with an emergency response or evacuation plan, and this impact is significant.

Transportation Network Improvements

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States Mexico border, as well as tolling equipment and

Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

By 2035, the proposed Plan includes 30 bikeway, transit, and highway projects that intersect with primary emergency evacuation routes in the San Diego region, which are shown on Figure 4.9-4 (SanGIS 2025). Construction activities associated with these projects could temporarily hinder emergency vehicle response or evacuation during emergencies. However, once operational, the transportation network improvements are anticipated to reduce vehicle miles traveled and congestion within the San Diego region. For example, the proposed Plan includes Managed Lanes that would offer priority access to emergency vehicles. Many of the Managed Lanes would be fully built by 2035. The proposed Plan also includes physical safety improvements on rural corridors, including evacuation routing, shoulder widening, and curve straightening projects that would increase roadway safety and improve access for emergency vehicles. In addition, the proposed Plan includes installation of a dynamic message sign on SR 76 near the I-15 interchange to provide real-time traffic information that would improve safety on emergency response and evacuation routes. Furthermore, California state law requires drivers to yield the right-of-way to emergency vehicles (California Vehicle Code Section 21806) and permits emergency vehicles to use opposing lane of travel, the center turn lanes, Managed Lanes, or transit-only lanes (California Vehicle Code Section 21809). Emergency vehicles can also encroach into on-street bicycle facilities, such as Class II Bike Lanes and Class IV Cycle Tracks, to maneuver around pinch points and bottlenecks within the roadway (California Vehicle Code Section 21209). Therefore, in some instances, roadway reconfigurations proposed within the proposed Plan could improve emergency access. For example, a roadway reconfiguration could improve emergency access where a Managed Lane, transit-only lane, or a contiguous center left-turn lane is introduced where it did not previously exist. Generally, multilane roadways allow emergency vehicles to travel at higher speeds and permit other traffic to maneuver out of the path of the emergency vehicles.

As discussed above, numerous statewide, regional, and local plans provide guidance for emergency response and evacuation in the San Diego region and these plans are updated at regular intervals to ensure effectiveness in accordance with planned growth. In addition, discretionary projects would require project-level review pursuant to CEQA to ensure that individual projects do not adversely impact emergency response or evacuation plans. Therefore, measures are in place to ensure transportation network improvement projects would not impair implementation of or physically interfere with an emergency response or evacuation plan.

Although the transportation network improvements are anticipated to reduce vehicle miles traveled and congestion within the San Diego region, it is not known if the improvements would be sufficient to ensure adequate evacuation during an emergency, particularly during catastrophic events. Therefore, transportation network improvement projects would have potential to impair implementation of or physically interfere with an emergency response or evacuation plan, and this impact is significant.

2035 Conclusion

By 2035, increased development and transportation network improvements obstruct emergency response vehicles or result in activities that would cause physical interference in the implementation of an emergency response or evacuation plan. Numerous statewide, regional, and local plans provide guidance for emergency response and evacuation in the San Diego region and these plans are updated at regular intervals to ensure effectiveness in accordance with planned growth. However, it cannot be assured that emergency evacuation and response would not be impaired during an emergency, particularly during major catastrophic events. Therefore, this impact (HAZ-4) is significant for this period.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.9-4 Emergency Evacuation Routes in the San Diego Region

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the Cities of San Diego (51.6%), Chula Vista (17.1%), and the unincorporated jurisdictions. As described in the 2035 analysis, the proposed Plan may improve emergency response times because it encourages more compact land development patterns by emphasizing higher-density, mixed-use development around transit stations. However, it cannot be assured that evacuation routes would be adequate for sufficiently quick evacuation during an emergency, particularly during major catastrophic events. Numerous statewide, regional, and local plans provide guidance for emergency response and evacuation in the San Diego region and these plans are updated at regular intervals to ensure effectiveness in accordance with planned growth. Although changes in land use would be reflected in updated emergency plans, it is not known if the changes would be sufficient to ensure adequate evacuation. Therefore, development projects associated with the proposed Plan's regional growth forecast would have the potential to impair implementation of or physically interfere with an emergency response or evacuation plan, and this impact would be significant.

Transportation Network Improvements

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which are a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

By 2050, the proposed Plan includes 54 bikeway, transit, and highway projects that intersect with primary emergency evacuation routes in the San Diego region, which are shown on Figure 4.9-4 (SanGIS 2025). As discussed in the 2035 analysis, construction activities associated with these projects could temporarily hinder emergency vehicle response or evacuation during emergencies. However, once operational, the transportation network improvements are anticipated to reduce vehicle miles traveled and congestion within the San Diego region, similar to those described under the 2035 analysis above. In addition, numerous statewide, regional, and local plans provide guidance for emergency response and evacuation in the San Diego region and these plans are updated at regular intervals to ensure effectiveness in accordance with planned growth. Although the transportation network improvements are anticipated to improve congestion within the San Diego region, it is not known if the improvements would be sufficient to ensure adequate evacuation during an emergency, particularly during catastrophic events. Therefore, transportation network improvement projects would have potential to impair implementation of or physically interfere with an emergency response or evacuation plan, and this impact would be significant.

2050 Conclusion

By 2050, increased development and transportation network improvements may cause obstruction for emergency response vehicles or result in activities that would cause physical interference in the implementation of an emergency response or evacuation plan. Numerous statewide, regional, and local plans provide guidance for emergency response and evacuation in the San Diego region and these plans are updated at regular intervals to ensure effectiveness in accordance with planned growth. However, it cannot be assured that emergency evacuation and response would not be impaired during an emergency, particularly during major catastrophic events. Therefore, this impact (HAZ-4) is significant for this period.

MITIGATION MEASURES

2035, 2050

HAZ-4 Demonstrate Consistency with Adopted Emergency Response or Evacuation Plans or Emergency Access
SANDAG shall and implementing agencies and/or project sponsors can and should demonstrate project consistency with all applicable emergency response and evacuation plans, where necessary based on project- and site-specific considerations. Where temporary road closures would be required during a project's construction, SANDAG shall and implementing agencies and/or project sponsors can and should prepare traffic mitigation plans that address traffic control and establish alternate emergency

4.9.5 Cumulative Impacts Analysis

C-HAZ-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO HAZARDS AND HAZARDOUS MATERIALS

The geographic scope of the cumulative impact analysis for hazardous materials is limited to the area immediately surrounding the affected hazardous material site or risk generator. However, other topics associated with hazards (e.g., transportation of hazardous materials, wildfire, and flooding) can occur at large regional scales and as a result of growth, population increase, or land use change. Thus, consideration of the Southern California and Northern Baja California region is appropriate.

The projection approach is used for the cumulative analysis of hazards and hazardous materials to allow for an overarching discussion of regional and cross-border hazards associated with general patterns of regional urbanization, growth, and land use changes. The consideration of regional development patterns and changes provides for the ability to assess potential increases to regional hazards and regional transportation of hazardous materials. The cumulative impact is the combination of the impacts of the proposed Plan and impacts related to hazards and hazardous materials resulting from implementation of approved regional planning documents. Significant cumulative impacts would occur if there were cumulatively significant risks of significant hazards to the public or the environment from hazardous material emissions or releases, including within one-quarter mile of schools; exposure of the public or environment to significant hazards from hazardous materials sites; air traffic hazards; or impediments to emergency response or evacuation plans.

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan, environmental analyses for the other related projects, the EIR for Connect SoCal 2024 and the current RTP/SCS for the Southern California Association of Governments (SCAG) region (SCAG 2024). Other plans with applicable information, but no associated environmental analysis include San Diego County Multi-Jurisdictional Hazard Mitigation Plan (County of San Diego 2025i); State of California Emergency Plan (Cal OES 2023a), and California-Baja California Border Master Plan (Caltrans 2021).

Impacts of the Proposed Plan

Regional growth and land use change and the transportation network improvements included in the proposed Plan would increase the risk of significant hazards to the public and the environment (including within one-quarter mile of schools) through the routine transport, use, or disposal of hazardous materials and through the hazardous emissions generated and handled during preconstruction, demolition, and construction activities. As discussed in Section 4.9.2, "Regulatory Setting," the transport, use, and disposal of hazardous materials is regulated to avoid and minimize the potential for accidental releases of hazardous materials and wastes into the environment and ensure that hazardous materials are promptly contained and remediated in the event of an accidental release. These regulations include RCRA (CFR Title 40), Hazardous Materials Transportation Act (CFR Title 49), and the Hazardous Waste Control Law (HSC Division 20, Chapter 6.5) For example, businesses that handle/generate hazardous materials within the region are monitored by EPA, San Diego RWQCB, DTSC, the San Diego County DEHQ HMD, LEA programs, and SDAPCD. San Diego County DEHQ HMD is also required to conduct ongoing

routine inspections to ensure compliance with existing laws and regulations, to identify safety hazards that could cause or contribute to an accidental spill or release, and to suggest preventative measures to minimize the risk of a spill or release of hazardous substances (County of San Diego 2025a) Future development and transportation network improvements would also occur near public airports and public-use airports, potentially exposing people to aircraft and airport-related safety hazards. However, FAA regulations place height restrictions on certain activities and development in proximity to airports to prevent obstructions to navigable airspace. In addition, ALUCPs restrict the development of incompatible land uses (e.g., noise-sensitive land uses) and development with potential to increase flight hazards (e.g., airspace obstructions, visual or electronic interference) in proximity to airports (Public Utilities Code Section 21675). Increased development and transportation network improvements would, in some locations, cause obstruction for emergency response vehicles or result in activities that could cause physical interference in the implementation of an emergency response and evacuation plan or interfere with adequate emergency access. However, local jurisdictions are required to prepare and implement emergency plans and response programs in compliance with OES requirements. OES periodically reviews and evaluates these plans to ensure that they align with federal and state standards and to ensure that local plans are effective in mitigating, responding to, and recovering from emergencies. According to the discussion above, adherence to the existing regulations discussed in Section 4.9.2, "Regulatory Setting," would ensure that these impacts would be less than significant in 2035 and 2050 (Impacts HAZ-1 through HAZ-4).

Impacts of Related Projects

Other related projects identified in the "Cumulative Projects" section of Chapter 4, "Environmental Impact Analysis Approach," including the California High-Speed Rail Los Angeles–San Diego Segment, Navy Old Town Revitalization Project, San Diego International Airport Development Plan, City of San Diego Pure Water North City Project, and San Diego Unified Port District Port Master Plan Update, have the potential to create a significant hazard to the public or the environment from (1) the routine transport, use, disposal, or release of hazardous materials (including from hazardous waste sites included on the Cortese List); (2) emitting or handling hazardous materials near schools; (3) being located within an airport land use plan or within two miles of an airport; and (4) impairing or interfering with an emergency response or evacuation plan. These projects could also have localized hazardous materials impacts. However, these projects would also be required to adhere to the existing regulations discussed in Section 4.9.2, "Regulatory Setting," and therefore, these impacts would be less than significant (Impacts HAZ-1 through HAZ-4).

Impacts of Projections in Adopted Plans

The SCAG Connect SoCal 2024 Program EIR found that the increased transport and handling of hazardous materials by goods-movement facilities could result in increased risk of accidental releases reaching neighborhoods and communities adjacent to transportation facilities. The increased mobility accommodated by the transportation investments of Connect SoCal 2024 would result in not only increased hazardous materials transport through the SCAG region but also outside the area, resulting in cumulative impacts throughout Southern California. As the population increases through 2050, the number of trips in the SCAG region that originate, end, or pass through Santa Barbara, San Diego, and Kern Counties, as well as other counties and states, would increase, including trips involving the transportation of hazardous materials. Thus, Connect SoCal 2024 would contribute to significant hazardous material transportation impacts in these other areas. The SCAG Connect SoCal 2024 Program EIR also determined that Connect SoCal 2024 had the potential to create a significant hazard to the public through the reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; to emit hazardous materials within one-quarter mile of an existing or proposed school; to result in development located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; to involve projects located within an airport land use plan or within 2 miles of a public-use airport, which could result in a safety hazard or excessive noise for people residing or working in the area; and to impair or interfere with an adopted emergency plan.

The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land ports of entry and transportation infrastructure serving those ports of entry at the California–Baja California border (Caltrans 2021). The Master Plan does not have an associated environmental analysis document; however, it is reasonable to assume that projects included in the Master Plan could have adverse impacts related to hazards, including hazardous materials, airport safety hazards, and interference with emergency and evacuation plans. Construction of new facilities could add to impacts from the projects associated with both the SANDAG and SCAG RTP/SCSs as they add to the increased mobility and transportation access throughout the California–Baja California region.

Cumulative Impacts and Impact Conclusions

2035

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan, impacts of related projects, and impacts from adopted plans within the Southern California and Northern Baja California region were significant when considered together, even if not independently significant.

Transport, Use, Disposal, or Release of Hazardous Materials

Future development associated with increased population growth forecasted in the proposed Plan would increase the number of people exposed to impacts related to hazardous materials. Impacts associated with these hazards would generally be confined to a specific project area, rather than result in an incremental cumulative effect spread over the Southern California and Northern Baja region. Adherence to federal, state, and local regulations, as described in Section 4.9.2, "Regulatory Setting," would reduce incremental impacts associated with exposure to hazards and hazardous materials in each of the affected project areas. For example, CCR Title 22, Division 4.5 provides hazardous waste management regulations, including standards designed to avoid releases. Businesses that handle/generate hazardous materials within the region are monitored by EPA; San Diego RWQCB; DTSC; the San Diego County DEHQ HMD; LEA programs; and SDAPCD. As the local CUPA, San Diego County DEHQ HMD is required to conduct ongoing routine inspections to ensure compliance with existing laws and regulations; to identify safety hazards that could cause or contribute to an accidental spill or release; and to suggest preventative measures to minimize the risk of a spill or release of hazardous substances (County of San Diego 2025a). Although projects located in Mexico would not be subject to such regulations, all development throughout the region within the United States would be fully regulated. Therefore, the project would not have a cumulatively considerable contribution to cumulative impacts associated with significant hazards to the public and the environment through the routine transport, use, disposal, and release of hazardous materials (including from hazardous waste sites included on the Cortese List). Therefore, there would be less-than-significant cumulative impacts from the proposed Plan on the transport, use, disposal, and release of hazardous materials.

Hazardous Emissions Near Schools

The proposed Plan could involve the siting of new development withing one-quarter mile of schools. The current regulatory environment discussed in Section 4.9.2, "Regulatory Setting," provides a high level of protection related to the handling of hazardous materials near schools, which would reduce incremental impacts associated with hazardous emissions near schools. Specifically, PRC Section 21151.4 requires evaluation and notification of the locations where potential materials handling and emissions could occur within one-quarter mile of existing or proposed schools. In addition, the EDC regulates the siting and construction of school facilities. Prior to commencing the acquisition of property for a new school site, an environmental site investigation must be completed to determine the health and safety risks (if any) associated with a site (EDC Section 17210). In addition, the code prohibits the siting of school facilities on a hazardous waste disposal site, a hazardous substance release site, or a site with pipelines carrying hazardous substances (EDC Section 17213). Adherence to existing regulations would ensure that the risk of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be minimized. Although projects located in Mexico would not be subject to such regulations, all development throughout the region within the United States would be fully regulated. Therefore, there would be less-than-significant cumulative impacts associated with emitting and handling hazardous materials, substances, or waste within one-quarter mile of existing and proposed schools.

Safety Hazards Near Airports

Future development and transportation network improvements forecasted in the proposed Plan could also occur near public airports and public-use airports, exposing people to aircraft and airport-related safety hazards. Related projects in the Southern California and Northern Baja region could involve development within the vicinity of a public airport or a public-use airport, and safety hazards for people residing or working in these project areas. However, cumulative projects in the United States would be subject to safety regulations as discussed in Section 4.9.2, "Regulatory Setting," such as ALUCPs, FAA standards, and the State Aeronautics Act, which minimize airport hazards. Specifically, transportation network improvements would be subject to FAA height restrictions to prevent obstructions to navigable airspace (14 CFR Part 77). In addition, project applicants would be required to notify the FAA of certain construction activities, alterations to existing structures, and proposed development to ensure there are no obstructions to navigable airspace (14 CFR Part 77). In accordance with ALUCPs developed in accordance with FAA standards (14 CFR Part 77), future development and transportation network improvements would not result in the siting of land uses that would be sensitive to overflight activity (e.g., noise-sensitive land uses) in the vicinity of an airport or in the development of land uses that would increase flight hazards (e.g., airspace obstructions, wildlife hazards, or visual or electronic interference). Therefore, there would be less-than-significant cumulative impacts associated with the exposure of people to aircraft and airport-related safety hazards near public airports and public-use airports.

Emergency Response and Evacuation Plans and Emergency Access

Increased development and transportation network improvements in the proposed Plan and other related projects would, in some locations, cause obstruction for emergency response vehicles or result in activities that would cause physical interference in the implementation of an emergency response or evacuation plan. Statewide, regional, and local plans have been adopted to ensure coordinated response and evacuation, which would reduce cumulative risk from future growth and development in the San Diego region. The State of California Emergency Plan (Cal OES 2023a) addresses the State's response to extraordinary emergency situations associated with natural disasters or human-caused emergencies and describes the methods for carrying out emergency operations, the process for rendering mutual aid, the emergency services of governmental agencies, how resources are mobilized, how the public will be informed, and the process to ensure continuity of government during an emergency or disaster. The State Emergency Plan encourages local jurisdictions to develop hazard mitigation plans so that they can be eligible to receive federal funding for hazard mitigation capabilities (e.g., risk reduction projects, critical infrastructure improvements, post-disaster initiatives) intended to reduce or eliminate the long-term risk to human life and property from natural or human-caused hazards and their effects (Cal OES 2023a). The County of San Diego and various jurisdictions throughout the county have prepared the San Diego County Multi-Jurisdictional Hazard Mitigation Plan (County of San Diego 2025i), which provides a risk assessment and identification of hazards prevalent within the region. The plan also provides guidance to local jurisdictions on developing mitigation strategies and incorporating the mitigation strategies into existing planning mechanisms, such as the County Comprehensive Land Use Plan, capital improvement plans, and building codes. Although growth and changes in land use would be reflected in updated emergency plans, it cannot be assured that emergency evacuation and response would not be impaired during an emergency, particularly during major catastrophic events. The combined effects of the proposed Plan and other cumulative projects could result in cumulative impacts on emergency response and evacuation if multiple projects affect the same routes or contribute to growth that results in more people using the same evacuation routes. Because the proposed Plan's impact on emergency response and evacuation is significant, the proposed Plan would contribute to a cumulatively considerable impact on emergency response and evacuation in 2035 (Impact C-HAZ-1).

2050

Transport, Use, Disposal, or Release of Hazardous Materials

The cumulative analyses presented above for the horizon year of 2035 would be applicable to year 2050. Therefore, there would be less-than-significant cumulative impacts associated with significant hazards to the public and the environment through the routine transport, use, disposal, and release of hazardous materials (including from hazardous waste sites included on the Cortese List).

Hazardous Emissions Near Schools

The cumulative analyses presented above for the horizon year of 2035 would be applicable to year 2050. Therefore, there would be less-than-significant cumulative impacts associated with emitting and handling hazardous materials, substances, or waste within one-quarter mile of existing and proposed schools.

Safety Hazards Near Airports

The cumulative analyses presented above for the horizon year of 2035 would be applicable to year 2050. Therefore, there would be less-than-significant cumulative impacts associated with the exposure of people to aircraft and airport-related safety hazards near public airports and public-use airports.

Emergency Response and Evacuation Plans and Emergency Access

The cumulative analyses presented above for the horizon year of 2035 would be applicable to year 2050. Therefore, there would be significant cumulative impacts associated with impairing implementation of or interfering with emergency response and evacuation plans and emergency access (Impact C-HAZ-1). Because the proposed Plan's impact on emergency response and evacuation is significant, the proposed Plan would contribute to a cumulatively considerable impact on emergency response and evacuation in 2050.

MITIGATION MEASURES

C-HAZ-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO EMERGENCY RESPONSE AND EVACUATION PLANS AND EMERGENCY ACCESS

Mitigation Measure HAZ-4 requires implementing agencies and project sponsors to evaluate the potential for individual development and transportation network improvement projects to impair implementation of or physically interfere with adopted emergency response and evacuation plans or impair emergency access. However, as discussed previously, SANDAG cannot require local implementing agencies to adopt the measures outlined in Mitigation Measure HAZ-4, and it is ultimately the responsibility of a lead agency to determine and adopt mitigation. Therefore, the proposed Plan's contributions to cumulative impacts on emergency response, evacuation, and access would remain cumulatively considerable with mitigation for 2035 and 2050.

2035, 2050

For the reasons discussed above, the proposed Plan's contribution to cumulative impacts on emergency response, evacuation, and access in 2035 and 2050 would remain cumulatively considerable with mitigation.

4.10 HYDROLOGY AND WATER QUALITY

This section evaluates the hydrology and water quality impacts of the proposed Plan.

4.10.1 Existing Conditions

HYDROLOGY

Surface Waters

Surface waters in the San Diego region include the area's ocean shoreline, bays, lagoons, lakes, reservoirs, playas/inundation areas/washes, streams, and rivers (Figure 4.10-1). Major rivers in the San Diego region are the Santa Margarita River, San Luis Rey River, San Dieguito River, San Diego River, Sweetwater River, Otay River, and Tijuana River. Major coastal waterbodies are the Buena Vista Lagoon, Agua Hedionda Lagoon, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito Lagoon, Los Peñasquitos Lagoon, Mission Bay, San Diego Bay, Tijuana River estuary, and Pacific Ocean. Playas/inundation areas/washes include areas surrounding Lake Henshaw, Lake Cuyamaca, Moreno Reservoir, and Lake Hodges, as shown in Figure 4.10-1.

Watersheds and Hydrological Characteristics

The San Diego region is divided into two hydrologic basins by the northwest-trending Peninsular Range. The San Diego Hydrologic Basin is on the gently sloping western side of the range, and the Colorado River Hydrologic Basin is on the steep eastern side (Figure 4.10-2).

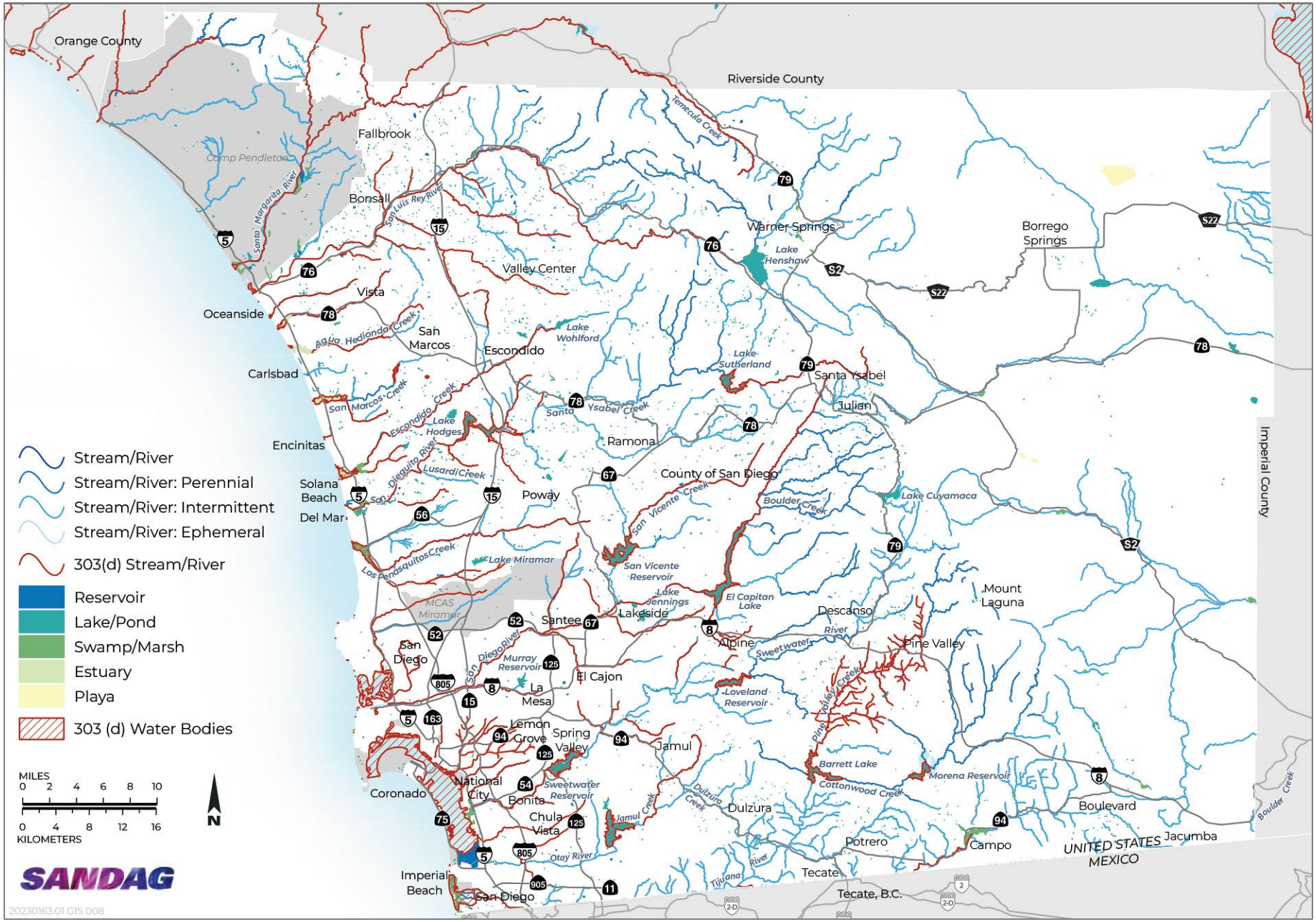
San Diego Hydrologic Basin

The San Diego Hydrologic Basin is divided into hydrologic units (HUs), which are entire watersheds made up of one or more rivers or streams. Each HU, or watershed, is divided into hydrologic areas (HAs), which are the major tributaries or major groundwater basins within the watershed. Hydrologic subareas (HSAs), which include water-bearing and non-water-bearing formations, are major subdivisions of HAs.

The San Diego Hydrologic Basin includes 11 HUs (watersheds). The Carlsbad, San Dieguito, Peñasquitos, San Diego River, Pueblo San Diego, Sweetwater, and Otay watersheds are located entirely within the San Diego region. The San Luis Rey, San Juan, Santa Margarita, and Tijuana watersheds are located in both the San Diego region and neighboring jurisdictions: Orange County, Riverside County, and Baja California, Mexico, respectively. All 11 watersheds ultimately drain to the Pacific Ocean. Figure 4.10-2 shows the watersheds and the groundwater basins.

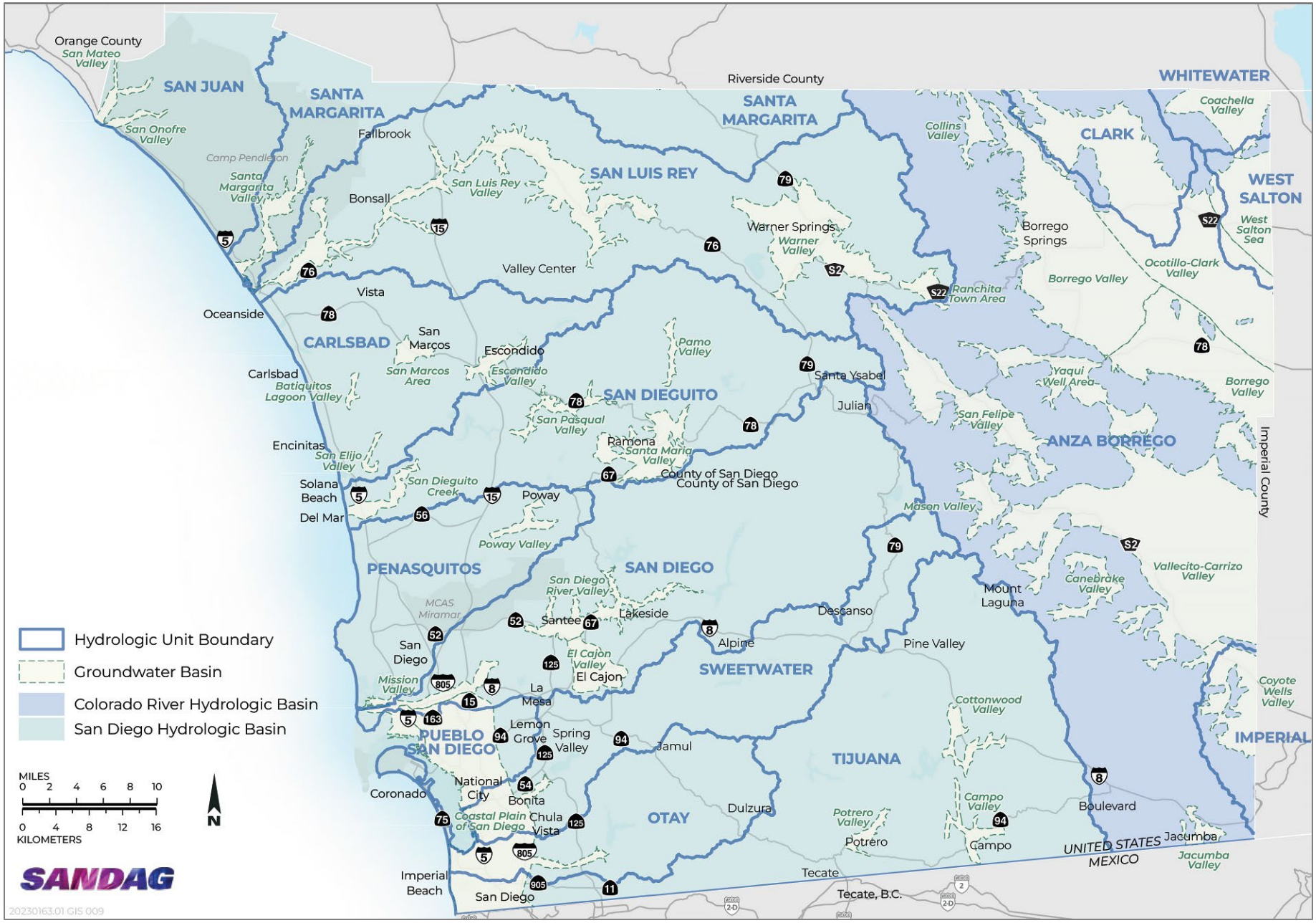
The major characteristics of the 11 watersheds are described below. Beneficial uses of water bodies within these watersheds are described in the "Water Quality" section under "Beneficial Uses/Water Quality Objectives."

San Juan watershed (HAs 901.1–901.5), also referred to as the South Orange County watershed, covers approximately 496 square miles, of which only 150 square miles lie in the northwest portion of the San Diego region. Most of the watershed lies within Marine Corps Base (MCB) Camp Pendleton in Orange and Riverside Counties. Two of its hydrological areas are within the San Diego region (San Onofre [901.5] and San Mateo Canyon [901.4]). The San Onofre Hydrologic Area is completely within the boundaries of San Diego County. It encompasses approximately 37,500 acres near the northern border of the county, and 97% of it is dedicated to military uses associated with MCB Camp Pendleton. The San Mateo Canyon Hydrologic Area is approximately 31,000 acres within San Diego County, and approximately 53% is incorporated into MCB Camp Pendleton. The remaining portions are unincorporated and include some park lands and other open spaces. Major stream systems include the San Mateo Creek, San Onofre Creek, and Jardine Creek. Topography varies from Pacific Ocean coastal plains to the Santa Margarita Mountains (over 2,000 feet above mean sea level [AMSL]). Water quality monitoring indicates that the watershed's surface waters are high in total dissolved solids (TDS). A Water Quality Improvement Plan (WQIP) for the South Orange County (South OC) Watershed Management Area (WMA) was developed by the County of Orange, Orange County Flood Control District, and the Cities of Aliso Viejo, Dana Point, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano (Permittees) and accepted by the San Diego Regional Water Quality Control Board in June 2018 (SOC 2024).



Source: Data downloaded from State Water Resources Control Board and US Geological Survey (National Hydrology Dataset) in 2025; adapted by Ascent in 2025.

Figure 4.10-1 Surface Hydrology & Major Surface Water Map



Source: Data downloaded from California Department of Water Resources in 2022; adapted by Ascent in 2025.

Figure 4.10-2 SGMA Basins Map

Santa Margarita watershed (HAs 902.1–902.9) encompasses approximately 750 square miles, of which only 200 square miles lie in the northern San Diego region. Most of the flow from the Santa Margarita River main stem is within the San Diego region and traverses through unincorporated areas, the community of Fallbrook, and MCB Camp Pendleton. The lower river and estuary at the Pacific Ocean coast are relatively less developed than the coastline to the south and, as a result, support abundant habitat and wildlife. The majority of the watershed is undeveloped (approximately 44%). Other land uses include agriculture (7%), military (30%), miscellaneous land uses (11%), and residential (8%). Presently, several waterbodies are impaired due to excessive nutrients from a variety of sources, including agricultural areas, orchards, livestock, domestic animals, septic systems, use of recycled water, and urban runoff (PCW n.d.-a).

San Luis Rey watershed (HAs 903.1–903.3) is the third-largest HU in the San Diego region (with an approximately 560-square-mile drainage area). Situated in the northwestern portion of the San Diego region, the basin has two major surface waters, the San Luis Rey River and Lake Henshaw, and is divided into three HAs: the lower San Luis, Monserate, and Warner Valley. The watershed also contains six groundwater aquifers: Warner, Pauma, Pala, Bonsall, Moosa, and Mission Basins. Approximately 54% of the land in the watershed is vacant or undeveloped. The next largest land uses in the watershed are residential (15%), tribal reservations (14%), and agriculture (14%). The lower San Luis Rey River is impaired for a number of pollutants, consisting of, but not limited to selenium, Enterococcus bacteria, total coliform bacteria, chloride, phosphorus, and TDS. Major sources of pollutants in the San Luis Rey watershed are agriculture, orchards, livestock, domestic animals, urban runoff, and septic systems (PCW n.d.-b).

Carlsbad watershed (HAs 904.1–904.6), extending from the headwaters above Lake Wohlford to the Pacific Ocean, is approximately 211 square miles in area. Within the watershed there are six HAs: Buena Vista Creek, Agua Hedionda, Loma Alta, Canyon de las Encinas, San Marcos, and Escondido Creek. Each HA drains into the Pacific Ocean through creeks and rivers to discrete coastal lagoons. There are also two large water reservoirs: Lake Wohlford and Dixon Lake. The Carlsbad watershed is approximately 68% urbanized, and its population results in the area being one of the most densely populated portions of the San Diego region (PCW n.d.-c). The dominant land uses within the watershed are residential (29%), freeways and roads (12%), agricultural lands (12%), commercial and industrial lands (6%), miscellaneous uses (9%), and vacant/undeveloped (32%) (PCW n.d.-c). As a result of this level of urbanization, water quality impairments include excessive coliform bacteria and sediment loading from upstream sources. Agricultural and urban runoff, sewage spills, and livestock have been identified as primary contributing sources. The coastal lagoons are critical freshwater and estuarine habitats for numerous plant and animal species (PCW n.d.-c).

San Dieguito watershed (HAs 905.1–905.5) comprises a drainage area of approximately 345 square miles in the west-central San Diego region from the Volcan Mountains to the San Dieguito lagoon at the Pacific coastline. Within the watershed, there are five HAs: Hodges, San Pasqual, Santa Maria Valley, Santa Ysabel, and Solana Beach. Over half of the land in the watershed (61%) is undeveloped or designated as open space (PCW n.d.-d). The remaining 39% of the land area is being used for residential areas (18%), agriculture (14%), and other uses (7%). Major features in the watershed include the San Dieguito River Park, San Dieguito Lagoon, and water storage reservoirs, including Lake Hodges, Lake Sutherland, and Lake Poway. Ocean waters along the coastline at the mouth of the San Dieguito River exhibit elevated levels of excess nutrients. San Dieguito Lagoon is especially sensitive to the effects of pollutants and oxygen depletion due to restricted or intermittent tidal flushing (PCW n.d.-d).

Peñasquitos watershed (HAs 906.1–906.5) encompasses a land area of 94 square miles, making it the second-smallest WMA in San Diego County. It lies in the central portion of San Diego County and neighbors the San Dieguito River Watershed to the north and the Mission Bay/La Jolla and San Diego River WMAs to the south. Approximately 46% of the watershed remains undeveloped or has otherwise been dedicated to open space and recreational lands. The remaining 54% of the land area is being used for residential areas (27%), roadways and transportation (12%), and other uses (15%). The remaining "other" 15% includes industrial, office, commercial, and agricultural land uses. Within the Los Peñasquitos watershed, pollutants are sourced primarily from urban runoff, sewage spills, dredging, and landfill leachate (PCW n.d.-e).

San Diego watershed (HAs 907.1–907.4) is the second largest hydrologic unit in the San Diego region (approximately 434 square miles) and hosts the highest population (approximately 520,000 residents) of the region's watersheds. Approximately 44% of the watershed is undeveloped, mainly in the upper, eastern portion.

The remaining 56% is urbanized with open space and park land (23%); residential (19%); transportation (6%); and commercial, agricultural, industrial, military, and miscellaneous land uses (2%) land uses predominating (PCW n.d.-f). Sources of pollutants within the San Diego River Watershed include urban and agricultural runoff, mining operations, and sewage spills (PCW n.d.-f).

San Diego watershed (HAs 907.1–907.4) is located entirely within the boundaries of San Diego County and includes three major subwatersheds: Pueblo San Diego, Sweetwater, and Otay. The San Diego Bay watershed supplies many local residents with potable water sourced from one of four reservoirs: the Sweetwater, Loveland, and Upper and Lower Otay reservoirs. Sources of pollutants impacting the above beneficial uses include urban and agricultural runoff, resource extraction, septic systems, and marinas and boating activities (PCW n.d.-g).

Pueblo San Diego watershed (HAs 908.1–908.3) is the smallest hydrologic unit in the San Diego region (approximately 60 square miles) and the most densely populated (approximately 500,000 residents). It drains to San Diego Bay. This watershed is approximately 75% developed with urban uses, but the dominant land use remains relatively consistent between HAs. Residential areas are the primary land use in all three of its hydrologic areas, comprising 32%, 40%, and 46% of the total land area of the Point Loma (908.1), San Diego Mesa (908.2), and National City (908.3) HAs, respectively (PCW n.d.-g). The creeks in the watershed are impaired by urban runoff, and Chollas Creek and the mouth of the creek in San Diego Bay are impaired for various trace metal parameters and aquatic toxicity (PCW n.d.-g). Five locations of San Diego Bay, which receives runoff from the Pueblo San Diego watershed, are identified as toxic hot spots by California's Bay Protection Toxic Cleanup Program (PCW n.d.-g). Toxic hot spots are identified as areas where pollutants have accumulated in the water or sediment to levels that may pose a hazard to aquatic life, wildlife, fisheries, or human health; may impact beneficial uses; or may exceed water quality or sediment quality objectives adopted by the State Water Resource Control Board (SWRCB) or regional water quality control board (RWQCB).

Sweetwater watershed (HAs 909.1–909.3) drains approximately 230 square miles. It is one of three watersheds that drain to San Diego Bay (along with Otay and Pueblo San Diego). Approximately 86% of the watershed is within unincorporated County of San Diego jurisdiction. Over half of the watershed is undeveloped and open space lands (60%). The Lower Sweetwater is the most urbanized, with residential areas leading at 44%, followed by transportation uses at 18% of land area. Undeveloped and open space lands dominate the majority of the area within the Middle and Upper Sweetwater HAs, making up 63% and 82%, respectively. Residential land uses follow in each of the hydrologic areas, with 28% and 12% of the total in each of the Middle and Upper Sweetwater HAs. The upper portion of the watershed contains large undeveloped areas within the Cleveland National Forest and Cuyamaca Rancho State Park; the unincorporated communities of Pine Valley, Descanso, and Alpine; and the Viejas Indian Reservation. The central part of the watershed consists of unincorporated rural and suburban communities, whereas the urbanized lower part contains portions of several cities, including San Diego, National City, Chula Vista, La Mesa, and Lemon Grove. Water quality impairments in the watershed are coliform bacteria, Enterococcus bacteria, trace metals, and other toxics (PCW n.d.-h).

Tijuana watershed (HAs 911.1–911.8) is the southernmost in the San Diego region with a drainage area of approximately 1,750 square miles (27% on the US side of the international border and 73% on the Mexico side). Within the US-controlled Tijuana watershed, most of the land remains undeveloped at 86% of the land area, followed by residential land uses at 7%, agricultural land uses at 3%, and transportation uses at 2%. The Tijuana Estuary, a National Estuarine Sanctuary that supports a variety of threatened and endangered plants and animals, is threatened by inflows from the Tijuana River containing high concentrations of coliform bacteria; sediment; trace metals (copper, lead, zinc, chromium, nickel, and cadmium); polychlorinated biphenyls (PCBs); and other urban, agricultural, and industrial pollutants. Sources of these pollutants include urban runoff, sewage spills, industrial discharges, agriculture, orchards, livestock, domestic animals, and septic systems (PCW n.d.-i).

Colorado River Hydrologic Basin

The Colorado River Hydrologic Basin has small portions of five HUs located within the eastern San Diego region. These units include the Anza-Borrego watershed, which is the largest hydrologic unit, covering about 80% of the desert portion of San Diego County and extending into Imperial and Riverside Counties. Portions of the Clark,

Whitewater, and West Salton watersheds are located at the extreme northeast corner of the San Diego region. The Imperial watershed is located at the southeast edge of the San Diego region and extends into Imperial County. Water is limited in all of these areas. The surface water that intermittently exists flows toward the Salton Sea and the Colorado River. Runoff occurs from winter precipitation especially in the higher elevations and from summer thunderstorms. The majority of the land uses within the San Diego region portion of the Colorado River Hydrologic Basin are parkland, undeveloped land, and agriculture. The remaining portions are sparsely populated with single-family residential units and a small amount of other uses (County of San Diego 2011a).

The Colorado River Basin RWQCB divides the Colorado River Hydrologic Basin into seven major planning areas based on economic and hydrologic characteristics. Only three of these planning areas lie within the San Diego region: Coachella Valley, Anza-Borrego, and Imperial Valley. The other four that fall outside of the San Diego region are Lucerne Valley, Hayfield, Salton Sea, and the East Colorado River Basin. Characteristics of each of the three Colorado River Hydrologic Basin planning areas in the San Diego region are described below:

Anza-Borrego Planning Area includes the Clark, West Salton Sea, and Anza-Borrego HUs. It comprises 1,000 square miles, mostly within the San Diego region and Imperial County, with a small segment in Riverside County. Elevations range from 230 feet below sea level at the Salton Sea to over 6,000 feet along the western boundary. The principal communities in the planning area are Salton City and Borrego Springs. Drainage flows to the Salton Sea except for two small areas of internal drainage in Clark and Borrego Valleys in the northwest corner of the planning area. Average annual precipitation ranges from less than 3 inches along the eastern boundary, near Imperial Valley, to 25 inches in the mountain divide between the Salton Sea and Pacific Ocean drainages. Runoff occurs from winter precipitation especially in the higher elevations and from summer thunderstorms. Perennial flow includes reaches of Coyote Creek and San Felipe Creek (CRB RWQCB 2024).

Coachella Valley Planning Area contains the Whitewater HU and the East Salton Sea HU. It lies almost entirely in Riverside County and covers 1,920 square miles in the west-central portion of the Colorado River Hydrologic Basin. Only a small area in the southernmost portion lies within the San Diego region. Elevations range from over 10,000 feet in the San Jacinto Mountains to 230 feet below sea level at the Salton Sea shoreline. The higher elevations of the San Bernardino and San Jacinto mountains have evergreen forests with perennial streams. A contrasting scene is presented on the Coachella Valley floor where the land contains desert vegetation, except where the land has been irrigated with pumped groundwater or with imported Colorado River water. Average annual precipitation ranges from less than 3 inches in the valleys to 40 inches in the San Bernardino Mountains. Seasonal snows fall on the higher elevations in the San Bernardino and San Jacinto mountains. In the valleys, precipitation from summer thunderstorms often exceeds that of winter. Runoff resulting from rains and snowmelt at the higher elevations is the major source of groundwater replenishment. Perennial streams include the upper reaches of the San Gorgonio and Whitewater Rivers, and Palm Canyon, Tahquitz, Snow, Deep Canyon, Chino, and Andreas Creeks. The Whitewater River is the major drainage course in the planning area. There is perennial flow in the mountains, but because of diversions and percolation into the basin, the river becomes dry farther downstream. The constructed downstream extension of the Whitewater River channel, known as the Coachella Valley Storm Water Channel, serves as a drainage way for irrigation return flows, treated community wastewater, and storm runoff. There is one relatively large surface water impoundment. Lake Cahuilla, at the terminus of the Coachella Canal, serves as a storage reservoir to regulate irrigation water demands and is also used for recreational purposes (CRB RWQCB 2024).

Imperial Valley Planning Area comprises 2,500 square miles in the southern portion of the Colorado River Hydrologic Basin, almost all of it in Imperial County. A small portion in the southwestern part of the planning area lies within the San Diego region. The easterly and westerly boundaries are contiguous with the westerly and easterly boundaries of the East Colorado River Basin and the Anza-Borrego Planning Area, respectively. Its northerly boundary is along the Salton Sea and the Coachella Valley Planning Area, and its southerly boundary follows the United States–Mexico border. The planning area's central feature is the flat, fertile Imperial Valley. The principal communities are El Centro, Brawley, and Calexico. Surface waters mostly drain toward the Salton Sea. The New and Alamo Rivers convey agricultural irrigation drainage water from farmlands in the Imperial Valley, surface runoff, and lesser amounts of treated municipal and industrial waste waters from the Imperial Valley. The flow in the New River also contains agricultural drainage, treated and untreated sewage, and industrial waste discharges from Mexicali,

Mexico. Average annual precipitation ranges from less than 3 inches over most of the planning area to about 8 inches in the Coyote Mountains on the western border. Colorado River water, imported via the All American Canal, is the predominant water supply and is used for irrigation, industrial, and domestic purposes (CRB RWQCB 2024).

Groundwater Hydrology

Groundwater supplies in the San Diego region are limited by several factors including the limited distribution of sand and gravel (alluvial) aquifers and their relatively shallow nature, lack of rainfall and associated groundwater recharge, and degraded water quality from human activities. Only a small portion of the region is underlain by permeable geologic formations that can accept, transmit, and yield appreciable amounts of groundwater, which leaves a limited amount of available groundwater.

Groundwater basins underlie about 277,000 acres (433 square miles) or about 11% of the region's surface, and groundwater is found in unconfined alluvial aquifers in most of the region's basins. In some larger basins, typified by those underlying the coastal plain, groundwater occurs in multiple aquifers that create confined groundwater conditions.

The San Diego region overlies three general categories of aquifers: alluvial and sedimentary aquifers, fractured rock aquifers, and desert basin aquifers (County of San Diego 2010). San Diego County is underlain primarily by fractured rock aquifers and alluvial and sedimentary aquifers. Desert basins, which underlie approximately 14% of the unincorporated portion of the county, are located in eastern San Diego County (County of San Diego 2010). Aquifers composed of alluvial deposits (alluvium) yield much of the groundwater production capacity in the region (Regional Water Management Group 2018). Alluvial and sedimentary aquifers (or groundwater basins) underlay a relatively small area of the region and account for approximately 13% of the unincorporated areas. These groundwater basins are typically found in river and stream valleys, around lagoons, near the coastline, and in the intermountain valleys (Figure 4.10-2 maps these groundwater basins). Sediments in these aquifers are composed of mostly consolidated (defined as sedimentary rock) or unconsolidated (defined as alluvium or colluvium) gravel, sand, silt, and clay. Most of these alluvial basins have relatively high hydraulic conductivity, porosity, and storage and generally would be considered good aquifers on the basis of their hydrogeologic characteristics. However, some alluvial basins in the San Diego region have relatively thin saturated thickness and limited storage, but can be underlain by fractured rock aquifers, which can potentially provide additional storage (County of San Diego 2011a). Because alluvial basins generally occur in low-lying areas of a watershed, surface water bodies and surface water runoff may accumulate in streams, lakes, or other surface depressions within alluvial basins may provide additional recharge to these basins. Surface water bodies within an alluvial or sedimentary aquifer may increase the recharge due to leakage from the water body into the subsurface. Alluvial and sedimentary aquifers typically have significant storage capacity, with specific yield values between 1 and 30% (County of San Diego 2010).

The San Diego County Water Authority reports that existing groundwater production produced an annual average of approximately 22,300 acre-feet per year of potable water supplies from groundwater (SDCWA 2021). Aside from the Warner, San Luis Rey Valley, and Sweetwater Valley Basins, none of the region's alluvial aquifers exceed a storage capacity of 100,000 acre-feet. Ten alluvial aquifers, however, are estimated to exceed 50,000 acre-feet (Regional Water Management Group 2018). The San Diego Integrated Regional Water Management (IRWM) contains 22 separate groundwater basins, as defined by the California Department of Water Resources (DWR) Bulletin 118 (Regional Water Management Group 2018). All groundwater basins listed below are alluvial aquifers with the exception of Escondido Valley and El Cajon Valley, which are both alluvial and fractured rock aquifers. These groundwater basins are shown in Figure 4.10-2 and consist of:

- San Mateo Valley
- San Onofre Valley
- Santa Margarita Valley
- San Luis Rey Valley
- Warner Valley
- Escondido Valley
- San Pasqual Valley
- Santa Maria Valley
- San Dieguito Creek
- Poway Valley

- Mission Valley
- San Diego River Valley
- El Cajon Valley
- San Diego Formation (Sweetwater Valley Basin, Otay Valley Basin, and Tijuana Basin were consolidated into one San Diego Formation Basin)
- Batiquitos Lagoon Valley
- San Elijo Valley
- Pamo Valley
- Ranchita Town Area
- Cottonwood Valley
- Campo Valley
- Potrero Valley
- San Marcos Area.

Significant groundwater resources have been found to exist in deeper aquifers composed of semi-consolidated or consolidated sediments. Recent field investigations indicate that one such deep aquifer, the San Diego Formation, has significant unused water storage and groundwater production potential. The San Diego Formation has been estimated to contain approximately 270,000–360,000 acre-feet of groundwater (Regional Water Management Group 2018).

Fractured rock underlies approximately 73% of the unincorporated area of the county. The majority of the mountainous region of the county consists of these fractured rocks, and fractured rock aquifers typically have much less storage capacity than alluvial aquifers (County of San Diego 2011a). Additionally, because of the low storage capacity, recharge to fractured rock aquifers can cause relatively fast rises to the water table, and similarly fast declines to the water table from groundwater pumping in years without significant recharge (County of San Diego 2010). Storage in fractured rock within the county spans several orders of magnitude from essentially zero up to 1% of the total volume of the aquifer. Specific yield values in San Diego County fractured rock are estimated to range from about 0.001–1% (County of San Diego 2010). In some instances, wells may derive water from only one or a few water-bearing fractures. Additionally, it is very difficult to estimate potential production rates for any new well drilled, and wells drilled only a few tens of feet from one another may have significantly different water production rates. This is because water-producing fracture locations and orientations are difficult to identify and predict, and fractures intersected by one well may not be intersected by nearby wells (County of San Diego 2010).

Desert basin aquifers are found in the easternmost area of the San Diego region in residual sediments. Desert basin aquifers are characterized by extremely limited groundwater recharge and large storage capacities (County of San Diego 2011a). In eastern San Diego County, most development occurs over the Borrego Valley Groundwater Basin. The Borrego Valley aquifer (Figure 4.10-2), which is completely groundwater dependent, has a well-documented groundwater overdraft condition where year-after-year groundwater extraction exceeds the amount of groundwater that is recharged back into the aquifer. The land uses in Borrego Valley primarily include residential, agricultural, recreational, and commercial uses. The source of recharge was estimated to come primarily from three major drainages: Coyote Creek (approximately 65%), Borrego Palm Canyon, and San Felipe Creek (approximately 35% when combined with Borrego Palm Canyon). Little recharge, if any from San Felipe Creek benefits users in Borrego Springs because the majority exits Borrego Valley and flows toward Ocotillo Wells (County of San Diego 2010).

Groundwater in the coastal communities of the San Diego region is relatively shallow as a result of the proximity of the ocean and can be approximated based on the elevation of an area. In general, groundwater is encountered a few feet AMSL in Downtown San Diego. Areas close to the San Diego Bay may see daily changes in groundwater level resulting from tidal variation. Groundwater levels in other areas of the San Diego region may be locally affected by temporary dewatering systems for adjacent structures under construction.

WATER QUALITY

This section describes existing groundwater and surface water quality in the region's two hydrologic basins.

San Diego Hydrologic Basin Surface Water and Groundwater Quality

Untreated stormwater can contain a number of pollutants that may eventually flow to surface water and groundwater. A primary cause of water pollution is the discharge of inadequately treated stormwater runoff that is

allowed to discharge into natural receiving waters (e.g., lakes, streams, the ocean). Growth and urbanization have placed increased pressure on water resources and resulted in local impacts on water quality, especially in the highly urbanized western portion of the San Diego region, within the San Diego RWQCB boundaries. The urbanized areas of the region exhibit a large area of impervious surfaces, thus reducing the amount of water that would normally infiltrate into the soil and be filtered naturally. Pollutants, such as motor oil, antifreeze, sediment, metals, fertilizers and pesticides, and bacteria and viruses can be transported to surface waters and groundwater in stormwater runoff. The stormwater conveyance systems in the region are not connected with the sanitary sewer systems; therefore, urban runoff in the region typically flows directly to surface waters and groundwater basins. Current levels of pollution (or impairment) in the region's surface waters are discussed in the sections that follow.

Stormwater Drainage Facilities and Management

The San Diego region includes urban development and associated infrastructure (e.g., roads, sidewalks, gutters, etc.). The conversion of undeveloped areas to urbanized uses in the region's watersheds has contributed to increased runoff rates and volumes, altered drainage patterns, and increased potential for flooding. Construction of impervious surfaces, such as rooftops, roads, and driveways, reduces the amount of rainfall that can infiltrate into the earth and increases runoff within a watershed. Subsequently, artificial conveyances, such as gutters, storm pipes, and concrete-lining channel improvements, accelerate flow rates that are directly conveyed into receiving waters (e.g., streams, rivers, reservoirs, Pacific Ocean) thereby increasing scour (erosion), promoting sediment transport, and concentrating flood risks.

The stormwater drainage system in the San Diego region comprises private and public drainage facilities other than sanitary sewers by which runoff is conveyed to receiving waters; it includes roads, streets, constructed channels, aqueducts, storm drains, pipes, street gutters, inlets to storm drains or pipes, and catch basins. The stormwater drainage system is designed to prevent flooding by transporting water away from developed areas. A vast amount of the unincorporated portion of the San Diego region is rural land that does not support or require stormwater drainage facilities. In contrast, most urban areas in the incorporated cities of the San Diego region have a range of stormwater drainage facilities that convey surface water runoff to the area's water bodies and ultimately the Pacific Ocean. (See Section 4.15, "Public Services, Recreation, and Utilities," for a discussion of existing stormwater drainage facilities within the San Diego region.)

Wastewater Treatment Facilities

The San Diego region is served by over 7,930 miles of pressure and gravity sewer lines, as well as pipes, sewer laterals, and pump stations to move wastewater from its source to a wastewater treatment plant (WWTP) (SWRCB 2024a). The treated wastewater is then released through ocean outfalls, percolation beds, or groundwater recharge.

The San Diego Regional Metropolitan Wastewater Department, the largest wastewater treatment facility in the San Diego region, provides regional wastewater treatment services for the City of San Diego and 15 other cities and sanitation districts: Chula Vista, Coronado, Del Mar, El Cajon, Imperial Beach, La Mesa, National City, and Poway; the Lemon Grove Sanitation District; the Padre Dam Municipal and Otay Water Districts; and the County of San Diego (on behalf of the Winter Gardens Sewer Maintenance District and the Alpine, Lakeside, and Spring Valley Sanitation Districts). The City of San Diego Public Utilities Department operates the Point Loma WWTP, North City Water Reclamation Plant (WRP), South Bay WRP, and the Environmental Monitoring and Technical Services Laboratory. The Point Loma WWTP treats roughly 175 million gallons of wastewater per day (maximum capacity of 240 million gallons per day [mgd]) and discharges it through the Point Loma Ocean Outfall into the Pacific Ocean (City of San Diego n.d.-a). Up to 30 mgd of wastewater can be treated at the North City WRP (City of San Diego n.d.-a). Water processed through the North City WRP is distributed throughout the northern region of San Diego via more than 79 miles of distribution for irrigation, landscaping, and industrial use. The South Bay WRP has the capacity to process 15 mgd (City of San Diego n.d.-a); water processed through the South Bay WRP can either be discharged into the ocean through the South Bay Ocean Outfall or sent on to tertiary treatment to be used for reclaimed water purposes.

The other two largest wastewater treatment facilities in the San Diego region are the Encina Water Pollution Control Facility and the City of Escondido Hale Avenue Resource Recovery Facility (HARRF). The Encina Water

Pollution Control Facility has the capacity to process approximately 43 mgd and treats about 21 mgd (EWA n.d.); the HARRF has the capacity to process 18 mgd and has an average daily flow of 12.7 MGD (City of Escondido n.d.).

Clean Water Act Section 303(d) Impaired Waters

On December 13th, 2024, the US Environmental Protection Agency (EPA) gave partial approval and partial disapproval to the SWRCB's 2024 California Integrated Report (CWA Section 303[d] List and 305[b] Report) (SWRCB 2025). EPA approved the majority of the 303(d) list but identified 53 waterbody-pollutant combinations it is considering adding to the 303(d) list. The impaired water segments and associated pollutants in the San Diego region are identified in Appendix J. Figure 4.10-1 illustrates the location of the region's impaired water body segments. See further description of the 303(d) list in the Regulatory Setting below.)

Placement of a water body onto the 303(d) list requires the RWQCB to make further analysis of the impairment and develop total maximum daily loads (TMDLs) for addressing the impairment. (See further description of TMDLs in the Regulatory Setting below.) Once a TMDL is established, the RWQCB may impose conditions on development either through an implementation plan and schedule for the listed water, or through special conditions required of the jurisdiction affected by the numeric criteria of the TMDL. As of January 23, 2024, several 303(d)-listed water body segments in the San Diego region are at various stages of TMDL development (SWRCB 2024b). SWRCB-approved TMDLs in the San Diego Hydrologic Basin are as follows:

- dissolved copper for Shelter Island Yacht Basin, San Diego Bay (R9-2005-0019)
- diazinon and metals for Chollas Creek (R9-2002-01213 and R9-2007-0043)
- nitrogen and phosphorus for Rainbow Creek (Resolution R9-2005-0036)
- indicator bacteria for Shelter Island Shoreline Park in San Diego Bay (R9-2008-0027)
- indicator bacteria for beaches and creeks in the San Diego Region (R9-2010-0001)
- sediment for Los Peñasquitos Lagoon (Resolution R9-2012-0022)
- phosphorus for Loma Alta Slough (R9-2014-0020)1.

Approved Advance Restoration Plans (ARPs), defined in Section 4.10.2, consist of:

- Tijuana River ARP
- Famosa Slough TMDL Phosphorus
- Loma Alta Slough Nutrient TMDL
- San Mateo Creek Invasive Species TMDL
- Santa Margarita River Estuary TMDL

The following TMDLs are in progress as of April 2024:

- San Diego Bay Investigations:
  - Laurel Hawthorn Central Embayment
  - Mouth of Chollas Creek
  - Shipyards Sediment Site Cleanup
- Tenth Avenue Marine Terminal (Switzer Creek)
  - Lagoon Investigations: Impaired Lagoons, Adjacent Beaches, and Agua Hedionda Creek.

Colorado River Hydrologic Basin Surface Water and Groundwater Quality

The Colorado River is the primary source of imported water supply. High salinity levels, uranium, and perchlorate contamination represent the primary areas of concern with the quality of Colorado River supplies. The salts in the Colorado River system are indigenous and pervasive, mostly resulting from saline sediments in the basin that were

deposited in prehistoric marine environments. They are easily eroded, dissolved, and transported into the river system. Agricultural development and water diversions over the past 50 years increase the already high, naturally occurring levels of TDS. Naturally occurring uranium and arsenic are monitored by drinking water agencies. The Metropolitan Water District adopted a Perchlorate Action Plan in 2002 following detection of perchlorate contamination, which includes continued tracking, remediation, and monitoring (SDCWA 2016).

Areas of Special Biological Significance

The SWRCB's California Ocean Plan identifies 34 locations along the California coast as Areas of Special Biological Significance (ASBS). The Ocean Plan prohibits the discharge of wastes into these locations, thus barring discharges associated with industrial activities, publicly owned treatment works, and other traditional point discharges (SWRCB 2019). In March 2012, the SWRCB released a Special Protections for ASBS, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges that defines design criteria for treating stormwater discharges and elimination of dry-weather discharges associated with non-stormwater sources (SWRCB 2012a). The two ASBS locations in the San Diego region (the La Jolla ASBS and San Diego-Scripps ASBS) are both within the Peñasquitos watershed. These locations are adjacent and extend from the northern bluffs of La Jolla through the University of California San Diego campus of the Scripps Institute Institution of Oceanography (SWRCB 2006).

FLOOD HAZARDS AND FLOOD CONTROL

The San Diego region's climate is semiarid and the seasonal precipitation is highly variable in frequency, magnitude, and location. Infrequent large bursts of rain can cause flash flood events especially in narrow valleys. Flooding in the San Diego region and the rest of Southern California most frequently occurs during winter storm events between November and April, and occasionally during the summer when a tropical storm makes landfall. However, as the San Diego region averages approximately 10 to 13 inches of rainfall annually, flooding is not frequent and usually occurs around the region's coastal lagoons and estuaries, as well as in the lower reaches of rivers and creeks near the Pacific Ocean. Dam failure inundation is flooding caused by the release of impounded water from failure or overtopping of a dam. Areas directly below the dam are at the greatest risk, and as the water moves farther downstream and its depth decreases, the magnitude of the damage and potential risk to life and property decreases. There are 25 dams in the San Diego region; failure of any of these dams would affect downstream areas. Dam owners are required to submit inundation maps to the California Governor's Office of Emergency Services (Cal OES) for review and approval in accordance with guidance issued by Cal OES. Inundation maps submitted by dam owners are provided by DWR (DWR 2025). These inundation maps delineate dam inundation zones, or the areas at risk in the event of failure for each dam. The maps represent the best estimate of where water would flow if a dam failed completely and suddenly with a full reservoir.

Flooding in the San Diego region could also occur as a result of a failure of a levee. Levee Flood Protection Zone (LFPZ) maps were developed by DWR to increase awareness of flood risks associated with state-federal levees. A state-federal levee is a levee that is part of the facilities of the State Plan of Flood Control. LFPZ maps estimate the maximum area that may be flooded if a levee fails with flows at maximum capacity that may reasonably be conveyed. No areas in the San Diego region are in a levee flood protection zone (Caltrans 2025).

The Federal Insurance Rate Map (FIRM) is the official map created and distributed by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP). The FIRM delineates Special Flood Hazard Areas (SFHAs): areas subject to inundation by the base flood (i.e., the flood having a 1% chance of being equaled or exceeded in any given year; the 100-year flood) for every county and community that participates in the NFIP, including those in the San Diego region. FIRMs contain flood risk information based on historical, meteorological, hydrologic, and hydraulic data, as well as open space conditions, flood control works, and development. Figure 4.10-3 shows FEMA floodway and floodplain areas for the San Diego region, as well as 100-year and 500-year flood zones (i.e., areas having a respective 1 and 0.2% chance of being equaled or exceeded with water in any given year). A floodway is any water channel and adjacent land areas necessary to convey floodwaters, and a floodplain includes the floodway and any land area susceptible to being inundated by floodwaters (FEMA 2011, 2020). In addition to the FEMA FIRMs, the County of San Diego has developed its own

flood maps that account for additional areas of known risk. The County of San Diego flood maps delineate 1% annual chance (100-year) riverine flood boundaries and elevations for areas not studied by FEMA. The County of San Diego Mapping Program has mapped miles of rivers and streams in the unincorporated area.

Seiches and Tsunamis

A seiche is an earthquake or wind-induced wave in a confined body of water, such as a lake, bay, or reservoir. Waves can be up to tens of feet high. Lakes, bays, and reservoirs that could experience a seiche are shown in Figure 4.10-1. There is no historical precedence for large damaging seiches in the San Diego region (SANDAG 2021).

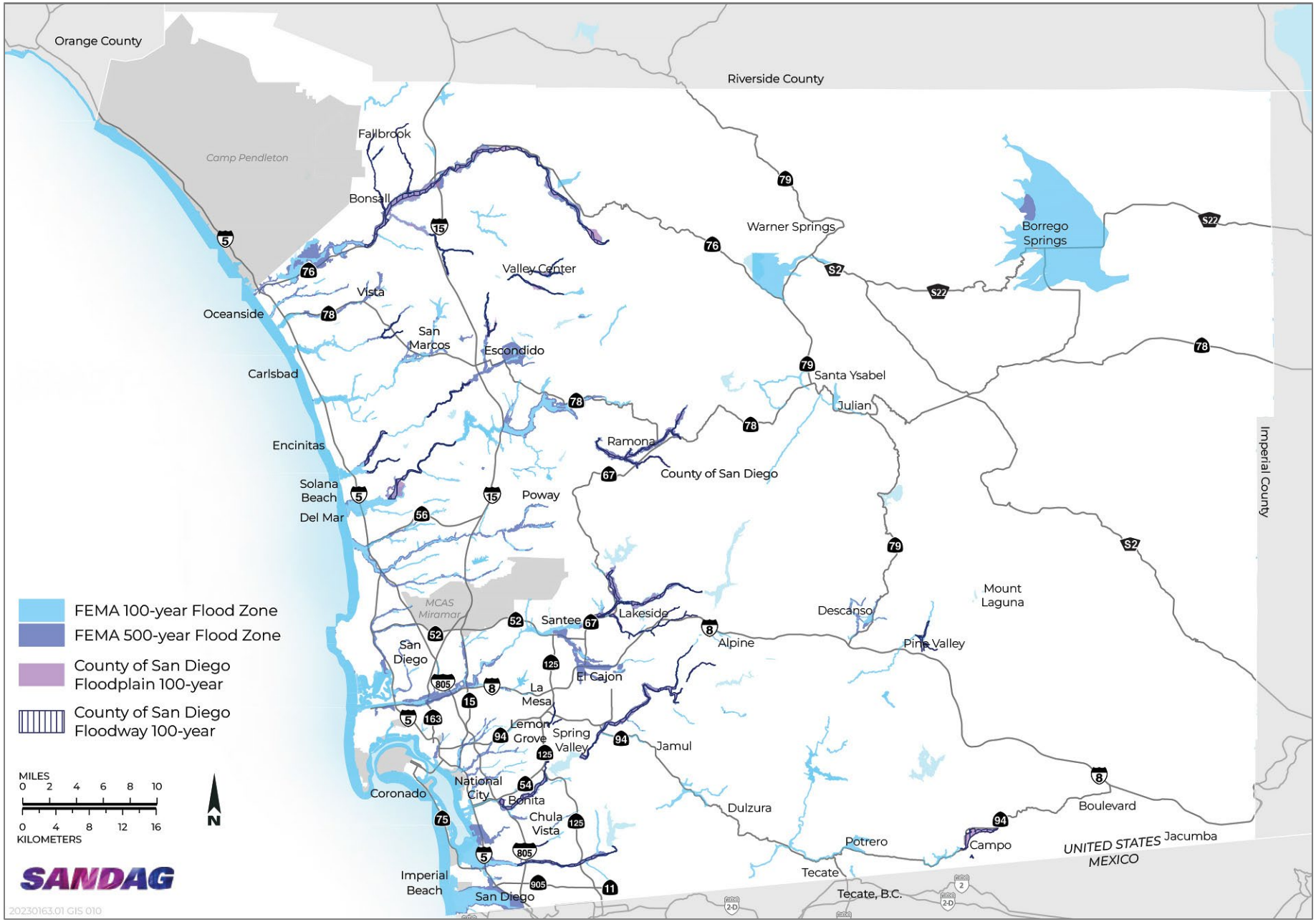
Tsunamis are long-period sea waves generated by an abrupt movement of large volumes of water. These waves can be caused by underwater earthquakes, landslides, volcanic eruptions, meteoric impacts, or onshore slope failures. Seismic conditions and fault zones in the San Diego region are discussed in Section 4.7, "Geology, Soils, and Paleontological Resources." The California Department of Conservation provides detailed maps showing the areas of inundation from tsunamis for the San Diego region that are used to determine whether a project footprint lies within the limits of inundation. These maps are developed for all populated areas at risk to tsunamis in California, and represent a combination of the maximum considered tsunamis for each area.

Maps are available by quadrangle for each affected coastal area/community in the San Diego region: Del Mar, Encinitas, Imperial Beach, La Jolla, National City, Oceanside-San Luis Rey, Point Loma, and San Onofre Bluff. Tsunami hazards would be limited to the lower shoreline elevations along the Pacific coast, San Diego Bay, Mission Bay, and five coastal lagoons. The risk of tsunamis in the San Diego region is low. In 92 years of record, at least 19 tsunamis have been recorded in the San Diego region, with most only a few tenths of a meter in height. The largest tsunami, caused by the Chilean earthquake in 1960, produced waves 1.5 meters in height causing damage to piers (Barberopoulou et al. 2011). Between 1854 and 2010, San Diego experienced numerous tsunamis generated by both local and distant earthquakes, including sources as far away as Japan, Chile, Alaska, Hawaii, Kamchatka, Indonesia, Ecuador, and the Aleutians. The most powerful earthquakes, such as the Chilean earthquake in 1960, the Alaskan earthquakes in 1964 and 2004 (Indonesia), and the Rat Islands earthquake in 1957, produced the most significant impacts. While many other events, such as those in 1854, 1923, 1944, and 1952, produced smaller waves of 0.1–0.7 meters, minor damage to harbor infrastructure still occurred. The February 27, 2010 Chile tsunami, with a magnitude of 8.8, produced waves 0.4 meter in height, strong currents, and flooding near Imperial Beach. Smaller events, such as the December 26, 2004 Indonesia tsunami, were detectable by tide gauges, showing that San Diego's harbor has consistently recorded the effects of major global seismic events (Barberopoulou et al. 2011).

ANTICIPATED EFFECTS FROM CLIMATE CHANGE

The San Diego region is likely to experience a variety of climate change impacts including longer and more intense droughts, sea-level rise of up to 1.3 feet by 2050 and up to 6.7 feet by 2100, fewer rainy days, more rainfall during the biggest rainstorms by 2050, and a decrease in runoff and streamflow due to less snowpack and more evaporation (CEP and SDF 2015; Kalansky et al. 2018; OPC 2024; Jennings et al. 2018). When it rains, these climate change effects make the region more susceptible to accelerated erosion and increased mudflow. (Higgs 2024).

Climate change can also worsen water quality in a variety of the region's water resources through increased nonpoint water pollution (i.e., pollution that enters water bodies from a variety of sources) during severe storm events, saltwater intrusion resulting from sea-level rise, sediment from increased incidence of wildfires, and higher temperatures. Heavier storms may decrease both beach and surface water quality because rainfall causes contamination from nonpoint source pollutants such as trash, fertilizers, sediments, metals, sewage, and other fluids, which then drain into the ocean, rivers, reservoirs, and streams. As a result, California health officials recommend that people stay out of the ocean for at least 72 hours following rain events of at least 0.1 inch (Schiff et al. 2016). In 2024, San Diego saw a number of beach closures and advisories due to high bacteria levels, primarily from sewage runoff, particularly from the Tijuana River. La Jolla Children's Pool, Coronado, the Silver Strand, Mission Bay, and Imperial Beach all experienced closures (Anastas 2024; CNS 2024; Smith 2024). The San Diego region may see 8 percent more precipitation during its heaviest storms by 2050 and these more intense rainstorms from climate change may worsen hazardous runoff (CEP and SDF 2015).



Sources: Data downloaded FEMA in 2022 and SANGIS in 2025; adapted by Ascent in 2025.

Figure 4.10-3 Flood Zone and Floodplain Map

Climate change could cause these incidents to increase in frequency or severity. Along the coast, saltwater intrusion from sea-level rise can infiltrate groundwater, worsening the quality of freshwater resources. Projected increases in wildfires across the region may also worsen water quality for surface waterbodies by increasing risk for severe flooding, erosion, and sediment, nutrient, and metal flows into rivers, lakes, and reservoirs (USGS 2023). Additionally, higher temperatures may lead to longer stratification periods (a seasonal separation of water into layers) driving harmful algae blooms, fish die-offs, and increased methane emissions (Tandon 2021).

4.10.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS AND POLICIES

Clean Water Act

The federal Clean Water Act (CWA) (33 U.S. Code [USC] Section 1251 et seq.) of 1972 is the basic federal law that addresses surface water quality control and protection of beneficial uses of water. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters through prevention, reduction, and elimination of pollution. The CWA applies to discharges of pollutants into waters of the United States. The CWA establishes a framework for regulating stormwater discharges from municipal, industrial, construction, and other activities under National Pollutant Discharge Elimination System (NPDES) regulations. In California, SWRCB administers the NPDES program. The following CWA sections are most relevant to regulation of surface water in the San Diego region.

Section 303(d): Total Maximum Daily Loads and Water Quality Standards

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop a list of water quality–limited segments. Waters on the 303(d) list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that states, territories, and authorized tribes establish priority rankings for water bodies on the 303(d) list and develop action plans (i.e., TMDLs) to improve water quality. As defined by the CWA, water quality standards consist of four elements:

- designated beneficial uses of water bodies
- water quality criteria to protect designated uses
- an antidegradation policy to maintain and protect existing uses and high-quality waters
- general policies addressing implementation issues.

Under CWA Section 303(d) (33 USC Section 1313[d]), states, territories, and authorized tribes are required to develop a list of water bodies that are considered to be "impaired" from a water quality standpoint. Water bodies that appear on this list either do not meet or are not expected to meet water quality standards, even after the minimum required levels of pollution control technology have been implemented to reduce point-source discharges. The law requires that respective jurisdictions establish priority rankings for surface water bodies on the list and develop action plans (TMDLs) to improve water quality. A TMDL is a calculation of the maximum amount of a specific pollutant that a water body can receive and still meet federal water quality standards as provided in the CWA (EPA 2024). TMDLs account for all sources of pollution, including point sources, nonpoint sources, and natural background sources.

The CWA Section 303(d) list of impaired water bodies provides a prioritization and schedule for development of TMDLs for states. The SWRCB, in compliance with CWA Section 303(d), publishes the list of water quality–limited segments in California, which includes a priority schedule for development of TMDLs for each contaminant or "stressor" affecting the water body (SWRCB 2025). An ARP, as defined by the United States Environmental Protection Agency, is a near-term plan or description of actions, with a schedule and milestones, that can in some cases be more immediately beneficial or practicable than a TMDL in achieving water quality objectives. An ARP is not a substitute for a TMDL, but rather is designed to address impairments prior to the development of a TMDL.

Section 401: Water Quality Certification

Every applicant for a federal permit or license for any activity that may result in a discharge to a water body must obtain a CWA Section 401 (33 USC Section 1341) Water Quality Certification for the proposed activity and must comply with state water quality standards prescribed in the certification. SWRCB and the RWQCBs are responsible for issuing Section 401 Water Quality Certifications. Most certifications are issued in connection with CWA Section 404 US Army Corps of Engineers (USACE) permits for dredge and fill material discharges.

Section 402: NPDES Program

CWA Section 402 (33 USC Section 1342) sets forth regulations that prohibit the discharge of pollutants into waters of the United States from point or nonpoint sources without first obtaining an NPDES permit. SWRCB and the nine RWQCBs administer the NPDES permit program. SWRCB implements the NPDES and the state's water quality programs by regulating discharges of pollutants to surface waters to protect their beneficial uses. To comply with the CWA water quality regulations, nine RWQCBs in California develop and enforce WQOs and implementation plans, issue waste discharge requirements (WDRs) that integrate NPDES permit requirements, take enforcement action, and monitor water quality within their hydrologic areas.

To regulate runoff-related (nonpoint source) discharges, SWRCB developed a variety of general NPDES permits for controlling industrial, construction, and municipal stormwater discharges (general permits for each category described separately under "State Laws, Regulations, Plans, and Policies," below). Stormwater discharges are permitted under the NPDES program. Section 402(p) of the CWA requires that municipal stormwater management programs be developed and implemented for municipalities to meet the requirements for stormwater discharges from municipal permits. Stormwater management programs limit, to the maximum extent practicable, the discharge of pollutants from storm sewer systems. A single agency or a coalition, often consisting of more than one municipality (such as cities and counties), may implement these programs. Each program includes best management practices (BMPs) intended to reduce the quantity and improve the quality of stormwater discharged to the stormwater system. Discharges to storm sewer systems must comply with the stormwater management program's requirements.

Section 404: Discharge of Dredge or Fill Material

CWA Section 404 (33 USC Section 1344) establishes a permit program, administered by USACE with EPA oversight, regulating discharge of both dredged and fill materials into waters of the United States (as defined in 33 CFR 328.3[a]), including wetlands. Dredged material means material that is excavated or dredged from waters of the United States. Fill material means material placed in waters of the United States where the material has the effect of replacing any portion of a waters of the United States with dry land or changing the bottom elevation of waters of the United States. Examples of fill material are rock, sand, soil, clay, plastics, woodchips, concrete, and materials used to create any structure or infrastructure in waters of the United States. Activities in waters of the United States that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry.

Under CWA Section 404(e), USACE can issue general permits to authorize activities that have minimal individual and cumulative adverse environmental effects. General permits can be issued for a period of no more than 5 years. USACE can issue nationwide permits, which is a general permit that authorizes activities across the country, unless revoked by a district or division commander. Nationwide permits authorize a wide variety of activities, such as linear transportation projects, residential development, commercial and industrial developments, utility lines, road crossings, bank stabilization activities, wetland and stream restoration activities, and certain maintenance activities.

Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act, administered by USACE, prohibits the creation of any obstruction, excavation, or fill, or any alteration or modification of any navigable water of the United States unless the work has been permitted by USACE (33 USC Section 403). Permits for activities including excavation and dredging or deposition of material, or any obstruction or alteration to a navigable water that could impact water quality, are regulated under both Section 404 (CWA) and Section 10 (Rivers and Harbors Act), and are processed simultaneously by the USACE.

Federal Antidegradation Policy

The federal antidegradation policy (40 CFR Section 131.12) has been in existence since 1968. The policy protects existing uses, water quality, and national water resources. It directs states to adopt a statewide policy that includes the following primary provisions:

- Maintain and protect existing instream uses and the water quality necessary to protect those uses.
- Where existing water quality is better than necessary to support fishing and swimming conditions, maintain and protect water quality unless the state finds that allowing lower water quality is necessary for important local economic or social development.
- Where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, maintain and protect that water quality.

Executive Order 11988: Floodplain Management

An amendment to Executive Order (EO) 11988 was issued on January 28, 2015, and includes revised guidelines for implementing EO 11988. Amended EO 11988 directs federal agencies to avoid, to the extent practicable and feasible, short- and long-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever a practicable alternative exists. Each federal agency is responsible for reducing the risk of flood loss, minimizing the impact of floods on human safety, health, and welfare, and restoring and preserving natural and beneficial values served by flood plains. In addition, amended EO 11988 advises agencies to use a higher flood elevation and expanded flood hazard area than the base flood previously described in EO 11988 to ensure that climate change and other future changes are more adequately accounted for in agency decisions.

National Flood Insurance Act of 1968

The National Flood Insurance Act of 1968 established the NFIP. The NFIP is a federal program administered by the Flood Insurance Administration of the FEMA. It enables individuals who have property within the 100-year floodplain to purchase insurance against flood losses. Community participation and eligibility, flood hazard identification, mapping, and floodplain management aspects are administered by state and local programs and support directorate within FEMA. FEMA works with the states and local communities to identify flood hazard areas and publishes a flood hazard boundary map of those areas.

The basic tools for regulating construction in potentially hazardous floodplain areas are local zoning techniques and FEMA floodplain mapping. FIRM is the official map created and distributed by FEMA and the NFIP that delineates SFHAs—areas that are subject to inundation by a base flood—for every county and community that participates in the NFIP. FIRMs contain flood risk information based on historical, meteorological, hydrologic, and hydraulic data, as well as open space conditions, flood control works, and development. For projects that would affect the hydrologic or hydraulic characteristics of a flooding source and modify an existing regulatory floodway, effective base flood elevations, or an SFHA, a conditional letter of map revision would need to be approved by FEMA.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California Ocean Plan

The California Ocean Plan implements standards for ensuring consistency between water quality control plans and policies (SWRCB 2019). In the adoption and amendment of water quality control plans, each plan provides for the attainment and maintenance of the water quality standards of downstream waters. To the extent there is a conflict between a provision of the California Ocean Plan and a provision of another statewide plan or policy, or a regional water quality control plan (basin plan), the more stringent provision shall apply except where pursuant to Chap. III.J of the California Ocean Plan (SWRCB 2019).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (Water Code Section 13000 et seq.) implements and augments federal protections under the CWA via regulation of the waters of the state, which include surface, ground, and ocean water, as well as point sources and nonpoint sources.

The Porter-Cologne Act is California's comprehensive water quality control law and is a complete regulatory program designed to protect water quality and beneficial uses of the state's waters. It requires the nine RWQCBs to adopt water quality control plans (basin plans) for watersheds within their regions. These basin plans are reviewed triennially and amended as necessary by the RWQCBs.

Each basin plan establishes water quality standards for specified surface waters and groundwater, which consist of beneficial uses and WQOs. WQOs may be numeric or narrative.

Where waste discharges could affect the quality of the waters of the state, the discharger must obtain a WDR permit. SWRCB and the RWQCBs have issued general WDRs governing certain categories of discharges. WDRs typically include effluent limitations, monitoring, and plan submittals that are to be implemented for protecting water quality.

State Antidegradation Policy (Resolution 68-16)

The state's antidegradation policy restricts degradation of surface and ground waters. This policy protects water bodies where existing quality is higher than necessary for the protection of beneficial uses. The state policy establishes two conditions that must be met before the quality of high-quality waters may be lowered by waste discharges.

1. The state must determine that lowering the quality of high-quality waters:
    - will be consistent with the maximum benefit to the people of the state
    - will not unreasonably affect present and anticipated beneficial uses of such water
    - will not result in water quality less than that prescribed in state policies (e.g., WQOs in water quality control plans).
2. Any activities that result in discharges to high-quality waters are required to:
    - meet WDRs that will result in the best practicable treatment or control of the discharge necessary to avoid pollution or nuisance
    - maintain the highest water quality consistent with the maximum benefit to the people of the state.

The discharge would not be allowed under Resolution 68-16 if the discharge, even after treatment, would unreasonably affect beneficial uses or would not comply with applicable provisions of water quality control plans.

Cobey-Alquist Flood Plain Management Act

The Cobey-Alquist Flood Plain Management Act (Water Code Sections 8400 et seq.) encourages local governments to plan, adopt, and enforce land use regulations to accomplish floodplain management, in order to protect people and property from flooding hazards. This act also provides state financial assistance for flood control projects.

2019 Final San Diego Integrated Regional Water Management Plan

The Final 2019 San Diego IRWM Plan was prepared under the direction of the Regional Water Management Group consisting of the San Diego County Water Authority, the County of San Diego, and the City of San Diego (Regional Water Management Group 2018). The IRWM Plan builds on local water and regional management plans within the San Diego region and is aimed at developing long-term water supply reliability, improving water quality, and protecting natural resources. The statewide IRWM program is supported by bond funding provided by DWR to fund competitive grants for projects that improve water resources management. IRWM Plan goals are to:

- improve the reliability and sustainability of regional water supplies
- protect and enhance water quality
- protect and enhance our watersheds and natural resources

- enhance resiliency to climate change for local water resources
- promote and support sustainable integrated water resource management.

California Fish and Game Code Section 1602

All diversions, obstructions, and changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by the California Department of Fish and Wildlife (CDFW), under the Fish and Game Code Section 1602.

Under Section 1602, it is unlawful for any person, governmental agency, or public utility to do the following without first submitting a complete notification of lake or streambed alteration to CDFW:

- substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A lake or streambed alteration agreement must be obtained from CDFW for any activity that may substantially adversely affect an existing fish or wildlife resource.

Municipal Stormwater Permit

Section 402(p) of the CWA requires that stormwater discharges are permitted under the NPDES program for municipal separate storm sewer systems (MS4s). As part of the NPDES MS4 permit process, stormwater management programs must be developed and implemented for municipalities to meet the requirements for stormwater discharges listed in MS4 permits. Stormwater management programs limit, to the maximum extent practicable, the discharge of pollutants from storm sewer systems. A single state agency or a coalition, often consisting of more than one municipality (such as cities and counties), may implement these programs. Each program includes BMPs intended to reduce the quantity and improve the quality of stormwater discharged to the stormwater system. Discharges to storm sewer systems must comply with the stormwater management program's requirements.

In 1990, EPA promulgated regulations establishing NPDES regulations for MS4s serving "medium" and "large" MS4s of 100,000 population or greater. These regulations, known as Phase I regulations, require operators of medium and large MS4s to obtain and comply with NPDES stormwater permits to reduce or eliminate the discharge of pollutants.

On December 8, 1999, EPA promulgated regulations, known as Phase II regulations, requiring operators of small MS4s to obtain and comply with NPDES stormwater permits for small MS4s under the authority of CWA Section 402(p)(6). On February 5, 2013, SWRCB adopted Water Quality Order No. 2013-0001-DWQ, NPDES General Permit No. CAS000004 (as amended by Orders 2015-0133_EXEC, WQ 2016-0069-EXEC, WQ 2018-0001-EXEC, and 2018-0007-EXEC), Waste Discharge Requirements for Storm Water Discharges from Small MS4 (Phase II General Permit) to comply with CWA Section 402(p)(6). The Phase II General Permit became effective on July 1, 2013.

In compliance with this requirement, the county and cities in San Diego County developed stormwater management programs, which are discussed in more detail under "Local Laws, Regulations, Plans, and Policies," below.

California Department of Transportation NPDES Permit

Under the California Department of Transportation (Caltrans) statewide NPDES permit (Order 2012-0011-DWQ, as amended by Order WQ 2014-0006-Exec, Order WQ 2014-0077-DWQ, and Order WQ 2015-0036-Exec), Caltrans is required to regulate nonpoint-source discharges from its properties, facilities, and activities (SWRCB 2012b), such as the following.

- stormwater discharges from all Caltrans-owned municipal separate stormwater sewer systems

- stormwater discharges from Caltrans' vehicle maintenance, equipment cleaning, and operations facilities, and any other nonindustrial facilities with activities that have the potential to generate significant quantities of pollutants
- certain categories of non-stormwater discharges, as listed under Provision B in Order 2012-0011-DWQ.

Order 2012-0011-DWQ does not regulate stormwater discharges from Caltrans-owned batch plants or any other industrial facilities. Caltrans must obtain coverage for stormwater discharges associated with industrial activities under the statewide Industrial General Permit for these discharges, and must comply with the applicable requirements. Although Order 2012-0011-DWQ does not regulate stormwater discharges associated with industrial activities, it does impose contractor requirements for certain industrial facilities.

Order 2012-0011-DWQ also does not regulate discharges from Caltrans construction activities, including dewatering effluent discharges from construction projects. Instead, Caltrans must obtain coverage for stormwater discharges associated with construction activities under Order 2022-0057-DWQ (previously Order 2009-0009-DWQ as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ), the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (SWRCB 2022).

Construction General Permit

Dischargers whose projects disturb 1 or more acres of soil, or less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the SWRCB's Order 2022-0057-DWQ (previously Order 2009-0009-DWQ as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ), the Construction General Permit (SWRCB 2022). Construction and demolition activities subject to this permit include clearing, grading, grubbing, and excavation, or any other activity that results in a land disturbance equal to or greater than 1 acre.

Permit applicants are required to submit a notice of intent to SWRCB and to prepare a stormwater prevention pollution plan (SWPPP). The SWPPP must identify BMPs that are to be implemented to reduce construction impacts on receiving water quality based on potential pollutants. The SWPPP also must include descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases are completed at a site (postconstruction BMPs). The Construction General Permit also includes requirements for risk-level assessment for construction sites, a stormwater effluent monitoring and reporting program, and numeric action levels for pH and turbidity.

Industrial General Permit

Industrial facilities are subject to the requirements of SWRCB Water Quality Order 2014-0057-DWQ (as amended by Order 2015-0122-DWQ and 2018-0028-DWQ), NPDES General Permit for Storm Water Discharges Associated with Industrial Activities Excluding Construction Activities (Industrial General Permit). These regulations prohibit discharges of industrial stormwater to waters of the United States and state from a broad range of industrial activities, including mining, manufacturing, disposal, recycling, and transportation, unless such discharges comply with a site-specific NPDES permit.

Special Protections for Areas of Special Biological Significance

On March 20, 2012, SWRCB approved Resolution No. 2012-0012 approving an exception to the Ocean Plan prohibition against discharges to Areas of Special Biological Significance (ASBS) for certain nonpoint-source discharges and NPDES-permitted municipal stormwater discharges. State Water Board Resolution No. 2012-0012 requires monitoring and testing of marine aquatic life and water quality in several ASBS to protect California's coastline during storm discharges into coastal waters. Specific terms, prohibitions, and special conditions were adopted to provide special protections for marine aquatic life and natural water quality in ASBS. The City of San Diego's municipal stormwater discharges to the San Diego Marine Life Refuge in La Jolla are subject to terms and conditions of State Water Board Resolution No. 2012-0012. The special protections are contained in Attachment B to Resolution No. 2012-0012.

California Coastal Act

Section 30231 of the California Coastal Act establishes a policy of maintaining and restoring the biological productivity and water quality of coastal waters, streams, wetlands, estuaries, and lakes within the Coastal Zone. Section 30236 addresses flood control projects for the protection of existing structures in the floodplain. Section 30253, Part(a) establishes a policy that that new development must minimize risks to life and property in areas of high flood hazard.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) requires basins to be sustainably managed by local public agencies (e.g., counties, cities, and water agencies) that become groundwater sustainability agencies (GSAs). The primary purpose of the GSAs is to develop and implement a Groundwater Sustainability Plan (GSP) to achieve long-term groundwater sustainability. Within the county, three groundwater basins have been designated as medium- and high-priority basins by the state under the SGMA. These include Borrego Springs, San Luis Rey Valley, and San Pasqual Valley. See Section 4.18, "Water Supply," for further discussion on this topic.

San Diego Regional Water Quality Control Board

As described above, the Porter-Cologne Act requires that RWQCBs adopt water quality control plans (basin plans) for watersheds within their jurisdiction. These plans establish water quality standards for particular surface water bodies and groundwater resources.

The San Diego RWQCB (Region 9), a state agency, is responsible for the basin plan for the San Diego Basin. The RWQCB implements management plans to modify and adopt standards under provisions set forth in Section 303(c) of the CWA and California Water Code (Division 7, Section 13240). In addition to basin plan requirements, the RWQCB issues water quality certifications under CWA Section 401. The RWQCB also regulates discharges to surface waters and groundwater through the issuance of WDRs. WDRs are issued for discharges that specify limitations relative to the Basin Plan (San Diego RWQCB 2021).

Water Quality Control Plan for the San Diego Basin

The preparation and adoption of basin plans are required by the California Water Code (Section 13240) as prescribed by the CWA. According to Section 13050 of the Water Code, basin plans include designation or establishment of beneficial uses to be protected, WQOs to protect those uses, and a program of implementation needed for achieving the objectives for the waters within a specified area. Basin plans satisfy both state and federal regulatory requirements for water quality control.

Water Quality Objectives

The San Diego RWQCB Basin Plan sets narrative and numerical WQOs that must be attained or maintained to protect beneficial uses and conform to the state's antidegradation policy. The WQOs are the levels of water quality constituents that must be met to protect the beneficial uses. A list of these water quality constituents that received narrative or numerical concentration objectives is identified below (San Diego RWQCB 2021). A complete and detailed list of WQOs can be found in the Basin Plan. Each water quality constituent may result in varied objectives conditional on the beneficial use of the waters.

Water Quality Constituents

- Bacteria: total coliform, fecal coliform, *E. Coli*, and enterococci
- Biostimulatory substances
- Boron
- Chlorides
- Color
- Dissolved oxygen
- Floating material
- Fluoride

- Inorganic chemicals[1]
- Iron
- Manganese
- Methylene blue–activated substances
- Nitrate
- Oil and grease
- Organic chemicals
- Pesticides
- pH
- Phenolic compounds
- Radioactivity
- Secondary drinking water standards[2]
- Sediment
- Sodium
- Sulfate
- Suspended and settleable solids
- Tastes and odors
- Temperature
- TDS
- Toxicity
- Toxic pollutants[3]
- Trihalomethanes
- Turbidity
- Un-Ionized ammonia

Beneficial Uses/Water Quality Objectives

Beneficial uses are defined as the uses of water necessary for the survival or well-being of humans, plants, and wildlife. Beneficial uses identified for surface waters in the Water Quality Control Plan for the San Diego Basin (Basin Plan) (San Diego RWQCB 2021) for the San Diego region are:

- MUN: municipal and domestic supply
- AGR: agricultural supply
- IND: industrial service supply
- PROC: industrial process supply
- GWR: groundwater recharge
- FRESH: freshwater replenishment
- NAV: navigation
- POW: hydropower generation
- REC-1: contact water recreation
- REC-2: non-contact water recreation
- COMM: commercial and sport fishing

[1] Waters designated for use as domestic or municipal supply (MUN) cannot contain concentrations of inorganic chemicals in excess of the maximum contaminant levels set forth in California Code of Regulations, Title 22, Table 64431-A of Section 64431 (Inorganic Chemicals), which is incorporated by reference into the Basin Plan. Inorganic chemicals include aluminum, antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrate+nitrite, nitrite, selenium, and thallium.

[2] Water designated for use as domestic or MUN cannot contain concentrations of chemical constituents in excess of the maximum contaminant levels specified in 64449-A of Section 64449 of Title 22 of the California Code of Regulations (Secondary Maximum Contaminant Levels, Consumer Acceptance Limits), which is incorporated by reference into the Basin Plan. Chemical constituents are aluminum, color, copper, corrosivity, foaming agents, iron, manganese, methyl tert-butyl ether, odor threshold, silver, thiobencarb, turbidity, and zinc.

[3] EPA promulgated a final rule prescribing water quality criteria for toxic pollutants in inland surface waters, enclosed bays, and estuaries in California on May 18, 2000 (the California Toxics Rule or "CTR" [40 CFR 131.38]). CTR criteria constitute applicable water quality criteria in California. In addition to the CTR, certain criteria for toxic pollutants in the National Toxics Rule (40 CFR 131.36) constitute applicable water quality criteria in California as well. The Shelter Island Yacht Basin portion of San Diego Bay is designated as an impaired water body for dissolved copper pursuant to CWA Section 303(d). A TMDL has been adopted to address this impairment.

- BIOL: preservation of biological habitats of special significance
- AQUA: aquaculture
- WARM: warm freshwater habitat
- COLD: cold freshwater habitat
- EST: estuarine habitat
- MAR: marine habitat
- WILD: wildlife habitat
- RARE: rare, threatened, or endangered species
- MIGR: migration of aquatic organisms
- SHELL: shellfish harvesting
- SPWN: spawning, reproduction, and/or early development
- CUL: tribal tradition and culture
- T-SUB: tribal subsistence fishing
- SUB: subsistence fishing

Beneficial uses identified in the Basin Plan (San Diego RWQCB 2021) for coastal waters are:

- IND: industrial service supply
- NAV: navigation
- REC-1: contact water recreation
- REC-2: non-contact water recreation
- COMM: commercial and sport fishing
- BIOL: preservation of biological habitats of special significance
- EST: estuarine habitat
- WILD: wildlife habitat
- RARE: rare, threatened, or endangered species
- MAR: marine habitat
- AQUA: aquaculture
- MIGR: migration of aquatic organisms
- SPWN: spawning, reproduction, and/or early development
- WARM: warm freshwater habitat
- SHELL: shellfish harvesting.

Traditionally, groundwater supplies in the San Diego region have produced high-quality drinking water. However, naturally occurring and more recent anthropogenic sources of contamination have decreased groundwater quality in some localized areas throughout the county. Groundwater contamination from anthropogenic sources are typically associated with leaking underground storage tanks, such as from gasoline stations or other industrial uses with underground storage tanks. SWRCB maintains the GeoTracker database of several types of such sites in California, including permitted underground storage tanks; leaking underground storage tanks; and Spills, Leaks, Investigations, and Cleanups sites. According to GeoTracker, there are over 3,000 leaking underground storage

tank listings in the San Diego region (SWRCB 2025). Not all of these sites represent areas of groundwater contamination, but they do identify the potential extent of possible localized areas of contamination. While alluvial groundwater aquifers can be quickly recharged by stormwater or urban runoff, the porous nature of the aquifers render them susceptible to contamination by activities on the ground surface, such as septic tank use in rural areas in the San Diego region, contaminated stormwater infiltration, abandoned well heads, and leaking underground storage tanks. The most common contaminants in groundwater in the San Diego region are elevated nitrate, TDS, iron, manganese, and toxic organic pollutants (Regional Water Management Group 2018).

Beneficial uses identified in the Basin Plan (San Diego RWQCB 2021) for groundwaters the San Diego region are:

- MUN: municipal and domestic supply
- AGR: agricultural supply
- IND: industrial service supply
- IPS: industrial process supply
- freshwater replenishment.

Narrative and numeric water quality objectives (WQOs) for all surface waters and groundwater within the San Diego region are established for a variety of constituents as described in the Basin Plan. Refer to Tables 3-9 and 3-10 in the Basin Plan (San Diego RWQCB 2021) for specific WQOs for each HA for inland surface waters and groundwater, respectively.

Colorado River Basin Regional Water Quality Control Board

The Colorado River Basin RWQCB's goal is to maintain the existing water quality of all nondegraded ground water basins. However, in most cases, groundwater that is pumped generally returns to the basin after use with an increase in mineral concentrations, such as TDS and nitrate, that are picked up by water during its use. Under these circumstances, the RWQCB's objective is to minimize the quantities of contaminants reaching any ground water basin. This could be achieved by establishing management practices for major discharges to land. Until the RWQCB can complete investigations for the establishment of management practices, the objective will be to maintain the existing water quality where feasible.

Colorado River Basin Plan

Beneficial uses identified for surface waters in the Water Quality Control Plan for the Colorado River Basin (CRB RWQCB 2024) for the San Diego region are:

- MUN: municipal and domestic supply
- AGR: agriculture supply
- AQUA: aquaculture
- IND: industrial service supply
- GWR: groundwater recharge
- REC-1: water contact recreation
- REC-2: non-contact water recreation
- WARM: warm freshwater habitat
- COLD: cold freshwater habitat
- WILD: wildlife habitat
- POW: hydropower generation
- FRSH: freshwater replenishment

- RARE: preservation of Rare, threatened, or endangered species
- LREC I: limited water contact recreation.

The groundwater quality discussion for this region is focused on the Borrego Valley Groundwater Basin. The most extensive water quality monitoring data in the Borrego Springs Subbasin comes from reporting by public water supply systems to the SWRCB Division of Drinking Water for the purpose of ensuring adequate drinking water quality (BVGSA 2019). There are both anthropogenic and natural sources of the contaminates of concern (COCs) in the Borrego Springs Subbasin. Anthropogenic sources that may contribute to degradation of the current water quality in the subbasin include agricultural use of pesticides and fertilizers, salt accumulation resulting from agricultural irrigation practices, and household septic system return flows. Natural sources of COCs in the subbasin include the rocks and minerals that make up the aquifer matrix material. These naturally occurring COCs contain evaporite minerals, which can dissolve and increase TDS concentration in the aquifer; silicate minerals, which can contribute arsenic to the groundwater; and sulfate minerals, which can contribute sulfate to the groundwater. All are found in differing amounts in the upper, middle, and lower aquifers. Differences in the mineralogical composition of the aquifers can result in groundwater quality differences between the aquifers (BVGSA 2019).

In general, water quality has historically been good in Borrego Water District's wells with TDS at concentrations of less than 500 milligrams per liter. The high proportion of sulfate in the surface water of Coyote Creek appears to dominate the character of groundwater in the northern and eastern parts of the basin. The more bicarbonate waters of Borrego Palm Canyon and Big Spring influence the groundwater along the western and southern parts of the basin. Historical issues with elevated nitrate concentrations have been noted as evidenced by wells either taken out of production or drilled deeper. High salinity, poor-quality connate water is thought to occur in deeper formational materials in select areas of the aquifer as well as shallow groundwater in the vicinity of the Borrego Sink in the southern portion of the Plan area. Water quality impacts may occur because decreased groundwater levels could induce flow of poor-quality water (i.e., unsuitable for municipal uses) found in select deeper formational materials of the aquifer. This may eventually necessitate additional expensive treatment of groundwater to make the water suitable as a drinking water supply (BVGSA 2019).

Beneficial uses identified in the Colorado River Basin Plan (CRB RWQCB 2024) for groundwaters in the San Diego region are:

- MUN: municipal and domestic supply
- AGR: agricultural supply
- IND: industrial service supply.

Establishment of numerical objectives for ground water involves complex considerations because the quality of ground water varies significantly with depth of well perforations, existing water levels, geology, hydrology and several other factors. The RWQCB indicates that detailed investigation of the ground water basins should be conducted before establishing specific ground WQOs (CRB RWQCB 2024).

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

San Diego Regional Municipal Storm Water Permit

The San Diego Regional Municipal Storm Water Permit (Order R9-2013-0001 [as amended by Order No. R9-2015-0001 and R9-2015-0100]) (Municipal Storm Water Permit) regulates the conditions under which stormwater and non-stormwater discharges into and from MS4s are prohibited or limited. The 18 cities, County of San Diego government, County of San Diego County Regional Airport Authority, and San Diego Unified Port District each owns or operates an MS4, through which it discharges stormwater and non-stormwater into waters of the United States within the San Diego region. These entities are the County of San Diego Copermittees (Copermittees) which, along with the applicable Orange County and Riverside County Copermittees, are subject to the requirements of the permit. The Caltrans stormwater system is regulated separately under the Caltrans NPDES permit.

The Municipal Permit is a framework for protecting water quality and designated beneficial uses of waters of the state from adverse impacts resulting from MS4 discharges. The Municipal Permit requires that each jurisdiction covered under the permit implement a jurisdictional urban runoff management program to control the contribution of pollutants to and the discharges from the MS4. The goal of the jurisdictional runoff management programs is to implement water quality improvement strategies and runoff management programs that effectively prohibit non-stormwater discharges into the Copermittees' MS4s and reduce pollutants in stormwater discharges from the Copermittees' MS4s to the maximum extent practicable.

The MS4 permit, required by NPDES, requires the development of a hydromodification management plan (HMP). Pursuant to RWQCB Order 2007-0001, provision D.1.g, HMPs shall be prepared with the purpose of managing increases in runoff discharge rates and durations from specific projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. Regulations require site design to account for hydrology and drainage studies are required for projects with significant increases in impervious surfaces. Projects are discouraged from diverting or increasing flows that cross a site. Larger projects (those with 50 acres of disturbance or greater) are subject to hydromodification requirements and must develop a project-level HMP.

The Municipal Permit requires that the Copermittees develop a WQIP for each of 10 WMAs in the San Diego region. These plans identify the highest priority water quality conditions in each watershed and specific goals, strategies, and schedules to address those priorities, including numeric goals and action levels, and requirements for water quality monitoring and assessment. The Copermittees implement strategies through their jurisdictional runoff management programs to achieve the goals of the water quality improvement plans.

In accordance with the provisions of the Municipal Permit, the County of San Diego developed a BMP Design Manual to identify design requirements and related postconstruction requirements to protect stormwater quality for new development and significant redevelopment in the incorporated cities and unincorporated areas of the San Diego region (County of San Diego 2020). The BMP Design Manual establishes a series of source control, site design, and treatment control BMPs that are to be implemented by all priority development projects (PDPs). PDPs include new development, redevelopment projects that create, add, or replace 5,000 square feet, and pollutant generating projects. A PDP should refer to the local agency that has jurisdiction for the project for guidance on the source control, site design, and treatment control BMPs for stormwater pollutants. All future projects implementing the proposed Plan must adhere to these regulations.

Under the Municipal Permit, Copermittees are required to implement stormwater management requirements and controls, which include construction and postconstruction requirements for stormwater BMPs. These requirements include implementing low impact development (LID) BMPs for development and significant redevelopment to reduce pollutants in stormwater runoff from sites through more natural processes such as infiltration and biofiltration.

The County of San Diego developed an LID handbook for guidance in the BMP selection process, which integrates current research on LID implementation in the San Diego region (County of San Diego 2014a). Design techniques include minimizing impervious areas, conserving natural areas, and using vegetation and landscaping for water quality treatment benefits.

Copermittees are also required to comply with hydromodification management requirements to mitigate the potential for increased erosion due to increased runoff rates and durations caused by development and increased impervious surfaces. The Municipal Permit requires Copermittees to implement hydromodification management requirements to manage increases in runoff discharge rates and durations from PDPs to minimize erosion of channel beds and banks, sediment pollutant generation, or other impacts on beneficial uses and stream habitat. The hydromodification management requirements are found Chapter 6 in the BMP Design Manual. The hydromodification management requirements require PDPs to implement hydrologic control measures so that post-project runoff flow rates and durations do not exceed predevelopment flow rates and durations.

Water Quality Control Policy for Siting, Design, Operation, and Maintenance of On Site Wastewater Treatment Systems

On June 19, 2012, SWRCB adopted Resolution No. 2012-0032, adopting the Water Quality Control Policy for Siting, Design, Operation, and Maintenance of On-Site Wastewater Treatment Systems (OWTS) Policy. This policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements and sets the level of performance and protection expected from OWTS (SWRCB 2012c).

In accordance with Water Code Section 13290 et seq., the policy sets standards for OWTS that are constructed or replaced, that are subject to a major repair, that pool or discharge waste to the surface of the ground, or that have affected, or will affect, groundwater or surface water to a degree that makes it unfit for drinking water or other uses, or cause a health or other public nuisance condition. The OWTS policy also includes minimum operating requirements for OWTS that may include siting, construction, and performance requirements; requirements for OWTS near certain waters listed as impaired under Section 303(d) of the CWA; requirements authorizing local agency implementation of the requirements; corrective action requirements; minimum monitoring requirements; exemption criteria; requirements for determining when an existing OWTS is subject to major repair; and a conditional waiver of waste discharge requirements.

On April 15, 2015, the San Diego RWQCB adopted a basin plan amendment that changed WQOs for nitrate in groundwater basins. The basin plan amendment also incorporates the State Water Quality Control Policy for Siting, Designing, Operation, and Maintenance of OWTS and made updates related to implementation of waste discharge requirements and adopted resolutions. The Office of Administrative Law approved the San Diego Water Board's Nitrate/OWTS Policy Basin Plan amendment on May 17, 2016 (San Diego RWQCB 2024). The basin plan amendment incorporates the OWTS Policy into the Basin Plan and amends the criteria to be used by the San Diego Water Board and local agencies to regulate OWTS in the San Diego region (San Diego RWQCB 2021).

Metropolitan Transit System

Metropolitan Transit System (MTS) is regulated under Resolution No. R9-2017-0006 for compliance with SWRCB Order 2013-0001-DWQ NPDES Permit No. CAS000004 (February 8, 2017). MTS was established as a special district in California and is authorized to operate public mass transit in the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego, and Santee, as well as the unincorporated areas of the County of San Diego not served by the North County Transit District (NCTD). In accordance with the resolution, the San Diego RWQCB requested an amendment to include MTS as a Nontraditional Small MS4. MTS and applied for coverage under the Phase II General Permit. SWRCB adopted Order WQ 2018-007-EXEC amending WQ Order 2013-0001-DWQ on March 13, 2018, to add MTS as a nontraditional permittee.

North County Transit District

NCTD has been regulated under SWRCB Water Quality Order No. 2013-0001-DWQ NPDES Permit No. CAS000004 since July 1, 2013. The jurisdiction boundary of the permit extends from the southern Orange County border on MCB Camp Pendleton (mile post [MP] 207.4) to south Del Mar (MP 245.7). MTS owns the City of San Diego portion of the rail corridor in San Diego County from MP 245.7 to MP 267.5, including the San Diego Trolley light rail and bus system. The stormwater management plan serves as the stormwater compliance document for all of the NCTD right-of-way, maintenance facilities, transit stations, and centers. All projects that create or replace between 2,500 and 5,000 square feet of impervious surface must implement one or more site design measures. NCTD regulates all development projects that create or replace 5,000 square feet or more of impervious surface (regulated projects). NCTD requires these regulated projects to implement measures for site design, source control, runoff reduction, stormwater treatment, and baseline hydromodification management as defined in the MS4 general permit.

Dewatering Permit

Discharges from specified groundwater extraction activities (such as construction dewatering) must be permitted either by the San Diego RWQCB under the General Order R9-2015-0013 for groundwater waste discharges to surface waters, or authorized by the agency with jurisdiction if discharged to an MS4. Discharge via either of these mechanisms must meet applicable WQOs, constituent limitations, and pretreatment requirements.

County of San Diego Multi-Jurisdictional Hazard Mitigation Plan

The federal Disaster Mitigation Act of 2000 requires all local governments to create a disaster plan in order to qualify for hazard mitigation funding. The Multi-Jurisdictional Hazard Mitigation Plan is a countywide plan that identifies risks and ways to minimize damage by natural and human-made disasters. The plan is a comprehensive resource document that serves many purposes, such as enhancing public awareness, creating a decision tool for management, promoting compliance with state and federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination.

Each of the 18 cities in the county participated in the planning process, as well as the Alpine Fire Protection District, Rancho Santa Fe Fire Protection District, and Padre Dam Municipal Water District. According to a review of jurisdictional-level hazard maps, the central and eastern portions of San Diego County are most susceptible to flash floods where mountain canyons, dry creek beds, and high deserts are the prevailing terrain. In regions such as San Diego, without extended periods of below-freezing temperatures, floods usually occur during the season of highest precipitations or during heavy rainfalls after long dry spells (County of San Diego 2023).

Approximately 270,263 people may be at risk of the 100-year flood hazard. In addition, special populations at risk that may be impacted by the 100-year flood hazard in San Diego County include low-income households and elderly people. Approximately 585,882 people are at risk of the 500-year flood hazard (County of San Diego 2023).

County of San Diego Floodplain Management Plan

The County of San Diego Floodplain Management Plan (FMP) assesses the flooding hazards in the unincorporated areas of San Diego County, summarizes current County of San Diego programs, describes potential mitigation strategies, and presents a plan for future action (County of San Diego 2007). It was prepared with input from county residents, responsible officials, and consultants, and with the support of Cal OES and FEMA. The FMP discusses a series of flood hazard issues and presents follow-up actions and recommendations for risk reduction. Using the findings and recommendations in each of these areas, the county developed a mitigation action plan (MAP). The County's hazard MAP identifies mitigation activities, the priority assigned to implementing each activity, a responsible lead department or staff position, and deadline.

County and City General Plans and Flood Ordinances

Local general plans address flood hazards through policies in their land use and safety elements. In addition, local floodplain management ordinances (e.g., the County of San Diego Flood Damage Prevention Ordinance, the City of San Diego floodplain ordinance [Chapter 14, Article 3, Division 1]) promote public health, safety, and general welfare, and minimize public and private losses due to flood conditions. Flood ordinances restrict uses that are dangerous to health, safety, and property due to erosion or water hazards; require uses vulnerable to floods to be protected from flood damage at the time of construction; control the alteration of natural floodplains; control filling, grading, or dredging that may increase flood damage; and prevent construction of flood barriers that divert flood waters or increase flood hazards in other areas. Flood ordinances also include design standards for abutments to prevent collapse or lateral movement during a 100-year flood. Goals of floodplain management and flood ordinances within the San Diego region include:

- Reduce or eliminate existing flood hazards.
- Prevent future flood hazards from developing.
- Reduce the economic losses associated with flooding events.
- Provide for expanded recreational and aesthetic opportunities in the County of San Diego.
- Restore, preserve, and enhance environmental quality wherever possible.
- Improve the quality of life in the San Diego region.

The *County of San Diego General Plan Safety Element* discusses potential risks of flooding, dam failure, safety procedures, involved agencies, and current and future action policies (County of San Diego 2011b). The Safety Element introduces safety considerations for planning and decision-making to reduce the risk of injury, loss of life,

and property damage associated with various hazards identified in the element, including flooding. The Safety Element also proposes policies and recommendations aimed at enhancing public safety through prevention as well as response preparation. The Safety Element provides goals and polices related to emergency response for natural or human-induced disasters in the region.

County of San Diego Local Agency Management Program for On Site Wastewater Treatment Systems

The Local Agency Management Program (LAMP), updated in February 2025, allows the continued use of OWTS in the jurisdiction of the County of San Diego and expands the local program to permit and regulate alternative OWTS while protecting water quality and public health (County of San Diego 2025). The LAMP also applies to OWTS on federal, state, and tribal lands to the extent authorized by law or agreement. The LAMP includes minimum standards for the treatment and ultimate disposal of sewage though the use of OWTS in San Diego County and is designed to protect groundwater sources and surface water bodies from contamination through the proper design, placement, installation, maintenance, and assessment of individual OWTS.

City of San Diego Stormwater Standards Manual

The Stormwater Standards Manual (City of San Diego 2024) provides the requirements for controlling discharges of pollutants in stormwater associated with construction and permanent phases of development project to ensure new development project comply with federal and state permitting. Specifically, the manual provides guidance for complying with, updated on-site post-construction stormwater requirements for Standard Projects and Priority Development Projects (PDPs), and provides updated procedures for planning, preliminary design, selection, and design of permanent stormwater BMPs based on the performance standards presented in the MS4 Permit.

City of San Diego Manual Standard Operating Procedures

The Standard Operating Procedures Administrative Procedures for Floodplain Management and Compliance (City of San Diego 2023) provides the requirements for minimum actions required for the intake, review, acceptance and recordkeeping of all new and substantially improved projects, as well as all repairs due to substantial damage when proposed in a Special Flood Hazard Area (SFHA) and/or near a Levee. All City departments are responsible for coordinating effectively to ensure that all projects comply with the City's municipal code.

4.10.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of Initial Study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan.

Checklist questions for hydrology and water quality impacts are provided in Section X of CEQA Guidelines Appendix G. For purposes of this EIR, the CEQA Guidelines Appendix G, Section X questions have been combined and modified as follows.

- Question (a) regarding water quality standards, waste discharge requirements, and degradation of surface water and groundwater quality; the portion of question (c)(iii) regarding substantial additional sources of polluted runoff; and the portion of question (e) regarding conflicts with implementation of a water quality control plan are all addressed in HWQ-1.
- Question (b) addressing decreases in groundwater supplies and substantial interference with groundwater recharge and the portion of question (e) addressing impediments to sustainable management of groundwater basins and the conflict with or obstruction of implementation of a sustainable groundwater management plan have been incorporated into significance criterion WS-2 in Section 4.18, "Water Supply."

- Question (c), including (c)(i), addressing substantial drainage pattern alterations is included in HWQ-2. The portion of question (c)(iii) regarding the creation or contribution of runoff water in excess of existing or planned stormwater drainage system capacity is addressed in significance criterion U-1 in Section 4.15, "Public Services, Recreation, and Utilities."
- Question (c), including (c)(ii) and (c)(iv), addressing flooding is included in HWQ-3.
- Question (d) addressing risk of pollutant release in a flood hazard, tsunami, or seiche zone is included as HWQ-4.

For purposes of this EIR, implementation of the proposed Plan would have a significant hydrology or water quality impact if it would:

HWQ-1 Substantially degrade surface water or groundwater quality, including in violation of any water quality standards or waste discharge requirements, in conflict with a water quality control plan or its implementation, or as a result of substantially altering the existing drainage pattern of the area in a manner which provides substantial additional sources of polluted runoff.

HWQ-2 Substantially alter the existing drainage pattern of an area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site.

HWQ-3 Substantially alter the existing drainage pattern of an area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would (i) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site or (ii) impede or redirect flood flows.

HWQ-4 Substantially increase risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone.

The analysis discloses potential impacts to hydrology and water quality. There is not enough evidence to support that climate change effects would worsen the proposed Plan's hydrology and water quality impacts, with the exception of flooding. Due to existing laws and regulations, the hydrology and water quality (HWQ-1 and HWQ-2) impacts of the proposed Plan are unlikely to worsen with future climate change. Analysis would be speculative and is not included in this section. However, because there is literature available that suggests the impacts of the proposed Plan on flooding may worsen with climate change, this literature and analysis are discussed in the HWQ-3 and HWQ-4 impact analyses.

4.10.4 Environmental Impacts and Mitigation Measures

HWQ-1 SUBSTANTIALLY DEGRADE SURFACE WATER OR GROUNDWATER QUALITY, INCLUDING IN VIOLATION OF ANY WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS OR IN CONFLICT WITH A WATER QUALITY CONTROL PLAN OR ITS IMPLEMENTATION, OR AS A RESULT OF SUBSTANTIALLY ALTERING THE EXISTING DRAINAGE PATTERN OF THE AREA IN A MANNER WHICH PROVIDES SUBSTANTIAL ADDITIONAL SOURCES OF POLLUTED RUNOFF.

Analysis Methodology

The analysis identifies and maps the existing impaired (i.e., 303[d]-listed) water bodies and the locations where land development from forecasted regional growth and changes to land uses and planned transportation network improvements would occur for each time horizon. The analysis evaluates whether the proposed Plan would result in significant discharges of a pollutant for which a waterbody is already impaired, which could further exacerbate an existing water quality standard violation and result in a significant impact or result in a new discharge that could impair water quality. Construction and operation (i.e., postconstruction) of development projects and transportation network improvements are analyzed to determine whether they would contribute substantial

additional sources of pollutants found in stormwater runoff from these types of projects and improvements, would substantially degrade water quality in violation of any water quality standards or WDRs, or would conflict with or obstruct implementation of a water quality control plan. Projects that comply with the Construction General Permit (2022-0057-DWQ) and local MS4 permit requirements under San Diego Regional Municipal Storm Water Permit (Order R9-2013-0001 [as amended by Order No. R9-2015-0001 and R9-2015-0100]), and implement BMPs to the maximum extent practicable would generally not conflict with or obstruct implementation of the water quality control plan. In addition, the analysis evaluates whether those additional sources of pollutants have the potential to infiltrate into and adversely affect groundwater quality.

The operational analysis of transportation network improvements focuses on improvements that would create new impervious surfaces that would collect pollutants from vehicles, consisting of, but not limited to, new Managed Lanes, general purpose lanes, regional arterial projects, and transit centers with parking areas. Active transportation projects and new transit services or transit service improvements would not be major sources of new pollutants during operation and are not analyzed in detail in this section for operational water quality impacts.

The analysis also considers that construction and postconstruction activities would be required to adhere to various federal, state, and regional water quality standards, such as the Municipal Permit, Industrial General Permit, and Construction General Permit. Therefore, runoff volumes and pollutants leaving sites during construction and postconstruction operations would be substantially reduced through source control, site design, and treatment-control BMPs mandated by these permits. Erosion and sediment controls identified for construction in project-specific SWPPPs would substantially reduce the amount of soil disturbance, erosion and sediment transport into receiving waters, and pollutants in site runoff during construction.

Impacts from the proposed Plan would be considered significant if the proposed Plan contributes substantial additional sources of pollutants leading to water quality standards or waste discharge requirements being violated, conflicts with the water quality control plan, substantially degrades water quality, or provide substantial sources of polluted runoff due to implementation of the forecasted regional growth and land use change and planned transportation network improvements.

Water quality impacts associated with wastewater discharge from wastewater treatment facilities (e.g., Point Loma WWTP and Ocean Outfall, North City WRP, and South Bay WRP) are analyzed. Forecasted regional growth and land use change would generate additional wastewater, which would be treated by regional wastewater treatment facilities. Information from Section 4.15, "Public Services, Recreation, and Utilities," is used to identify planned capacity of wastewater treatment facilities and future expansion needs of the facility. The analysis determines whether additional demand for wastewater treatment from forecasted regional growth and land use change would contribute to violation of water quality standards or WDRs for wastewater treatment facilities. Transportation network improvements and programs would not generate additional demand for wastewater treatment and therefore are not analyzed for a contribution to violation of WDRs for wastewater treatment facilities. Impacts on groundwater quality also are analyzed for forecasted regional growth and land use change in areas without sewer systems that are reliant on septic tanks or other alternative wastewater systems.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Construction activities associated with regional growth and land use change under the proposed Plan would generate pollutants, such as sediment, soil stabilization residues, oil and grease, and trash and debris. Construction-related ground-disturbing activities would result in short-term water quality impacts associated with soil erosion and subsequent sediment transport to adjacent properties or watercourses via storm drains. Development under the proposed Plan would also increase the amount of impervious surface area in the region, such as new buildings and paved areas. The new impervious surface areas would collect common urban pollutants, such as sediment, oil and grease, metals, nutrients, and trash and debris. Development under the proposed Plan would also increase the amount of managed landscaping areas in the region that would provide sources of nutrients, herbicides, and irrigation runoff.

Most development by 2035 would consist of infill development and redevelopment in existing urban and suburban communities that are already highly developed with impervious surfaces. As shown in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Infill and redevelopment would incrementally increase the amount of impervious surface area in existing urban and suburban communities. Conversely, the limited development forecasted on vacant land, open space, and agricultural land would cause greater increases in impervious surfaces (and associated polluted runoff) than infill and redevelopment.

Generally, increases in the amount of impervious surfaces and landscaped areas would result in the accumulation, exposure, and transport of additional pollutants. Runoff during storm events and non-stormwater flows (such as over-irrigation) would transport pollutants through the storm drain system and adversely affect surface and groundwater water quality if not properly managed. Several creeks and coastal lagoons have existing water quality impairments; therefore, any increase in pollutant concentrations from new development would impact water quality, particularly for waterbodies listed as impaired under CWA Section 303(d). However, pollutant types and concentrations in runoff would depend on numerous site- and location-specific factors, consisting of, but not limited to, land use type, presence of source control and structural BMPs, site drainage conditions, intensity and duration of rainfall, and climatic conditions preceding a rainfall event.

Compliance with regional, state, and federal water quality regulations, such as the CWA implemented by Porter-Cologne Act, Water Code Section 13000 et seq.; NPDES regulations; and the Municipal Permit, would ensure that the increased runoff volume and pollutants generated from development are effectively treated. Development associated with forecasted growth and land use change under the proposed Plan would be subject to regulatory requirements that substantially reduce surface water quality impacts during construction and postconstruction. Construction BMPs that reduce erosion and subsequent sediment transport, such as silt fences, fiber rolls, sandbags, berms, and drainage inlet protection, would be implemented during construction activities in compliance with the Construction General Permit. For any ground disturbances greater than 1 acre, a SWPPP would be implemented. The SWPPP would identify sources of pollutants and erosion and the pollution control BMPs that would be implemented during construction to minimize pollutants in stormwater runoff. Implementation of water quality control measures and BMPs would ensure that water quality standards would be achieved, including the WQOs that protect designated beneficial uses of surface and groundwater, as defined in the Basin Plan.

During operation and maintenance of development projects, practices would be implemented to reduce stormwater pollution and prevent water quality degradation as required by applicable regulation, such as the Municipal Stormwater Permit. Development projects would be required to maintain predevelopment hydrology in compliance with enforced hydromodification requirements (Municipal Permit). Postconstruction BMPs would consist of, but are not limited to, the following permanent stabilization designs and stormwater quality treatment measures:

- reestablishment of native vegetation to control erosion
- LID designs that reduce, treat, infiltrate, and manage stormwater runoff and facilitate groundwater recharge (i.e., detention basins, bioretention systems, infiltration areas, porous paving)

- runoff conveyance designs that provide adequate storage capacity and overland flow, detention, and infiltration before runoff reaches culverts or detention systems
- in-line systems such as oil and sediment separators or absorbent filter systems to provide stormwater filtration prior to discharge
- hydromodification measures that ensure post-project stormwater runoff does not exceed the predevelopment flow and duration
- regular street cleaning, litter control, and catch basin cleaning.

Regional growth and land use change associated with the proposed Plan would also contribute additional demand for wastewater treatment in 2035. As a result, wastewater discharges (primarily residential, commercial, and industrial) from regional wastewater treatment plants, such as the Point Loma WWTP and Ocean Outfall, North City WRP, and South Bay WRP) would increase. Treated wastewater from regional wastewater treatment plants are discharged to surface waters, including the Pacific Ocean.

Although population growth would result in an increase in the amount of wastewater generated, especially in the cities of San Marcos and Chula Vista, the existing wastewater treatment plants would have sufficient capacity to serve forecasted growth through 2035 (see Section 4.15). However, smaller treatment plants throughout the region would need to be expanded to ensure they have adequate capacity while also protecting surface, ground, and marine water resources. Development in existing communities would require expansion or upsizing of existing collection and treatment systems, whereas development in new areas would require installation of new collection and treatment systems. Wastewater treatment facility/infrastructure expansions would be required to comply with ongoing point-source discharge NPDES permits, as well as applicable NPDES general permits and assorted local regulations to minimize impacts on receiving waters.

Marine water quality is regularly monitored by the City of San Diego Environmental Monitoring and Technical Services Laboratory to ensure that the wastewater discharge does not negatively affect water quality or harm aquatic health. This monitoring program would continue, relative to new regulatory permit requirements for evaluating and ensuring compliance.

Compliance with applicable regulatory requirements outlined above, including CWA implemented by Porter-Cologne Act, Water Code Section 13000 et seq.; NPDES regulations; the Municipal Permit; and Construction General Permit, and in Section 4.10.2, "Regulatory Setting," would require that predevelopment hydrology be maintained after construction is completed; runoff would be treated to remove or substantially reduce pollutants before discharging to surface waters. For projects that discharge to 303(d)-listed impaired water bodies, mandatory BMPs would be implemented to substantially lessen the quantity of pollutants causing the impairment from leaving the site and entering the impaired water body. Wastewater discharges would be in compliance with applicable NPDES permit requirements. Therefore, regional growth and land use change associated with the proposed Plan would not substantially degrade water quality in violation of water quality standards or WDRs, conflict with a water quality control plan or its implementation, or provide substantial sources of polluted runoff. This impact is less than significant.

Transportation Network Improvements and Programs

Transportation infrastructure would contribute to water quality impacts during construction and operations. Construction activities associated with transportation network improvements would increase erosion and subsequent sediment transport to adjacent properties, roadways, or watercourses via storm drains. Construction activities would also generate pollutants, such as sediment, soil stabilization residues, oil and grease, and trash and debris, that could contaminate runoff or receiving waters. In addition, bridge and roadway modifications across water courses would be required. Construction disturbances and dredging would have an adverse impact on turbidity affecting water quality, particularly for receiving waters listed as impaired for sediment or siltation.

Transportation network improvements under the proposed Plan would also increase the amount of impervious surface area in the region, including new paved areas. New impervious surfaces including freeways, roadways, and parking lots would convey common urban pollutants to landscaped areas. The primary source of water pollution

from transportation infrastructure is vehicles and associated oil and grease, metals, sediment, hydrocarbons, trash and debris accumulated on paved surfaces (EPA 2025). The main pollutants associated with railway are polycyclic aromatic hydrocarbons (PAHs), heavy metals, and herbicides. The main source of PAHs in railway areas is from machine grease, fuel oils and transformers oils, and creosote (railway ties) (Wiłkomirski et al. 2010). Sources of heavy metals include rail material abrasion, fuel combustion in diesel-electric locomotives, trolley wires, and cargo leakage. Runoff during storm events and non-stormwater flows (such as over-irrigation) would transport these pollutants through the local storm drain systems. If not properly managed, pollutants in runoff discharged from local storm drain systems could adversely affect surface water quality (particularly CWA Section 303[d]–impaired water bodies). In general, bicycle improvements and other active transportation projects do not collect the same type of pollutants as transportation facilities used by vehicles, and therefore, runoff from such improvements would not discharge similar vehicle-related pollutants into storm drains and receiving waters.

As shown in Table 4.10-1, a variety of transportation network improvements proposed by 2035 cross 303(d)-listed water bodies. Most improvements would occur in areas that are already highly developed with impervious surfaces. By 2035, most projects that would cross 303(d) waters would either be active transportation projects or local improvements to the regional arterial system, streets, or roads with a more limited potential to introduce large acreages of new impervious surface area. Although these facilities are primarily developed urban areas, they also cross 303(d)-listed waters, including rivers, creeks, and lagoons. Transportation network improvements in semirural and rural areas would result in greater increases in impervious surface area and collection of pollutants relative to existing conditions, which would degrade surface water or groundwater quality, conflict with a water quality control plan or its implementation, or provide substantial sources of polluted runoff.

Table 4.10-1 Planned Transportation Network Improvements Crossing 303(d)-Listed Water Bodies by 2035

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
Bike			
	Bayshore Bikeway Segment 1	San Diego Bay	18070304
	Coastal Rail Trail Encinitas	Cottonwood Creek (San Marcos Creek watershed)	18070303
	Coastal Rail Trail Oceanside	Loma Alta Creek	18070303
		Loma Alta Slough	18070303
	Coastal Rail Trail San Diego: Carmel Valley to Roselle via Sorrento	Los Peñasquitos Creek	18070304
		Soledad Canyon	18070304
	Coastal Rail Trail San Diego: Mission Bay (Clairemont to Tecolote)	Tecolote Creek	18070304
	Coastal Rail Trail: Encinitas to Carlsbad	Batiquitos Lagoon	18070303
	I-15 Bikeway: Camino del Rio South to Rancho Mission Road—off-street	San Diego River (Lower)	18070304
	Inland Rail Trail: Phase 4	Buena Vista Creek	18070303
	Inland Rail Trail: Vista to Oceanside	Loma Alta Creek	18070303
	Pacific Beach to East Mission Bay	Mission Bay (area at mouth of Rose Creek only)	18070304
	San Diego River Trail: Bridge connection (Sefton Field to Mission Valley YMCA)	San Diego River (Lower)	18070304
	San Diego River Trail: Carlton Oaks Segment	Forester Creek	18070304
		San Diego River (Lower)	18070304
	Santee–El Cajon Corridor–Forester Creek Connection	Forester Creek	18070304

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
Highway			
	I-15 Managed Lanes	San Diego River (Lower)	18070304
	I-15/I-805 ML connector	Chollas Creek	18070304
	I-5 Managed Lanes	Paleta Creek	18070304
		Loma Alta Creek	18070303
		San Luis Rey River, Lower (west of I-15)	18070303
	I-5/I-805 ML connector	Los Peñasquitos Creek	18070304
		Soledad Canyon	18070304
	I-805 Managed Lanes	Chollas Creek	18070304
		San Diego River (Lower)	18070304
		Chollas Creek	18070304
	SR 15 Managed Lanes	Chollas Creek	18070304
	SR 52 Managed Lanes	Forester Creek	18070304
		San Diego River (Lower)	18070304
	SR 67	Poway Creek	18070304
		San Diego River (Lower)	18070304
	SR 76	San Luis Rey River, Upper (east of I-15)	18070303
	SR 78 Managed Lanes	Buena Creek	18070303
		Buena Vista Creek	18070303
Rail			
	Blue Line (San Ysidro to UTC)	Chollas Creek	18070304
		Paleta Creek	18070304
		Paradise Creek, HSA 908.320	18070304
		Rose Creek	18070304
		San Diego River (Lower)	18070304
		Sweetwater River, Lower (below Sweetwater Reservoir)	18070304
		Switzer Creek	18070304
		Tecolote Creek	18070304
		Telegraph Canyon Creek	18070304
	Green Line (Santee to Downtown)	Alvarado Creek	18070304
		San Diego River (Lower)	18070304
	Orange Line (El Cajon to Downtown)	Chollas Creek	18070304
		Switzer Creek	18070304
	Regional Rail 398	Batiquitos Lagoon	18070303
		Buena Vista Lagoon	18070303
		Cottonwood Creek (San Marcos Creek watershed)	18070303
		Loma Alta Creek	18070303
		Los Peñasquitos Creek	18070304

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
		Los Peñasquitos Lagoon	18070304
		Rose Creek	18070304
		San Diego River (Lower)	18070304
		San Dieguito River	18070304
		San Elijo Lagoon	18070303
		Soledad Canyon	18070304
		Tecolote Creek	18070304
	Regional Rail 598	Batiquitos Lagoon	18070303
		Buena Vista Lagoon	18070303
		Cottonwood Creek (San Marcos Creek watershed)	18070303
		Loma Alta Creek	18070303
		Loma Alta Slough	18070303
		Los Peñasquitos Creek	18070304
		Los Peñasquitos Lagoon	18070304
		Rose Creek	18070304
		San Diego River (Lower)	18070304
		San Dieguito River	18070304
		San Elijo Lagoon	18070303
		Soledad Canyon	18070304
		Tecolote Creek	18070304
	SPRINTER (Oceanside to Escondido)	Buena Creek	18070303
		Buena Vista Creek	18070303
		Escondido Creek	18070303
		Loma Alta Creek	18070303

Notes: I = Interstate; SR = State Route; ML = Managed Lane; UTC = University Town Center.

Source: SWRCB 2018; adapted by Ascent 2025.

As discussed in the "Regional Growth and Land Use Change" section above, specific regulations, such as the statewide Construction General Permit, are in place to substantially reduce the water quality impacts of construction activities on receiving waters, including 303(d)-listed waters; the Caltrans Statewide Storm Water Program and Management Plan sets forth requirements to substantially reduce or eliminate the discharge of pollutants from construction activities for Caltrans facilities. The need for and design of BMPs would be dictated by the project-related SWPPP and the presence of surrounding sensitive resources. During the SWPPP development process, BMPs would be selected that target the construction-phase pollutant(s) of concern relative to adjacent impaired 303(d)-listed water bodies, and operation-phase BMPs would be evaluated during the development of drainage designs. Construction BMPs aimed at reducing erosion and subsequent sediment transport, such as silt fence or fiber rolls, sandbag barrier, and slope stabilization, would be implemented during construction activities to substantially reduce or eliminate the discharge of pollutants into receiving waters, including 303(d)-listed water bodies. Implementation of BMPs would also ensure that water quality standards would be achieved, including the WQOs that protect designated beneficial uses of surface and groundwater, as defined in the Basin Plan.

During operations and maintenance of transportation network improvement projects, operational BMPs would be implemented and maintained to substantially lessen the flow of stormwater pollutants into receiving waters, including 303(d)-listed water bodies, to prevent substantial water quality degradation in compliance with

applicable stormwater runoff discharge permits (i.e., Municipal Stormwater Permit). Postconstruction BMPs would consider factors such as permanent stabilization of disturbed soil and natural stormwater quality treatment and would include LID, hydromodification measures, and erosion control/revegetation efforts. A statewide permit establishes requirements to substantially reduce or eliminate the discharge of pollutants from Caltrans right-of-way to storm drain systems and receiving waters.

Compliance with applicable regulatory requirements including the Construction General Permit, Caltrans Statewide Storm Water Program and Management Plan, and Municipal Stormwater Permit outlined above and in Section 4.10.2, "Regulatory Setting," would require that predevelopment hydrology be maintained after construction and treatment of runoff to substantially reduce or eliminate the discharge of pollutants to storm drain systems and receiving waters. For projects that discharge to 303(d)-listed impaired water bodies, BMPs would be required that target the removal of the pollutants causing the impairment. Transportation network improvements and programs associated with the proposed Plan would not substantially degrade water quality in violation of applicable water quality standards or WDRs or conflict with a water quality control plan or its implementation. This impact is therefore less than significant.

2035 Conclusion

Implementation of regional growth and land use changes and transportation network improvements associated with the proposed Plan would not substantially degrade water quality in violation of existing standards and WDRs conflict with a water quality control plan or its implementation, or provide substantial sources of polluted runoff because compliance with detailed existing and evolving regulatory requirements would substantially lessen or eliminate the discharge of pollutants into receiving waters, including 303(d)-listed waters, during construction and operations. Therefore, this impact (HWQ-1) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As discussed in the 2035 analysis, construction associated with regional growth and land use change under the proposed Plan would generate pollutants. Construction-related earth-disturbing activities would result in short-term water quality impacts associated with soil erosion and subsequent sediment transport to adjacent properties or watercourses via storm drains. Development under the proposed Plan would also increase the amount of impervious surface area in the region, such as new building rooftops and paved areas. The new impervious surface areas would collect common urban pollutants, such as sediment, oil and grease, metals, nutrients, and trash and debris. Development under the proposed Plan would also increase the amount of managed landscaping areas in the region that would provide a source of nutrients, weed abatement herbicides, and irrigation runoff.

Most development by 2050 would consist of infill development and redevelopment in existing urban and suburban communities that are already highly developed with impervious surfaces. As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Infill and redevelopment would incrementally increase the amount of impervious surface area in existing urban and suburban communities. Conversely, the limited development forecasted on vacant land, open space, and agricultural land would cause greater increases in impervious surfaces (and polluted runoff) than infill and redevelopment.

Increases in the amount of impervious surfaces and landscaped areas would generally result in the accumulation, exposure, and transport of additional pollutants. Runoff during storm events and non-stormwater flows would transport pollutants via storm drain systems and could adversely affect surface water and groundwater quality if not properly managed. Several creeks and coastal lagoons have existing water quality impairments; therefore, any

increase in pollutant concentrations from new development could impact water quality, particularly for waterbodies listed as impaired under CWA Section 303(d). However, pollutant types and concentrations in runoff would depend on numerous site and location-specific factors, as described in the 2035 analysis.

Compliance with regional, state, and federal water quality regulations would ensure that the increased runoff volume and pollutant generation from development are addressed. Development associated with forecasted regional growth and land use change under the proposed Plan would be subject to regulatory requirements that substantially reduce surface water quality impacts during construction and postconstruction. Construction BMPs that reduce erosion and subsequent sediment transport, such as silt fences, fiber rolls, sandbags, gravel bag berm, and drainage inlet protection, would be implemented during construction activities in compliance with the SWPPP and Construction General Permit. Implementation of BMPs would also ensure that water quality standards would be achieved, including the WQOs that protect designated beneficial uses of surface and groundwater, as defined in the Basin Plan.

During operations and maintenance of development projects, postconstruction practices would be implemented and maintained to substantially reduce stormwater pollution and prevent substantial water quality degradation as required by applicable regulations including the Municipal Stormwater Permit. Postconstruction BMPs are listed in the 2035 analysis.

As discussed in the 2035 analysis, regional growth and land use change associated with the proposed Plan would also contribute additional demand for wastewater treatment, which would increase wastewater discharges (i.e., residential, commercial, and industrial) from regional wastewater treatment plants (e.g., Point Loma WWTP and Ocean Outfall, North City WRP, and South Bay WRP). Treated wastewater from regional wastewater treatment plants is discharged to surface waters, including the Pacific Ocean. NPDES permits govern the discharge of water from wastewater treatment plants to surface waters. As discussed earlier, the recent NPDES permit renewal for the Point Loma WWTP under the proposed Pure Water San Diego concept specifies new and improved joint water/wastewater facilities that would divert approximately 83 mgd of wastewater from the plant's wastewater stream in the form of potable reuse water by the end of 2035 (City of San Diego 2022). Although the proposed Pure Water San Diego program calls for new potable water reclamation to reduce capacity concerns, smaller regional collection systems and treatment facilities in areas of increased growth would require expansion to ensure adequate capacity in 2050 (see Section 4.15) while also protecting surface, ground, and marine water resources (i.e., outfall discharge areas). Development in existing communities would require expansion or upsizing of existing collection and treatment systems, whereas development in new areas would require installation of new collection and treatment systems. These wastewater treatment facility/infrastructure expansion actions would be required to comply with evolving point-source-discharge NPDES permits, as well as applicable NPDES general permits and assorted local regulations to minimize impacts on receiving waters. Ongoing marine water quality monitoring programs would ensure water quality is not adversely impacted by wastewater discharges.

Compliance with applicable regulatory requirements outlined above including CWA implemented by Porter-Cologne Act, Water Code Section 13000 et seq.; NPDES regulations; the Municipal Permit; Construction General Permit, and in Section 4.10.2, "Regulatory Setting," would require that predevelopment hydrology be maintained after construction is completed; runoff would be treated to remove or substantially reduce pollutants before discharging to surface waters. For projects that discharge to 303(d)-listed impaired water bodies, mandatory BMPs would be implemented to substantially lessen the quantity of pollutants causing the impairment from leaving the site and entering the impaired water body. Wastewater discharges would be in compliance with applicable NPDES permit requirements. Therefore, regional growth and land use change associated with the proposed Plan would not substantially degrade water quality in violation of water quality standards or WDRs, conflict with a water quality control plan or its implementation. or provide substantial sources of polluted runoff. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. As described in the 2035 analysis, transportation infrastructure contributes to water

quality impacts during construction and operations. Construction activities associated with transportation network improvements would increase erosion and subsequent sediment transport to adjacent properties, roadways, or watercourses via storm drains. Construction activities could also generate pollutants that could contaminate runoff or receiving waters. In addition, bridge and roadway modifications across water courses would be required. Construction disturbances and dredging would have an adverse impact on turbidity, affecting receiving water quality, particularly receiving waters listed as impaired for sediment/siltation.

Transportation network improvements under the proposed Plan would also increase the amount of impervious surface area in the region, such as new paved areas. New impervious surfaces, including freeways, roadways, and parking lots, would convey common urban pollutants to landscaped areas. As described above, primary water pollutants associated with transportation infrastructure include oil and grease, metals, sediment, hydrocarbons, trash and debris, PAHs, heavy metals, and herbicides. Runoff would transport pollutants via local storm drain systems, and if not properly managed, pollutants could adversely affect surface water quality. In general, bicycle improvement projects would not collect the same type of pollutants as transportation facilities used by vehicles. Therefore, runoff from such improvements would not discharge vehicle-related pollutants into storm drains and receiving waters.

As shown in Table 4.10-2, several planned transportation network improvements by 2050, including the addition of Managed Lanes to Interstate (I) 5, I-15, I-805, State Route (SR) 15, SR 78, and SR 94, cross multiple 303(d)-listed water bodies. Most improvements would occur in areas that are already highly developed with impervious surfaces or are improvements to existing facilities such that transportation-related pollutants would discharge into storm drains and receiving waters which could degrade water quality in violation of water quality standards or WDRs, conflict with a water quality control plan or its implementation. or provide substantial sources of polluted runoff. Transportation network improvements by 2050 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, I-15, and I-805, which would also cross 303(d)-listed water bodies. Like the 2035 phase year, a number of active transportation improvements would be located on existing streets in urban areas and along rivers and creeks listed as impaired on the 303(d) list and transportation-related pollutants would discharge into storm drains and receiving waters which could degrade water quality in violation of water quality standards or WDRs, conflict with a water quality control plan or its implementation. or provide substantial sources of polluted runoff.

Compliance with applicable regulatory requirements described in the 2035 analysis and in Section 4.10.2, "Regulatory Setting," would require that predevelopment hydrology be maintained after construction and treatment of runoff to substantially reduce or eliminate the discharge of pollutants to storm drain systems and receiving waters. Although these regulations would evolve and change, compliance would ensure impacts on surface water are less than significant as each project is designed, analyzed, and permitted for construction. For projects that discharge to 303(d)-listed impaired water bodies, BMPs would be required that target the removal of the pollutants causing the impairment. Implementation of BMPs would also ensure that water quality standards would be achieved, including the WQOs that protect designated beneficial uses of surface and groundwater, as defined in the Basin Plan. Transportation network improvements and programs associated with the proposed Plan would not substantially degrade water quality in violation of applicable water quality standards or WDRs, conflict with a water quality control plan or its implementation, or provide substantial sources of polluted runoff. This impact is therefore less than significant.

Table 4.10-2 Planned Transportation Network Improvements Crossing 303(d)-Listed Water Bodies by 2050

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
Bike			
	Camp Pendleton Trail	San Mateo Creek (San Diego County)	18070301
	Bear Valley Bikeway	Kit Carson Creek	18070304
	Chollas Creek Bikeway: North Fork	Chollas Creek	18070304
	Clairemont Mesa to Linda Vista Bikeway	Rose Creek	18070304
	Golden Hill to Fairmount Park	Chollas Creek	18070304

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
	I-15 Bikeway: Murphy Canyon Road to Affinity Court	Carroll Canyon	18070304
		Murphy Canyon	18070304
		Rose Creek	18070304
	I-15 Bikeway: via Rancho Parkway to Citracado Parkway	Kit Carson Creek	18070304
	North Coast Bike Trail	Cottonwood Creek (San Marcos Creek watershed)	18070303
		San Dieguito Lagoon, Lower Basin	18070304
		San Dieguito River	18070304
	San Diego River Bikeway Connections	San Diego River (Lower)	18070304
	San Luis Rey River Trail	Green Canyon Creek	18070303
		Live Oak Creek (San Diego County)	18070303
		San Luis Rey River, Lower (west of I-15)	18070303
	SR 125 Connector: Bonita Road to the United States–Mexico Border	Otay River	18070304
	SR 52 Bikeway: I-5 to Santo Road	Murphy Canyon	18070304
		Rose Creek	18070304
		San Clemente Creek (San Diego County)	18070304
	SR 67 Bikeway – Lakeside to Ramona	Poway Creek	18070304
		San Diego River (Lower)	18070304
	SR 94 multiuse pathway	Mexican Canyon Creek (western tributary to Sweetwater River, Upper)	18070304
		Steele Canyon	18070304
		Sweetwater River, Middle (between Sweetwater and Loveland Reservoirs)	18070304
Highway			
	I-15 Managed Lanes	Murphy Canyon	18070304
		San Diego River (Lower)	18070304
		Shepherd Canyon	18070304
	I-15/I-805 ML connector	Chollas Creek	18070304
	I-15/SR 94 ML connector	Chollas Creek	18070304
	I-5 Managed Lanes	Paleta Creek	18070304
		Loma Alta Creek	18070303
		San Luis Rey River, Lower (west of I-15)	18070303
	I-5/I-805 ML Connector	Los Peñasquitos Creek	18070304
		Soledad Canyon	18070304
	I-805 Managed Lanes	Chollas Creek	18070304
		San Clemente Creek (San Diego County)	18070304
		San Diego River (Lower)	18070304

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
		Chollas Creek	18070304
	SR 15 Managed Lanes	Chollas Creek	18070304
	SR 52 Managed Lanes	Murphy Canyon	18070304
		Forester Creek	18070304
		San Diego River (Lower)	18070304
	SR 67	Poway Creek	18070304
		San Diego River (Lower)	18070304
	SR 76	Gomez Creek	18070303
		Gomez Creek	18070303
		San Luis Rey River, Upper (east of I-15)	18070303
		Pauma Creek	18070303
		San Luis Rey River, Upper (east of I-15)	18070303
	SR 78 Managed Lanes	Agua Hedionda Creek	18070303
		Buena Creek	18070303
		Buena Vista Creek	18070303
		San Marcos Creek, Upper (above San Marcos Lake)	18070303
	SR 79	Santa Ysabel Creek (above Sutherland Reservoir)	18070304
	SR 94	Cottonwood Creek below Barrett Reservoir	18070305
		Dulzura Creek	18070304
		Jamul Creek	18070304
		Olive Vista Creek	18070304
Rail			
	Blue Line (San Ysidro to UTC)	Chollas Creek	18070304
		Paleta Creek	18070304
		Paradise Creek, HSA 908.320	18070304
		Rose Creek	18070304
		San Diego River (Lower)	18070304
		Sweetwater River, Lower (below Sweetwater Reservoir)	18070304
		Switzer Creek	18070304
		Tecolote Creek	18070304
		Telegraph Canyon Creek	18070304
	Green Line (Santee to Downtown)	Alvarado Creek	18070304
		San Diego River (Lower)	18070304
	Light Rail 582	Chollas Creek	18070304
		Paleta Creek	18070304
		Paradise Creek, HSA 908.320	18070304
		San Diego River (Lower)	18070304

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
		Sweetwater River, Lower (below Sweetwater Reservoir)	18070304
		Telegraph Canyon Creek	18070304
	Orange Line (El Cajon to Downtown)	Chollas Creek	18070304
		Switzer Creek	18070304
	Regional Rail 398	Batiquitos Lagoon	18070303
		Buena Vista Lagoon	18070303
		Cottonwood Creek (San Marcos Creek watershed)	18070303
		Loma Alta Creek	18070303
		Los Peñasquitos Creek	18070304
		Los Peñasquitos Lagoon	18070304
		Rose Creek	18070304
		San Diego River (Lower)	18070304
		San Dieguito Lagoon, Lower Basin	18070304
		San Dieguito River	18070304
		San Elijo Lagoon	18070303
		San Luis Rey River, Lower (west of I-15)	18070303
		Soledad Canyon	18070304
		Tecolote Creek	18070304
	Regional Rail 598	Batiquitos Lagoon	18070303
		Buena Vista Lagoon	18070303
		Cottonwood Creek (San Marcos Creek watershed)	18070303
		Loma Alta Creek	18070303
		Loma Alta Slough	18070303
		Los Peñasquitos Creek	18070304
		Los Peñasquitos Lagoon	18070304
		Rose Creek	18070304
		San Diego River (Lower)	18070304
		San Dieguito Lagoon, Lower Basin	18070304
		San Dieguito River	18070304
		San Elijo Lagoon	18070303
		San Luis Rey River, Lower (west of I-15)	18070303
		Soledad Canyon	18070304
		Tecolote Creek	18070304
	SPRINTER (Oceanside to Escondido)	Buena Creek	18070303
		Buena Vista Creek	18070303
		Escondido Creek	18070303

Improvement Type	Project Name	Impaired Waterbody	Hydrologic Unit #
		San Marcos Creek, Upper (above San Marcos Lake)	18070303
	Streetcar	Switzer Creek	18070304

Notes: I = Interstate; SR = State Route; ML = Managed Lane; UTC = University Town Center.

Source: SWRCB 2018; adapted by Ascent 2025.

2050 Conclusion

Implementation of regional growth and land use changes and transportation network improvements associated with the proposed Plan would not substantially degrade water quality in violation of existing standards and WDRs, conflict with a water quality control plan or its implementation, or provide substantial sources of polluted runoff because compliance with detailed existing and evolving regulatory requirements would substantially lessen or eliminate the discharge of pollutants into receiving waters, including 303(d)-listed waters, during construction and operations. Therefore, this impact (HWQ-1) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

HWQ-2 SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERN OF AN AREA, INCLUDING THROUGH THE ALTERATION OF THE COURSE OF A STREAM OR RIVER OR THROUGH THE ADDITION OF IMPERVIOUS SURFACES, IN A MANNER WHICH WOULD RESULT IN SUBSTANTIAL EROSION OR SILTATION ON OR OFF SITE.

Analysis Methodology

Evaluation of potential impacts associated with changes to the existing drainage pattern is based on a review of the proposed Plan in the context of state regulations, such as the Construction General Permit, and local regulations, such as general plans. The analysis examines how implementation of the proposed Plan, including components of the Sustainable Community Strategy (SCS) land use pattern and planned transportation improvements, such as increased impervious surfaces and construction activities associated with future development that would accommodate regional growth, may affect existing hydrology. The implementation of land use changes leading to future development and transportation network improvement projects under the proposed Plan would alter existing topography and drainage patterns and could increase stormwater runoff volume and rates as a result of increased impervious area. Implementation of the proposed Plan would have a significant impact related to alteration of existing drainage patterns if implementation were to substantially increase erosion or siltation on or off site.

Impact Analysis

2035

Regional Growth and Land Use Change

Regional growth and land use change associated with the proposed Plan could alter existing topography, change drainage patterns, increase impervious surface area, add pollutant sources, and reduce natural (i.e., undeveloped) landscape.

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the

region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Most development between 2022 and 2035 would consist of infill development and redevelopment in existing urban and suburban communities that are already highly developed with impervious surfaces. Redevelopment of existing areas or new development would likely require grading or earthwork and alter existing topography, which may increase the propensity for soils to become unstable and cause erosion or siltation on or off future development sites. Infill and redevelopment would incrementally increase the amount of impervious surface area in existing urban and suburban communities. However, development forecasted on vacant land, open space, and agricultural land, mainly in rural areas in San Diego County, would cause greater increases in impervious surfaces than infill and redevelopment, resulting in alterations to existing topography and drainage patterns. Forecasted regional growth and land use change in the coastal areas of the region, including parts of the city of San Diego, would be located on soils that are unstable or that may become unstable, making them more susceptible to erosion as a result of the development. Forecasted regional growth and land use change in the desert portion of the region, including parts of San Diego County and extending into Imperial and Riverside Counties, would be located on undeveloped land with soils susceptible to erosion as a result of the development. In addition, development under the proposed Plan would occur on or adjacent to steep slopes, which would increase erosion and sediment discharge if disturbed slopes are unstable.

Such changes would be closely regulated by the federal, state, and local laws described earlier, including Section 402 of the CWA, the Construction General Permit, and the Municipal Permit. Impacts resulting from construction would be primarily addressed through compliance with the Construction General Permit as discussed in Impact HWQ-1. A SWPPP would be implemented for any ground disturbance greater than 1 acre and would identify the sources of pollutants that may affect the quality of stormwater and would include construction BMPs to control erosion and minimize pollutants (e.g., sedimentation/siltation) in runoff.

Related to alterations to existing topography, development associated with the proposed Plan would be required to adhere to existing laws and regulations, including the design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce erosion or siltation. Specifically, the CBC addresses the design and construction of excavations, foundations, and other building elements to mitigate adverse soil conditions by requiring structures and buildings are built to withstand potential hazards associated with unstable or problematic soils. Compliance with the CBC would minimize risks associated with locating future development on unstable geologic units or soils. See Section 4.7.2 for a description of applicable CBC requirements. Further, site-specific analyses would be required for future development as a result of regional growth. Corrective measures, such as structural reinforcement and using engineered fill to replace unstable and expansive soils, would be applied to the design of individual future projects. All site designs would be reviewed and approved by the appropriate agencies.

During operations and maintenance, development projects would maintain predevelopment hydrology in compliance with current hydromodification requirements of the Municipal Permit. Although these regulations would evolve over time, their intent would remain in effect and serve to mitigate or otherwise control increased stormwater flows and erosion in an effort to maintain predevelopment hydrology. Therefore, any additional runoff volumes and peak flow discharges from impervious areas, such as new building rooftops and paved areas, must be attenuated such that drainage or conveyance capacities are not adversely impacted. As a result, runoff for postconstruction operations would be required to be mitigated and treated through LID, on site design, or off site structural BMPs. Detailed hydrologic and hydraulic calculations for proposed stormwater treatment measures, such as storm drains and for sizing of rock riprap energy dissipaters at storm drains to reduce storm runoff to non-erosive velocities, would be required to comply with the Municipal Permit. LID and incorporation of natural spaces, such as detention basins, infiltration strips, and porous paving, that reduce, infiltrate, and manage stormwater runoff flows would be required for all new developments. These measures would be required to be properly sized and engineered to substantially lessen runoff from development, thereby avoiding substantial erosion or siltation on or off site.

By incorporating these prescriptive design standards (in compliance with regulatory requirements) into development projects associated with regional growth and land use change, surface runoff patterns and erosive flows would be controlled. Through the Municipal Permit requirements to incorporate hydromodification measures, the regional growth and land use changes would maintain predevelopment hydrology. Therefore, development associated with regional growth and land use change would not substantially alter existing drainage patterns such that erosion or siltation on or off site would increase by 2035. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

The proposed transportation network improvements (e.g., highway, arterial, transit, and bicycle) would result in alterations to existing topography and drainage patterns without the incorporation of the appropriate BMPs. By 2035, additional transportation network improvements and programs would be developed, including new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes improvements to rural intersections and interchanges on SR 67, SR 76, and SR 94, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico Border, as well as tolling equipment and regional border management system investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. Some of these improvements and programs may involve major grading or earthwork resulting in alterations to existing topography and temporary changes to existing drainage patterns during construction. Grading and recontouring would be dependent on project alignments, existing topography, and the size/extent of runoff conveyance systems. Although most of the transportation network improvements would occur in already urbanized areas, some improvements, mainly in San Diego County, would occur on vacant land and would cross natural drainage areas. Impacts on both upstream and downstream resources result from increases in impervious areas and the construction of bridge pilings which can alter streams, rivers, and floodways. The introduction of new or expanded bridge pilings can cause scouring and changes in the transportation and deposition of sediment both upstream and downstream. Impervious areas increase stormwater flow volume or velocity, thereby increasing scouring and erosion in channels. As with regional growth and land use changes, the transportation network improvements in place by 2025 that are located in, on, or near hills; coastal areas; canyons; and other places with steep slopes or unstable soils, including parts of the city of San Diego, would increase the potential for erosion.

Caltrans policies related to flooding, require that engineered conveyances (whether hardscaped or soft bottom) integrate energy dissipation protection, streambank erosion protection, bridge pier scour protection, and other suitable design controls to eliminate or substantially reduce erosion and transport of sediment or silt to downstream areas. By incorporating these standard engineering practices and complying with regulatory requirements, such as the Municipal Permit, Construction General Permit, Municipal Stormwater Permit, and the Caltrans NPDES permit, on and off site erosion would be avoided or substantially reduced.

In areas with highly erosive soils, additional site design controls would be used to ensure stabilization under a variety of storm intensities. By incorporating these types of prescriptive design standards in compliance with regulatory requirements such as the Construction General Permit and Industrial General Permit, surface runoff patterns, and erosive flows associated with transportation network improvements would be controlled. Through

the various hydromodification requirements that would be in place, the transportation network improvements would maintain predevelopment hydrology. Therefore, transportation network improvements associated with the proposed Plan would not substantially alter existing drainage patterns such that erosion or siltation would increase by 2035. This impact is less than significant.

2035 Conclusion

Compliance with regulatory requirements and implementation of similar design measures described above and in Section 4.10.2, "Regulatory Setting," would ensure that regional growth and land use changes as well as transportation network improvements associated with the proposed Plan would not substantially alter existing drainage patterns such that erosion or siltation would increase. Through the various requirements to incorporate hydromodification and LID measures, the proposed Plan would maintain predevelopment hydrology, and would reduce, infiltrate, and properly manage stormwater runoff such that alterations to the existing drainage pattern of an area, would not result in substantial erosion or siltation on or off site. Therefore, this impact (HWQ-2) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

Similar to the 2035 analysis, regional growth and development associated with the proposed Plan could alter existing topography, change drainage patterns, increase impervious surface area, add pollutant sources, and reduce natural, undeveloped landscape. Most development by 2050 would consist of infill development and redevelopment in existing urban and suburban communities that are already highly developed with impervious surfaces. Redevelopment of existing areas or new development would likely require grading or earthwork and alter existing topography, which may increase the propensity for soils to become unstable and cause erosion or siltation on or off future development sites. As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Infill and redevelopment would incrementally increase the amount of impervious surface area in existing urban and suburban communities. Conversely, development forecasted on vacant land, open space, and agricultural land, mainly in San Diego County, would cause greater increases in impervious surfaces than infill and redevelopment. Forecasted regional growth and land use change in the coastal areas of the region or near areas with canyons and hills, including parts of the city of San Diego, would result in alterations to existing topography and increase erosion and sediment discharge if disturbed slopes are unstable. However, Plan-related projects would need to comply with a variety of regulatory requirements for controlling erosion, and siltation, as well as design standards and other applicable regulations such as the Construction General Permit, and the Municipal Permit to reduce impacts. development associated with the proposed Plan would be required to adhere to existing laws and regulations, including the design standards described in the CBC and all standard design, grading, and construction practices to avoid or reduce erosion or siltation. Specifically, the CBC addresses the design and construction of excavations, foundations, and other building elements to mitigate adverse soil conditions by requiring structures and buildings are built to withstand potential hazards associated with unstable or problematic soils. Compliance with the CBC would minimize risks associated with locating future development on unstable geologic units or soils. See Section 4.7.2 for a description of applicable CBC requirements. Further, site-specific analyses would be required for future development as a result of regional growth. Corrective measures, such as structural reinforcement and using engineered fill to replace unstable and expansive soils, would be applied to the design of individual future projects. All site designs would be reviewed and approved by the appropriate agencies. Construction impacts would generally be addressed through compliance with the Construction General Permit. For projects disturbing more than 1 acre, a SWPPP and associated BMPs would be implemented to control and minimize runoff.

Operations and maintenance for development projects would be required to comply with hydromodification management requirements identified in the Municipal Permit, which requires the implementation of hydrologic control measures so that post project runoff flow rates and durations do not exceed predevelopment flow rates and durations. Further, the Municipal Permit would require LID, on site design, or off site structural BMPs for future development. These measures would substantially reduce runoff rates and volumes such that impacts associated with erosion would be avoided or minimized.

By incorporating design standards in compliance with regulatory requirements into development projects accommodating regional growth, surface runoff patterns and erosive flows would be controlled. Through the Municipal Permit requirements to incorporate hydromodification measures, future development that would accommodate regional growth would maintain predevelopment hydrology. Therefore, development associated with regional growth and land use change would not substantially alter existing drainage patterns such that erosion and siltation would increase by 2050. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, the proposed transportation network improvements by 2050 would result in alterations to existing topography and drainage patterns without the incorporation of the appropriate BMPs. Transportation facilities that would alter existing drainage patterns include improvements near the coast and improvements to highways that would involve grading. Although most of the transportation network improvements would occur in already urbanized areas, some improvements, mainly in San Diego County, would occur on vacant land, increasing impervious surface areas, stormwater flow volume or velocity, and scouring and erosion in channels. Similar to the 2035 analysis, transportation network improvements would occur in areas with unstable soils, particularly improvements located in hilly or coastal areas such as the Coastal Rail Trail improvements, making these areas more susceptible to erosion. Transportation network improvements in place by 2050 are shown in Figures 2-7 and 2-8. Transportation network improvements and programs proposed under the proposed Plan would be required to conform to and comply with the water quality protection regulations discussed above and, as such, would employ necessary erosion protection and siltation control into their respective designs. Changes to surface runoff patterns, drainage patterns, and flows would be substantially less as a result.

Required design standards (e.g., municipal HMPs, Caltrans, FHWA, and FTA standards) would be implemented to eliminate or substantially reduce increased risk of erosion and siltation. By incorporating design standards in compliance with regulatory requirements, surface runoff patterns, and erosive flows associated with transportation network improvements would be controlled. Through the various hydromodification requirements that would be in place, the transportation network improvements would maintain predevelopment hydrology. Therefore, transportation network improvements associated with the proposed Plan would not substantially alter existing drainage patterns such that erosion and siltation would increase by 2050. This impact is less than significant.

2050 Conclusion

Compliance with regulatory requirements and implementation of similar design measures described above and in Section 4.10.2, "Regulatory Setting," would ensure that regional growth and land use changes as well as transportation network improvements associated with the proposed Plan would not substantially alter existing drainage patterns such that erosion and siltation would increase. Through the various requirements to incorporate hydromodification and LID measures, the proposed Plan would maintain predevelopment hydrology, and would reduce, infiltrate, and properly manage stormwater runoff such that alterations to the existing drainage pattern of an area, would not result in substantial erosion or siltation on or off site. Therefore, this impact (HWQ-2) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

HWQ-3 SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERN OF AN AREA, INCLUDING THROUGH THE ALTERATION OF THE COURSE OF A STREAM OR RIVER OR THROUGH THE ADDITION OF IMPERVIOUS SURFACES, IN A MANNER WHICH WOULD (I) SUBSTANTIALLY INCREASE THE RATE OR AMOUNT OF SURFACE RUNOFF IN A MANNER WHICH WOULD RESULT IN FLOODING ON- OR OFF-SITE OR (II) IMPEDE OR REDIRECT FLOOD FLOWS.

Analysis Methodology

Evaluation of potential impacts associated with changes to the existing drainage pattern potential and flooding impacts is based on a review of the proposed Plan in the context of federal regulations such as FEMA's NFIP; and local regulations such as general plans and the County's Multi-Jurisdictional Hazard Mitigation Plan, and local flood control and stormwater management practices. The analysis examines how implementation of the proposed Plan, including components of the SCS land use pattern and planned transportation improvements, such as increased impervious surfaces, and construction activities, may alter existing drainage patterns that could lead to flooding or impede or redirect flood flows.

Future development associated with the implementation of the SCS land use pattern and transportation network improvement projects under the proposed Plan would alter existing topography and drainage patterns and could increase stormwater runoff volume and rates due to increased impervious area. Land use development generally alters drainage patterns by redistributing runoff that is discharging to waterbodies (hydromodification), whereas linear transportation projects can result in direct modifications to waterbodies through new and modified water crossing structures (e.g., bridges and culverts). Therefore, hydromodification and increased flood risks from modified water crossings or impeded or redirected flood flows under the proposed Plan are qualitatively evaluated in the analysis below. A qualitative analysis of the proposed Plan's ability to maintain predevelopment hydrology, properly minimize and treat project runoff, and incorporate LID site design is provided, and any resulting potential impacts associated with flooding are analyzed. Implementation of the proposed Plan would have a significant impact related to the existing drainage pattern if it were to substantially increase flooding on or off site or cause the impediment or redirection of flood flows. The analysis is based on the most current data and planning tools, including data from FEMA's FIRMs that delineate 100-year flood hazard areas to assist local governments with the land use planning and floodplain management decisions, in accordance with the National Flood Insurance Act, and the County of San Diego's 100-year flood hazard mapping identified in the Multi-Jurisdictional Hazard Mitigation Plan.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. The regional growth pattern in 2035 would result in development within 100-year and 500-year flood hazard zones (see Figure 4.10-3). FEMA prepares FIRMs that delineate floodplains in geographic areas across the nation to assist with appropriate land use planning and floodplain management decisions needed to meet the requirements of the NFIP. In general, the NFIP mandates that development is not to proceed within the 100-year floodplain if development is expected to increase flood

elevation by 1 foot or more. The County of San Diego FMP identifies actions and recommendations for flood risk reduction (County of San Diego 2007). Development that would accommodate growth under the proposed Plan is required to align with the County's hazard MAP as part of compliance with the County of San Diego FMP (County of San Diego 2007). Designing regional growth land use projects to comply with County and city general plan safety elements and flood ordinances would further ensure that development associated with the proposed Plan would be built to minimize flood risk.

As discussed in Impact HWQ-2, development that would accommodate regional growth and land use patterns associated with the proposed Plan would change drainage patterns, increase impervious surface area, and reduce natural (i.e., undeveloped) landscape. Development forecasted on vacant land, open space, and agricultural land, mainly in rural areas in San Diego County, would cause greater increases in impervious surfaces than infill and redevelopment, resulting in alterations to existing drainage patterns, an increase in potential for flooding, and impeded or redirected flood flows.

Potential flooding impacts resulting from construction would be primarily addressed through compliance with the Construction General Permit and the requirement to develop a SWPPP, as discussed in Impact HWQ-1. These regulations would require the implementation of BMPs during construction to minimize runoff from the construction site and reduce the potential for any on or off site flooding. During operations and maintenance, development projects would ensure predevelopment hydrology is maintained in compliance with current hydromodification requirements of the Municipal Permit, as discussed in Impact HWQ-2. Runoff from post construction operations for all new developments would be required to be mitigated and treated through LID, on site design, or off site structural BMPs. LID and incorporation of natural spaces, such as detention basins, infiltration strips, and porous paving that reduce, infiltrate, and manage stormwater runoff flows. These measures would be required to be properly sized and engineered to substantially lessen runoff from development, thereby avoiding adverse hydromodification and flooding impacts. In addition, the contractor would comply with the minimum construction BMPs identified in the regional MS4 permit and implement construction BMPs to manage stormwater run-on and runoff from individual construction sites. Therefore, the proposed Plan would not result in construction impacts that could increase the rate or amount of surface runoff in a manner which would result in flooding on or off site or impede or redirect flood flows by 2035.

To address the alteration of drainage patterns that could affect existing flood risk, compliance with the NPDES MS4 Phase I and Phase II permits requires agencies to implement stormwater management plans. Stormwater management plans require the implementation of site design control measures, which can include conserving natural areas, protecting slopes and channels, minimizing impervious surfaces, the use of vegetated swales and buffers, grass median strips, detention basins, ponds or constructed wetlands, infiltration basins, settlement ponds, or other LID practices and drainage control features such as rain gardens, vegetated rooftops, rain barrels, and permeable pavement. These design practices would help to maximize on site infiltration of runoff, preserve natural drainage flow where appropriate, and control stormwater drainage and runoff flow to minimize potential drainage impacts affecting existing flood risk. Although future development could result in an increased volume of surface water runoff from new impervious surfaces compared to existing conditions, compliance with local, state, and federal regulations would be effective in minimizing impacts related to alteration of drainage.

Land use patterns by 2035 under the proposed Plan to accommodate regional growth would be concentrated in built-out areas where drainage infrastructure already exists. In these areas, increasing intensification of land uses would either be accommodated by existing drainage infrastructure or project applicants would be required to construct infrastructure improvements in accordance with local ordinances within the plan area. Development that would occur in undeveloped and/or vacant areas with no previous infrastructure would be required to comply with NPDES permits, depending on project size; site design control measures and LID practices to address flooding; and local ordinances and regulations regarding on site drainage, stormwater management, and runoff. Compliance with applicable regulations would ensure that drainage would not be altered such that any changes to existing drainage patterns would not increase the rate or amount of surface runoff in a manner which would result in flooding on or off site or impede or redirect flood flows.

By incorporating these prescriptive design standards in compliance with regulatory requirements into development projects associated with regional growth and land use change, surface runoff volumes and flooding would be controlled. Through the requirements to incorporate hydromodification measures as required by the Municipal Permit, the regional growth and land use changes would maintain predevelopment hydrology and would not substantially increase the rate or amount of, or impede or redirect, flood flows. Therefore, development associated with regional growth and land use change would not substantially alter existing drainage patterns such that flooding on or off site would increase by 2035. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

As discussed in Impact HWQ-2, transportation network improvements (e.g., highway, arterial, transit, and bicycle) would result in alterations to drainage patterns without the incorporation of the appropriate BMPs. Some of these improvements and programs may involve major grading or earthwork, resulting in temporary changes to existing drainage patterns during construction. Grading and recontouring would be dependent on project alignments, existing topography, and the size/extent of runoff conveyance systems. Although most of the transportation network improvements would occur in already urbanized areas, some improvements, mainly in San Diego County, would occur on vacant land and would cross natural drainage areas. Impacts on both upstream and downstream resources result from alterations to streams, rivers, and floodways, such as increases in impervious areas and the construction of bridge pilings. Impervious areas increase stormwater flow volume or velocity, thereby increasing the risk of flooding. However, no other structures apart from bridge pilings associated with transportation network improvements are anticipated to be added that could redirect or exacerbate existing flood flows. In addition, the contractor would comply with the minimum construction BMPs identified in the regional MS4 permit and implement construction BMPs to manage stormwater run-on and runoff from individual construction sites. Therefore, transportation network improvements would not result in impacts associated with impeding or redirecting flood flows.

Current design practices are employed in accordance with local HMPs prepared with the purpose of managing increases in runoff discharge rates and durations from specific projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.

Engineering standards exist for properly controlling and conveying surface runoff and surface waters when drainage modifications are necessary for project implementation. Caltrans' drainage designs would conform to the Highway Design Manual (Caltrans 2019), which requires the following design flood criteria:

- Roadway storm drain system and the freeway shoulder must be able to safely drain the 25-year return interval storm.
- Culverts must be designed to convey the 10-year interval storm (without causing the headwater elevation to rise above the inlet top of the culvert) and convey the 100-year interval storm without headwaters rising above an elevation that would cause objectionable backwater depths or outlet velocities.

The County of San Diego requires transportation projects in unincorporated areas to be designed to convey 50-year storm peak runoff volumes within the project drainage system and to be capable of conveying 100-year floodwaters without exceeding curb height or damaging structures along the right-of-way (County of San Diego

2014b). In addition, HMP regulations, as well as the Municipal Permit, require that PDPs maintain predevelopment hydrology. As a result, additional runoff volumes and peak flow discharges from impervious areas, such as freeways, must be attenuated to maintain hydrological conditions and not exceed stormwater conveyance capacities. LID is commonly applied to achieve this requirement. By incorporating these types of prescriptive design standards in compliance with regulatory requirements, surface runoff patterns and flooding associated with transportation network improvements would be controlled. Through the various hydromodification requirements that would be in place, the transportation network improvements would maintain predevelopment hydrology. Therefore, transportation network improvements associated with the proposed Plan would not substantially alter existing drainage patterns or impede or redirect flood flows such that flood risk would increase by 2035. This impact is less than significant.

2035 Conclusion

Compliance with regulatory requirements and implementation of similar design measures, as described above and in Section 4.10.2, "Regulatory Setting," would ensure that regional growth and land use changes, as well as transportation network improvements associated with the proposed Plan would not substantially alter existing drainage patterns or increase the rate or amount of, or impede or redirect flood flows such that flood risk would increase. Through the various requirements to incorporate hydromodification and LID measures, the proposed Plan would maintain predevelopment hydrology and would reduce, infiltrate, and properly manage stormwater runoff. Therefore, this impact (HWQ-3) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Similar to the 2035 analysis, the land use pattern in 2050 would result in development within 100-year and 500-year flood hazard zones (see Figure 4.10-3). Designing regional growth and land use projects to comply with NFIP mandates, the County of San Diego FMP, and County and city general plan safety elements and flood ordinances would minimize flood risk to future development. Compliance with individual requirements or regulatory oversight, approval, or involvement from municipal and county flood control management agencies would further reduce the risk of pollutant release due to project site inundation by restricting uses that are dangerous to health, safety, and property due to erosion or water hazards; require uses vulnerable to floods to be protected from flood damage at the time of construction; control the alteration of natural floodplains; control filling, grading, or dredging that may increase flood damage; and prevent construction of flood barriers that divert flood waters or increase flood hazards in other areas. As described above, the NFIP mandates that development is not to proceed within the 100-year floodplain if development is expected to increase flood elevation by 1 foot or more, which would prohibit new development in areas subject to flooding which could increase the risk of pollutant release due to inundation.

Similar to the 2035 analysis and as discussed in Impact HWQ-2, development that would accommodate regional growth and land use patterns associated with the proposed Plan would change drainage patterns, increase impervious surface area, and reduce natural, undeveloped landscape. Plan-related projects would need to comply with a variety of regulatory requirements for controlling floodwater, as well as design standards and other applicable regulations to reduce flooding impacts. Construction-related flooding impacts would generally be addressed through compliance with the Construction General Permit. For projects disturbing more than 1 acre, a SWPPP and associated BMPs would be implemented to control and minimize runoff, thereby reducing the potential for on or off site flooding or impeded or redirected flood flows.

Operations and maintenance for development projects would be required to maintain predevelopment hydrology in compliance with enforced hydromodification requirements, similar to requirements in the Municipal Permit, which would require LID, on site design, or off site structural BMPs. Through the requirements to incorporate hydromodification measures, the regional growth and land use changes would maintain predevelopment hydrology. Therefore, development associated with regional growth and land use change would not substantially alter existing drainage patterns, or increase the rate or amount of surface runoff in a manner which would result in flooding on or off site or impede or redirect flood flows by 2050. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis and as discussed in Impact HWQ-2, the proposed transportation network improvements by 2050, including the addition of Managed Lanes to Interstate (I) 5, I-15, I-805, State Route (SR) 15, SR 78, and SR 94 would increase impervious surface which could result in alterations to drainage patterns without the incorporation of the appropriate BMPs. Transportation network improvements and programs proposed under the proposed Plan would be required to conform to and comply with water quality protection regulations and, as such, would employ necessary flood control measures into their respective designs. Changes to surface runoff patterns, drainage patterns, and flows would be substantially less as a result. No structures apart from bridge pilings associated with transportation network improvements are anticipated to be added that could redirect or exacerbate existing flood flows. Required design practices (e.g., municipal HMPs, Caltrans standards, FHWA and FTA policies) would be implemented to eliminate or substantially reduce risk of flooding.

By incorporating design standards in compliance with regulatory requirements, surface runoff patterns and flooding associated with transportation network improvements would be controlled. Through the various hydromodification requirements that would be in place, the transportation network improvements would maintain predevelopment hydrology. Therefore, transportation network improvements associated with the proposed Plan would not substantially alter existing drainage patterns, or substantially increase the rate or amount of, or impede or redirect flood flows such that flood risk would increase by 2050. This impact is less than significant.

2050 Conclusion

Compliance with regulatory requirements and implementation of similar design measures, as described above and in Section 4.10.2, "Regulatory Setting," would ensure that regional growth and land use changes, as well as transportation network improvements, associated with the proposed Plan would not substantially alter existing drainage patterns or substantially increase the rate or amount of, impede, or redirect flood flows such that flood risk would increase. Through the various requirements to incorporate hydromodification and LID measures, the proposed Plan would maintain predevelopment hydrology and would reduce, infiltrate, and properly manage stormwater runoff such that on or off site flooding would not occur. Therefore, this impact (HWQ-3) in the year 2050 is less than significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would result in alterations to drainage patterns. However, development and transportation projects as described in the proposed Plan are required to comply with existing and evolving regulatory requirements that control surface runoff patterns and floodwater, as well as design standards (e.g., SWPPP, hydromodification, and LID measures) and other applicable regulations to reduce impacts. The proposed Plan's drainage impacts would be worsened by climate change; however, regularly updated flood mapping, regulations (e.g., NPDES), and design standards are increasingly stringent and are expected to mitigate runoff.

MITIGATION MEASURES

No mitigation measures are required for this impact.

HWQ-4 SUBSTANTIALLY INCREASE RISK OF POLLUTANT RELEASE DUE TO INUNDATION OF A FLOOD HAZARD, TSUNAMI, OR SEICHE ZONE.

Analysis Methodology

This section analyzes whether areas where growth would occur and land use change and transportation network improvements that occur near the San Diego region's coastline would be subjected to hazards resulting from flooding, tsunamis, or seiches. In addition, this section analyzes whether inland areas where growth would occur and land use change and transportation network improvements that occur near surface water resources, such as streams and rivers, would be subject to flooding. Flooding, tsunami, and seiche hazard areas identified in local general plans or other data sources are referenced to determine whether any forecasted regional growth and land use change or planned transportation network improvements or programs under the proposed Plan would occur in the hazard areas identified.

Hazard areas associated with seiches include large enclosed or partially enclosed water bodies, such as reservoirs, coastal bays, and lakes. Tsunami hazard areas occur along the coastline; however, some areas are protected by the coastal formations and offshore islands. In addition, surface water streams and rivers are also subject to flooding and inundation. Where land use changes or planned transportation network improvements may occur in flood, tsunami or seiche zones, appropriate precautions, design standards, and other methods to protect the public and structures are referenced and discussed. Implementation of the proposed Plan would have a significant impact related to flooding, tsunami, and seiche hazard areas if forecasted regional growth and land use change or planned transportation network improvements under the proposed Plan would occur in areas with the potential for flooding or inundation conditions, resulting in an increased risk of pollutants being released due to inundation.

Seiches and tsunamis are rare events that are typically caused by geologic factors such as earthquakes. A new project that might result in the risk of pollutant release due to inundation would likely be limited to an industrial project that uses significant amounts of chemicals in industrial processes or stores chemical outdoors that could be washed away in the event of flooding from tsunami or seiche. This section evaluates the potential for future development that would accommodate regional growth that could be inundated by flooding and pose a risk of release of pollutants.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, approximately 93.3% of the forecasted regional population increase between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Development with project footprints that lie in low elevations directly adjacent to the coast would be susceptible to tsunami, including coastal areas in the cities of San Diego and Chula Vista. Tsunami inundation areas occur along the entire coastline from the California-Mexico border to north of Oceanside (California Department of Conservation 2025). However, as described in Section 4.10.1, "Existing Conditions," the risk of tsunamis in the San Diego region is low. In 92 years of record, 19 measurable tsunamis have been recorded in the San Diego region, with most only a few tenths of a meter high (Agnew 1979). There is no historical precedent for large damaging seiches in the San Diego region; therefore, the risk of seiches affecting development associated with regional growth would be expected to be low.

Although the risk of tsunami and seiche and the associated risk of pollution release are considered low in the San Diego region, development under the proposed Plan would occur in areas subject to these hazards. Regional growth in 2035 would result in development within 100-year and 500-year flood hazard zones (see Figure 4.10-3). Designing regional growth and land use projects to comply with NFIP mandates, the County of San Diego FMP, and County and City general plan safety elements and flood ordinances would minimize flood risk to development associated

with the proposed Plan. As described above, the NFIP mandates that development is not to proceed within the 100-year floodplain if development is expected to increase flood elevation by 1 foot or more, which would prohibit new development in areas subject to flooding which could increase the risk of pollutant release due to inundation.

Development projects associated with regional growth in the Plan area would also be subject to the requirements of applicable municipal and county flood control management regulations and plans such as the County of San Diego FMP, and local floodplain management ordinances (e.g., the County of San Diego Flood Damage Prevention Ordinance, the City of San Diego floodplain ordinance [Chapter 14, Article 3, Division 1]). Compliance with individual requirements or regulatory oversight, approval, or involvement from municipal and county flood control management agencies would further reduce the risk of pollutant release due to project site inundation by restricting uses that are dangerous to health, safety, and property due to erosion or water hazards; require uses vulnerable to floods to be protected from flood damage at the time of construction; control the alteration of natural floodplains; control filling, grading, or dredging that may increase flood damage; and prevent construction of flood barriers that divert flood waters or increase flood hazards in other areas.

The risk of release of pollutants is related to local seismic conditions and potential flooding that could occur. As described in Section 4.9, "Hazards and Hazardous Materials," development that occurs in the Plan area could include a range of type and intensity of pollutants during construction and operation. The use and storage of these pollutants is regulated to minimize the potential for accidental release. State and local regulations are also in place that require flood protection. Prior to flood events, measures such as sandbag barriers and gravel bag berms would be implemented and maintained to reduce the risk of pollutant release. As a result, there is not a substantial risk of pollutant release due to project inundation.

Compliance with enforced planning and design standards, regulations, and safety ordinances would serve to address and minimize the release of pollutants due to inundation in a flood hazard, tsunami, or seiche zone. Planning and design of development projects would be required to comply with safety policies in the County of San Diego General Plan Safety Element to reduce the risk associated with flooding hazards, such as Policy S-9.3, which requires development within mapped flood hazard areas be sited and designed to minimize on and off-site hazards to health, safety, and property due to flooding, and Policy S-9.6, which prohibits development in dam inundation areas. State planning and zoning law requires that all city and county general plans contain a safety element that identifies and appraises hazards including the effects of seismically induced waves, such as tsunamis and seiches. The County of San Diego General Plan Safety Element policies S-9.3 and S-9.6 reduce the risk of flooding hazards by requiring development within mapped flood hazard areas to be sited and designed to minimize on and off-site hazards (County of San Diego 2011b).

The portions of the regional growth and land use development pattern associated with the proposed Plan that are located within the existing floodplains, including the cities of San Diego and Chula Vista and San Diego County, would be impacted by a 100-year flood if appropriate design measures are not incorporated. Table 4.10-3 shows the land use types in each municipality in the San Diego region that encroach upon the 100-year floodplain for 2035.

Table 4.10-3 2035 Land Use Types in the 100-Year Floodplain

Land Use Type	Municipality
Airstrip	County of San Diego
Arterial commercial	Carlsbad, Chula Vista, Coronado, El Cajon, Encinitas, Escondido, Imperial Beach, Lemon Grove, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee, Solana Beach, Vista
Automobile dealership	Chula Vista, El Cajon, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos
Bay or lagoon	Carlsbad, Chula Vista, Coronado, Del Mar, Encinitas, Imperial Beach, National City, Oceanside, County of San Diego, San Diego, Solana Beach
Beach—active	Carlsbad, Coronado, Encinitas, Oceanside, County of San Diego, San Diego
Beach—passive	Carlsbad, Coronado, Del Mar, Encinitas, Oceanside, County of San Diego, San Diego
Casino	County of San Diego

Land Use Type	Municipality
Cemetery	County of San Diego, San Diego
Commercial under construction	Encinitas, San Diego, Santee
Communications and utilities	Carlsbad, Chula Vista, Coronado, Del Mar, Escondido, National City, Oceanside, County of San Diego, San Diego, San Marcos, Vista
Community shopping center	Carlsbad, Chula Vista, El Cajon, Encinitas, Escondido, National City, Oceanside, County of San Diego, San Diego, San Marcos, Santee, Vista
Convention center	San Diego
Dormitory	San Diego
Elementary school	Chula Vista, Escondido, National City, Oceanside, Poway, County of San Diego, San Diego, Santee, Vista
Extractive industry	Chula Vista, Coronado, National City, Poway, County of San Diego, San Diego
Field crops	Carlsbad, Encinitas, Escondido, Oceanside, Poway, County of San Diego, San Diego, San Marcos
Fire or police station	Chula Vista, Escondido, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Vista
Freeway	Carlsbad, Chula Vista, El Cajon, Encinitas, Escondido, La Mesa, Lemon Grove, National City, Oceanside, County of San Diego, San Diego, San Marcos, Santee, Vista
General aviation airport	El Cajon, Oceanside, County of San Diego
Golf course	Carlsbad, Chula Vista, Coronado, Escondido, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee
Golf course clubhouse	Chula Vista, National City, County of San Diego, San Diego
Government office or civic center	Coronado, Poway, County of San Diego, San Diego
Group quarters	San Marcos
Heavy industry	San Diego
Hospital—general	San Diego
Hotel or motel (high rise)	San Diego
Hotel or motel (low rise)	Carlsbad, Chula Vista, Del Mar, El Cajon, La Mesa, National City, Oceanside, County of San Diego, San Diego, San Marcos
Industrial park	Carlsbad, Chula Vista, El Cajon, Oceanside, County of San Diego, San Diego, San Marcos, Santee, Vista
Industrial under construction	Chula Vista, County of San Diego, San Diego
Intensive agriculture	Carlsbad, Encinitas, Oceanside, Poway, County of San Diego, San Diego, Vista
Jail or prison	County of San Diego, Santee
Junior college	Encinitas, Escondido, San Diego
Junior high school or middle school	Carlsbad, El Cajon, Escondido, Oceanside, San Diego, Vista
Junkyard, dump, or landfill	Chula Vista, County of San Diego, San Diego
Lake, reservoir, or large pond	Chula Vista, Escondido, National City, Oceanside, Poway, County of San Diego, San Diego, Santee
Landscape open space	Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee, Solana Beach, Vista
Library	National City, Poway, County of San Diego
Light industry—general	Chula Vista, Del Mar, El Cajon, Lemon Grove, National City, Oceanside, County of San Diego, San Diego, Santee, Vista
Marina	Chula Vista, Coronado, National City, Oceanside, San Diego
Marine terminal	National City, San Diego

Land Use Type	Municipality
Military training	County of San Diego, San Diego
Military use	Coronado, County of San Diego, Imperial Beach, National City, San Diego
Mission	Oceanside, County of San Diego, San Diego
Mixed use	Del Mar, Escondido, Imperial Beach, National City, Oceanside, Poway, San Diego, San Marcos, Vista
Mobile home park	Carlsbad, Chula Vista, County of San Diego, El Cajon, Escondido, La Mesa, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Multifamily—residential	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Escondido, Imperial Beach, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Multifamily—residential without units	County of San Diego Escondido, National City, San Diego
Neighborhood shopping center	Carlsbad, Chula Vista, County of San Diego, Encinitas, Escondido, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Office (low rise)	Carlsbad, Chula Vista, County of San Diego, El Cajon, Encinitas, Escondido, La Mesa, Lemon Grove, National City, Poway, San Diego, San Marcos, Solana Beach, Vista
Open space park or preserve	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Orchard or vineyard	County of San Diego, Oceanside, San Diego
Other group quarters facility	Carlsbad, County of San Diego, El Cajon, Escondido, Oceanside, San Diego, San Marcos, Santee, Vista
Other health care	Chula Vista, County of San Diego, Del Mar, Escondido, San Diego, Vista
Other public services	Carlsbad, Chula Vista, County of San Diego, El Cajon, Escondido, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Other recreation—high	Carlsbad, Chula Vista, County of San Diego, El Cajon, Encinitas, National City, Poway, San Diego, San Marcos, Santee, Vista
Other recreation—low	County of San Diego, San Diego, Vista
Other retail trade and strip commercial	Carlsbad, Chula Vista, Coronado, County of San Diego, El Cajon, Escondido, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Other school	Carlsbad, County of San Diego, Escondido, National City, Oceanside, Poway, San Diego, San Marcos
Other transportation	Carlsbad, Chula Vista, County of San Diego, Del Mar, Imperial Beach, National City, Poway, San Diego
Other university or college	San Diego
Park—active	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Escondido, Imperial Beach, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Park & Ride lot	Chula Vista
Parking lot—structure	San Diego
Parking lot—surface	Chula Vista, Coronado, County of San Diego, National City, Oceanside, San Diego, San Marcos, Vista
Post office	County of San Diego, El Cajon, Escondido, Oceanside, San Diego
Public storage	Chula Vista, County of San Diego, El Cajon, Escondido, Oceanside, San Diego, San Marcos, Vista
Racetrack	County of San Diego, Del Mar
Rail station or transit center	County of San Diego, La Mesa, Oceanside, San Diego
Railroad right-of-way	Carlsbad, Chula Vista, County of San Diego, Del Mar, El Cajon, Encinitas, National City, Oceanside, San Diego, San Marcos, Solana Beach, Vista
Regional shopping center	Carlsbad, County of San Diego, Escondido, National City, Oceanside, San Diego
Religious facility	Chula Vista, County of San Diego, Escondido, Oceanside, Poway, San Diego, San Marcos, Santee, Vista

Land Use Type	Municipality
Residential recreation	Carlsbad, Chula Vista, Coronado, County of San Diego, Escondido, National City, Oceanside, San Diego, Santee, Vista
Residential under construction	Chula Vista, County of San Diego, Escondido, San Diego
Resort	Carlsbad, Coronado, County of San Diego, Oceanside, San Diego, Solana Beach
Road right-of-way	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Road under construction	San Diego
School district office	County of San Diego, Escondido, San Marcos
SDSU, CSU San Marcos, or UC San Diego	San Diego
Senior high school	Carlsbad, Chula Vista, County of San Diego, El Cajon, Escondido, Oceanside, San Diego, San Marcos, Santee
Service station	Carlsbad, Chula Vista, El Cajon, Encinitas, Escondido, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Single family—detached	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Single family—multiple units	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Single family—residential	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, Encinitas, Escondido, Oceanside, Poway, San Diego, Solana Beach, Vista
Single family–residential without units	Carlsbad, Coronado, County of San Diego, Del Mar, Encinitas, Escondido, Oceanside, Poway, San Diego, San Marcos, Solana Beach, Vista
Single room occupancy units (SROs)	San Diego
Spaced rural residential	Carlsbad, Chula Vista, County of San Diego, Del Mar, Encinitas, Escondido, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Specialty commercial	County of San Diego, San Diego
Stadium or arena	San Diego
Tourist attraction	County of San Diego, San Diego
UC San Diego hospital, VA hospital, or Balboa Hospital	San Diego
Undevelopable natural area	Coronado, County of San Diego, El Cajon, Escondido, National City, Oceanside, San Diego, Santee
Vacant and undeveloped land	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, Lemon Grove, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee, Vista
Warehousing	Chula Vista, County of San Diego, Del Mar, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos
Water	County of San Diego, Imperial Beach, Vista
Wholesale trade	Chula Vista, County of San Diego, Poway, San Diego, San Marcos

Source: FEMA 2025.

Compliance with local floodplain management ordinances (e.g., County of San Diego Flood Damage Prevention Ordinance, the City of San Diego floodplain ordinance [Chapter 14, Article 3, Division 1]) and water quality requirements (e.g., regional waste discharge requirements) would be required for all development projects to minimize flood hazards and associated risk of release of pollutants. Flood ordinances include requirements for reducing flood losses, including restricting uses that are dangerous to health, safety, and property due to erosion or water hazards; requiring uses vulnerable to floods to be protected from flood damage at the time of construction; controlling the alteration of natural floodplains; controlling filling, grading, or dredging that may increase flood damage; and preventing construction of flood barriers that will divert flood waters or increase flood hazards in other areas. Flood ordinances also include design standards for abutments to prevent collapse or lateral movement during a 100-year flood.

Development under the proposed Plan would occur in areas subject to inundation hazards from failure of a dam or levee, including coastal areas in the city of San Diego and areas downstream of Lake Murray, Sweetwater Reservoir, and Lower Otay Lake, as depicted in Figure 2-4 which shows the proposed 2035 SCS land use pattern. Planning and design of development projects would be required to comply with Policy S-9.6 of the County of San Diego General Plan Safety Element, which prohibits development in dam inundation areas to reduce the risk of damage associated with dam or levee failure.

Project designs and review approvals would include reference to the Safety Element, California Department of Conservation maps showing tsunami inundation areas, FEMA maps, and other pertinent resources to determine at-risk areas such that proposed projects in coastal and rough terrain areas are designed for safety. By complying with all applicable regulations and safety ordinances outlined above and in Section 4.10.2, "Regulatory Setting," storm flows would be controlled, substantially reducing flood hazards. Through the various requirements to incorporate floodplain management, safety ordinances, and siting requirements to restrict development in areas prone to flooding, the risk of pollutant release due to inundation by flood hazard, tsunami, or seiche would be minimized. Therefore, the regional growth and land use change would not substantially increase the risk of pollutant release due to inundation in a flood hazard, tsunami, or seiche zone. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to regional growth and land use changes, the transportation network improvements in place by 2035 would be located in or near coastal areas. Proposed improvements that lie in low elevations directly adjacent to the coast would be susceptible to tsunami, including coastal areas in the city of San Diego. However, the risk of tsunamis in the San Diego region is low. There is no historical precedent for large damaging seiches in the San Diego region; therefore, the risk of seiches and associated risk of pollutant release affecting transportation network improvements would be low.

Although the risk of tsunami and seiche and the associated risk of pollution release are low in the San Diego region, transportation improvements under the proposed Plan would occur in areas potentially subject to these hazards. Transportation network improvements within 100-year flood hazard areas, including mostly local roadway and arterial improvements, would be exposed to flood hazards. Table 4.10-4 shows the transportation network improvements planned for 2035 that would encroach upon 100-year floodplains.

Designing regional growth and land use projects to comply with NFIP mandates, the County of San Diego FMP, and County and City general plan safety elements and flood ordinances would minimize flood risk to

transportation improvements associated with the proposed Plan. Compliance with individual requirements or regulatory oversight, approval, or involvement from municipal and county flood control management agencies would further reduce the risk of pollutant release due to project site inundation by restricting uses that are dangerous to health, safety, and property due to erosion or water hazards; require uses vulnerable to floods to be protected from flood damage at the time of construction; control the alteration of natural floodplains; control filling, grading, or dredging that may increase flood damage; and prevent construction of flood barriers that divert flood waters or increase flood hazards in other areas. As described above, the NFIP mandates that development is not to proceed within the 100-year floodplain if development is expected to increase flood elevation by 1 foot or more, which would prohibit new development in areas subject to flooding which could increase the risk of pollutant release due to inundation.

Caltrans policies related to flooding require that engineered conveyances (whether hardscaped or soft bottom) integrate energy dissipation protection, streambank erosion protection, bridge pier scour protection, and other suitable design controls to eliminate or substantially reduce erosion and transport of sediment or silt to downstream areas. By incorporating these standard engineering practices flooding that could result in the release of pollutants as a result of inundation would be avoided or substantially reduced. Compliance with local floodplain management ordinances (e.g., County of San Diego Flood Damage Prevention Ordinance, the City of San Diego floodplain ordinance [Chapter 14, Article 3, Division 1]) would be required for all transportation network improvement projects to minimize impacts associated with flooding. Flood ordinances would include requirements for reducing flood hazards, including restricting uses that are dangerous to health, safety, and property due to erosion or water hazards; requiring uses vulnerable to floods and associated pollutant release to be protected from flood damage at the time of construction; controlling the alteration of natural floodplains; controlling filling, grading, or dredging that may increase flood damage and adverse water quality impacts; and preventing construction of flood barriers that will divert flood waters or increase flood hazards and the risk of conveyance of pollutants to other areas. Flood ordinances also include design standards for abutments to prevent collapse or lateral movement during a 100-year flood.

The risk of release of pollutants is related to local seismic conditions and potential flooding that could occur. As described in Section 4.9, "Hazards and Hazardous Materials," transportation improvements that would occur in the plan area could involve the use of pollutants during construction and operation. The use and storage of these pollutants is regulated to minimize the potential for accidental release. Local regulations, including floodplain management ordinances (e.g., County of San Diego Flood Damage Prevention Ordinance, the City of San Diego floodplain ordinance [Chapter 14, Article 3, Division 1]) are also in place that require flood protection to minimize impacts associated with flooding. Prior to flood events, measures such as sandbag barriers and gravel bag berms would be implemented and maintained to reduce the risk of pollutant release. As a result, there is not a substantial risk of pollutant release due to project inundation.

Table 4.10-4 2035 Transportation Network Improvements in the 100-Year Floodplain

Improvement Type	Improvement
Bike	Bayshore Bikeway Segment 1
Bike	Bayshore Bikeway: Barrio Logan Segment (Beardsley Street to Park Boulevard)
Bike	Bayshore Bikeway: Segment 8B—Palomar Street to Main Street
Bike	Coastal Rail Trail Del Mar
Bike	Coastal Rail Trail Oceanside
Bike	Coastal Rail Trail San Diego: Carmel Valley to Roselle via Sorrento
Bike	Coastal Rail Trail San Diego: Del Mar to Sorrento via Carmel Valley
Bike	Coastal Rail Trail San Diego: Mission Bay (Clairemont to Tecolote)
Bike	Coastal Rail Trail San Diego: UTC to Rose Canyon
Bike	Coastal Rail Trail: Carlsbad

Improvement Type	Improvement
Bike	Coastal Rail Trail: Encinitas to Carlsbad
Bike	I-15 Bikeway: Camino del Rio South to Rancho Mission Road: Off-Street
Bike	I-805 Multiuse path bridge Main Street to Palm Avenue
Bike	Inland Rail Trail: Phase 4
Bike	Inland Rail Trail: Vista to Oceanside
Bike	Ocean Beach to Mission Bay
Bike	Pacific Beach to East Mission Bay
Bike	San Diego River Trail: bridge connection (Sefton Field to Mission Valley YMCA)
Bike	San Diego River Trail: I-805 to Fenton Parkway
Bike	San Diego River Trail: Mast Park to Lakeside Baseball Park
Bike	San Diego River Trail: Carlton Oaks Segment
Bike	Santee–El Cajon Corridor–Forester Creek Connection
Bike	SR 67 Bikeway: Lakeside to Ramona
Highway	I-15 Managed Lanes
Highway	I-5 Managed Lanes
Highway	I-5/I-805 ML connector
Highway	I-5/SR 78 ML connector
Highway	I-805 Managed Lanes
Highway	SR 15 Managed Lanes
Highway	SR 52 operational improvements
Highway	SR 67
Highway	SR 76
Highway	SR 78 Managed Lanes
Highway	SR 94/SR 125 interchange/arterial improvements
Rail	Blue Line (San Ysidro to UTC)
Rail	Green Line (Santee to Downtown)
Rail	Orange Line (El Cajon to Downtown)
Rail	Regional Rail 398
Rail	Regional Rail 598
Rail	SPRINTER (Oceanside to Escondido)

Notes: I = Interstate; SR = State Route; ML = Managed Lane; UTC = University Town Center.

Source: FEMA 2025.

Transportation network improvements under the proposed Plan would also occur in areas subject to inundation hazards from failure of a dam or levee. Though more dams exist in the region, these areas are large reservoirs that would produce large volumes of water if a dam were to fail. Cal OES dam inundation maps and LFPZ maps would be reviewed for all projects associated with transportation network improvements of the proposed Plan to determine the extent of inundation for at-risk areas in the event of a dam or levee failure, in compliance with Policy S-9.6 of the County of San Diego General Plan Safety Element, which prohibits development in dam inundation areas to reduce the risk of damage associated with dam or levee failure. Planning and design of transportation network improvements would be required to comply with Policy S-9.6 of the County of San Diego

General Plan Safety Element, which prohibits development in dam inundation areas to reduce the risk of dam or levee failure hazards and associated pollutant release.

By incorporating the required design standards and complying with all applicable regulations and ordinances outlined above and in Section 4.10.2, "Regulatory Setting," impacts associated with release of pollutants due to inundation of a flood hazard, tsunami, or seiche zone would be minimized. Through the various requirements to incorporate floodplain management, safety ordinances, and siting requirements to prohibit development in areas prone to flooding, runoff would be controlled, flooding hazards would be substantially reduced, and the risks associated with tsunami and seiche hazards would be minimized. Safety policies from the Safety Element, such as the County of San Diego Safety Element policies discussed above, would reduce the risk of property damage associated with tsunami and seiche hazards. Therefore, the transportation network improvements would not substantially increase the risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone. This impact is less than significant.

2035 Conclusion

Compliance with applicable regulatory requirements and implementation of design measures, safety ordinances and policies, and hazardous materials storage requirements described above and in Section 4.10.2, "Regulatory Setting," would ensure that regional growth and land use changes, as well as transportation network improvements, would minimize the release of pollutants due inundation of a flood hazard, tsunami, or seiche zone. Through the various requirements to incorporate floodplain management, safety ordinances, and siting requirements to prohibit development in areas prone to flooding, the proposed Plan would not substantially increase the risk of pollutant release due to inundation in a flood hazard, tsunami, or seiche zone. Therefore, this impact (HWQ-4) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Project footprints that lie in low elevations directly adjacent to the coast would be susceptible to tsunami, including coastal areas within the cities of San Diego and Chula Vista; however, the risk of tsunamis in the San Diego region is low. There is no historical precedent for large damaging seiches in the San Diego region; therefore, the risk of seiches affecting regional growth and land use change development would be low.

Although the risk of tsunami and seiche and the associated risk of pollution release are considered low in the San Diego region, development under the proposed Plan would occur in areas subject to these hazards, such as the cities of San Diego and Chula Vista. Regional growth in 2050 would result in development within 100-year and 500-year flood hazard zones (see Figure 4.10-3). Designing regional growth land use projects to comply with NFIP mandates, the County of San Diego FMP, and County and City general plan safety elements and flood ordinances would minimize flood risk to development associated with the proposed Plan. As described above, the NFIP mandates that development is not to proceed within the 100-year floodplain if development is expected to increase flood elevation by 1 foot or more, which would prohibit new development in areas subject to flooding which could increase the risk of pollutant release due to inundation.

Development projects associated with regional growth in the Plan area would also be subject to the requirements of applicable municipal and county flood control management regulations and plans such as the County of San Diego FMP, and local floodplain management ordinances (e.g., the County of San Diego Flood Damage Prevention Ordinance, the City of San Diego floodplain ordinance [Chapter 14, Article 3, Division 1]). Compliance

with individual requirements or regulatory oversight, approval, or involvement from municipal and county flood control management agencies would further reduce the risk of pollutant release due to project site inundation.

The risk of release of pollutants is related to local seismic conditions and potential flooding that could occur. As described in Section 4.9, "Hazards and Hazardous Materials," development that occurs in the Plan area could include a range of type and intensity of pollutants during construction and operation. The use and storage of these pollutants is regulated to minimize the potential for accidental release. State and local regulations are also in place that require flood protection. Prior to flood events, measures such as sandbag barriers and gravel bag berms would be implemented and maintained to reduce the risk of pollutant release. As a result, there is not a substantial risk of pollutant release due to project inundation.

Compliance with enforced planning and design standards, regulations, and safety ordinances would serve to address and minimize the release of pollutants due to inundation in a flood hazard, tsunami, or seiche zone. Planning and design of development projects would be required to incorporate safety policies such as County of San Diego General Plan Safety Element Policy S-9.3, which requires development within mapped flood hazard areas be sited and designed to minimize on and off-site hazards to health, safety, and property due to flooding, and Policy S-9.6, which prohibits development in dam inundation areas to reduce the risk associated with flooding hazards. State planning and zoning law requires a safety element (City of San Diego 2015) in all city and county general plans that identifies and appraises hazards including the effects of seismically induced waves, such as tsunamis and seiches. The County of San Diego General Plan Safety Element policies S-9.3 and S-9.6 reduce the risk of flooding hazards by requiring development within mapped flood hazard areas to be sited and designed to minimize on and off-site hazards.

The regional growth and land use changes associated with the proposed Plan that are located in the existing floodplains, including the cities of San Diego and Chula Vista and San Diego County, would be impacted by a 100-year flood if appropriate design measures are not incorporated. Refer to Table 4.10-5 for the proposed changes in land use types that encroach upon the 100-year floodplain through 2050. However, as discussed in the 2035 analysis, compliance with local floodplain management ordinances (e.g., County of San Diego Flood Damage Prevention Ordinance, the City of San Diego floodplain ordinance [Chapter 14, Article 3, Division 1]) and water quality requirements (e.g., regional waste discharge requirements) would be required for all development projects to minimize hazards due to flood conditions and associated risk of release of pollutants. Planning and design of development projects would also be required to incorporate Policy S-9.6 of the County of San Diego General Plan Safety Element, which prohibits development in dam inundation areas to reduce the risk of damage associated with dam or levee failure.

By complying with all applicable regulations and ordinances outlined above and in Section 4.10.2, "Regulatory Setting," storm flows would be controlled, and flooding hazards would be substantially reduced. Through the various requirements to incorporate floodplain management, safety ordinances, and siting requirements to prohibit development in areas prone to flooding, the risk of pollutant release due to inundation by flood hazard, tsunami, or seiche would be minimized. Therefore, the regional growth and land use change would not substantially increase the risk of pollutant release due to inundation in a flood hazard, tsunami, or seiche zone. This impact is less than significant.

Table 4.10-5 2050 Land Use Types in the 100-Year Floodplain

Land Use Type	Municipality
Airstrip	County of San Diego
Arterial commercial	Carlsbad, Chula Vista, Coronado, El Cajon, Encinitas, Escondido, Imperial Beach, Lemon Grove, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee, Solana Beach, Vista
Automobile dealership	Chula Vista, El Cajon, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Vista
Bay or lagoon	Carlsbad, Chula Vista, Coronado, Del Mar, Encinitas, Imperial Beach, National City, Oceanside, County of San Diego, San Diego, Solana Beach

Land Use Type	Municipality
Beach—active	Carlsbad, Coronado, Encinitas, Oceanside, County of San Diego, San Diego
Beach—passive	Carlsbad, Coronado, Del Mar, Encinitas, Oceanside, County of San Diego, San Diego
Casino	County of San Diego
Cemetery	County of San Diego, San Diego
Commercial under construction	Encinitas, San Diego, Santee
Communications and utilities	Carlsbad, Chula Vista, Coronado, Del Mar, Escondido, National City, Oceanside, County of San Diego, San Diego, San Marcos, Vista
Community shopping center	Carlsbad, Chula Vista, El Cajon, Encinitas, Escondido, La Mes, National City, Oceanside, County of San Diego, San Diego, San Marcos, Santee, Vista
Convention center	San Diego
Dormitory	San Diego
Elementary school	Chula Vista, Escondido, National City, Oceanside, Poway, County of San Diego, San Diego, Santee, Vista
Extractive industry	Chula Vista, Coronado, National City, Poway, County of San Diego, San Diego
Field crops	Carlsbad, Encinitas, Escondido, Oceanside, Poway, County of San Diego, San Diego, San Marcos
Fire or police station	Chula Vista, Escondido, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Vista
Freeway	Carlsbad, Chula Vista, El Cajon, Encinitas, Escondido, La Mesa, Lemon Grove, National City, Oceanside, County of San Diego, San Diego, San Marcos, Santee, Vista
General aviation airport	El Cajon, Oceanside, County of San Diego
Golf course	Carlsbad, Chula Vista, Coronado, Escondido, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee
Golf course clubhouse	Chula Vista, National City, County of San Diego, San Diego
Government office or civic center	Coronado, Poway, County of San Diego, San Diego
Group quarters	San Marcos
Heavy industry	San Diego
Hospital—general	San Diego
Hotel or motel (high rise)	San Diego
Hotel or motel (low rise)	Carlsbad, Chula Vista, Del Mar, El Cajon, La Mesa, National City, Oceanside, County of San Diego, San Diego, San Marcos
Industrial park	Carlsbad, Chula Vista, El Cajon, Oceanside, County of San Diego, San Diego, San Marcos, Santee, Vista
Industrial under construction	Chula Vista
Intensive agriculture	Carlsbad, Encinitas, Oceanside, Poway, County of San Diego, San Diego
Jail or prison	County of San Diego, Santee
Junior college	Encinitas, Escondido, San Diego
Junior high school or middle school	Carlsbad, El Cajon, Escondido, Oceanside, San Diego, Vista
Junkyard, dump, or landfill	Chula Vista, County of San Diego, San Diego
Lake, reservoir, or large pond	Chula Vista, Escondido, National City, Oceanside, Poway, County of San Diego, San Diego, Santee
Landscape open space	Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee, Solana Beach, Vista
Library	National City, Poway, County of San Diego

Land Use Type	Municipality
Light industry—general	Chula Vista, Del Mar, El Cajon, Lemon Grove, National City, Oceanside, County of San Diego, San Diego, San Marcos, Santee, Vista
Marina	Chula Vista, Coronado, National City, Oceanside, San Diego
Marine terminal	National City, San Diego
Military training	County of San Diego, San Diego
Military use	Coronado, County of San Diego, Imperial Beach, National City, San Diego
Mission	Oceanside, County of San Diego, San Diego
Mixed use	Chula Vista, Coronado, Del Mar, El Cajon, Escondido, Imperial Beach, National City, Oceanside, Poway, San Diego, San Marcos, Vista
Mobile home park	Carlsbad, Chula Vista, County of San Diego, El Cajon, Escondido, La Mesa, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Multifamily—residential	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Escondido, Imperial Beach, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Multifamily—residential without units	County of San Diego Escondido, National City, San Diego
Neighborhood shopping center	Carlsbad, Chula Vista, County of San Diego, Encinitas, Escondido, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Office (low rise)	Carlsbad, Chula Vista, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, La Mesa, Lemon Grove, National City, Poway, San Diego, San Marcos, Solana Beach, Vista
Open space park or preserve	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, Encinitas, Escondido, Imperial Beach, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Orchard or vineyard	County of San Diego, Oceanside, San Diego
Other group quarters facility	Carlsbad, County of San Diego, El Cajon, Escondido, Oceanside, San Diego, San Marcos, Santee, Vista
Other health care	Chula Vista, County of San Diego, Del Mar, Escondido, San Diego, Vista
Other public services	Carlsbad, Chula Vista, County of San Diego, El Cajon, Escondido, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Other recreation—high	Carlsbad, Chula Vista, County of San Diego, El Cajon, Encinitas, National City, Poway, San Diego, San Marcos, Vista
Other recreation—low	County of San Diego, San Diego, Vista
Other retail trade and strip commercial	Carlsbad, Chula Vista, Coronado, County of San Diego, El Cajon, Escondido, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Other school	Carlsbad, County of San Diego, Escondido, National City, Oceanside, Poway, San Diego, San Marcos
Other transportation	Carlsbad, County of San Diego, Del Mar, Imperial Beach, National City, Poway, San Diego
Other university or college	San Diego
Park—active	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Escondido, Imperial Beach, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Parking lot—surface	Chula Vista, Coronado, County of San Diego, National City, Oceanside, San Diego, San Marcos, Vista
Post office	El Cajon, Escondido, Oceanside, San Diego
Public storage	Chula Vista, County of San Diego, El Cajon, Escondido, Oceanside, San Diego, San Marcos, Vista
Public or semipublic	San Marcos

Land Use Type	Municipality
Racetrack	County of San Diego, Del Mar
Rail station or transit center	County of San Diego, La Mesa, Oceanside, San Diego
Railroad right-of-way	Carlsbad, Chula Vista, County of San Diego, Del Mar, El Cajon, Encinitas, La Mesa, National City, Oceanside, San Diego, San Marcos, Solana Beach, Vista
Regional shopping center	Carlsbad, Escondido, National City, Oceanside, San Diego
Religious facility	Chula Vista, County of San Diego, Escondido, Oceanside, Poway, San Diego, San Marcos, Santee, Vista
Residential recreation	Carlsbad, Chula Vista, Coronado, County of San Diego, Escondido, National City, Oceanside, San Diego, Santee, Vista
Residential under construction	Chula Vista, County of San Diego, Escondido, San Diego
Resort	Carlsbad, Coronado, County of San Diego, Oceanside, San Diego, Solana Beach
Road right-of-way	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Road under construction	San Diego
School district office	County of San Diego, Escondido, San Marcos
SDSU, CSU San Marcos, UC San Diego	San Diego
Senior high school	Carlsbad, Chula Vista, County of San Diego, El Cajon, Escondido, Oceanside, San Diego, San Marcos, Santee
Service station	Carlsbad, Chula Vista, El Cajon, Encinitas, Escondido, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Single family—detached	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Single family—multiple units	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista
Single family—residential	County of San Diego, Oceanside
Single family—residential without units	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, Encinitas, Escondido, Oceanside, Poway, San Diego, Solana Beach, Vista
Single room occupancy units (SROs)	San Diego
Spaced rural residential	Carlsbad, Chula Vista, County of San Diego, Del Mar, Encinitas, Escondido, Poway, San Diego, San Marcos, Santee, Vista
Specialty commercial	County of San Diego, Oceanside, San Diego
Stadium or arena	San Diego
Tourist attraction	County of San Diego, San Diego
UC San Diego hospital, VA hospital, or Balboa Hospital	San Diego
Undevelopable natural area	Coronado, County of San Diego, El Cajon, Escondido, National City, Oceanside, San Diego, Santee
Vacant and undeveloped land	Carlsbad, Chula Vista, Coronado, County of San Diego, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, National City, Oceanside, Poway, County of San Diego, San Diego, San Marcos, Santee, Vista

Land Use Type	Municipality
Warehousing	Chula Vista, County of San Diego, Del Mar, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos
Water	County of San Diego, Imperial Beach, Vista
Wholesale trade	Chula Vista, County of San Diego, Poway, San Diego, San Marcos

Source: FEMA 2025.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to regional growth and land use change, the transportation network improvements in place by 2050 would be located in or near coastal areas. Proposed improvements that lie in low elevations directly adjacent to the coast would be susceptible to tsunami, including coastal areas in the city of San Diego; however, the risk of tsunamis in the San Diego region is low. There is no historical precedence for large damaging seiches in the San Diego region; therefore, the risk of seiches and associated risk of pollutant release affecting transportation network improvements would be low.

Although the risk of tsunami and seiche and the associated risk of pollution release are low in the San Diego region, transportation improvements under the proposed Plan would occur in areas potentially subject to these hazards.

Transportation network improvements within 100-year flood hazard areas, including Managed Lanes and Managed Lane connectors, would be exposed to flood hazards without the appropriate design measures. Table 4.10-6 shows the transportation network improvements planned for 2050 that would encroach upon the 100-year floodplain. Caltrans policies related to flooding require that engineered conveyances (whether hardscaped or soft bottom) integrate energy dissipation protection, streambank erosion protection, bridge pier scour protection, and other suitable design controls to eliminate or substantially reduce erosion and transport of sediment or silt to downstream areas. By incorporating these standard engineering practices flooding that could result in the release of pollutants as a result of inundation would be avoided or substantially reduced. By incorporating the required design standards and complying with all applicable regulations and ordinances outlined above and in Section 4.10.2, "Regulatory Setting," impacts associated with release of pollutants due to inundation of a flood hazard, tsunami, or seiche zone would be minimized. Through the various requirements to incorporate floodplain management, safety ordinances and policies, flooding hazards would be substantially reduced, and the risks associated with tsunami and seiche hazards would be minimized. Therefore, the transportation network improvements would not substantially increase the risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone. This impact is less than significant.

Table 4.10-6 2050 Transportation Network Improvements in the 100-Year Floodplain

Improvement Type	Improvement
Bike	Bear Valley Bikeway
Bike	Chollas Creek Bikeway: North Fork
Bike	Clairemont Mesa to Linda Vista Bikeway
Bike	Golden Hill to Fairmount Park
Bike	I-15 Bikeway: Murphy Canyon Road to Affinity Court
Bike	I-15 Bikeway: Poway Road interchange to Carmel Mountain Road
Bike	I-15 Bikeway: Via Rancho Parkway to Citracado Parkway

Improvement Type	Improvement
Bike	I-805 connector: Bonita Road to Floyd Avenue
Bike	I-805 connector: Bonita Road to H Street
Bike	Midway to Pacific Beach Bikeway
Bike	North Coast Bike Trail
Bike	North County Inland Bikeway: El Camino Real
Bike	Pacific Highway Coastal Rail Trail airport connections (PACTAC)
Bike	San Diego River Bikeway connections
Bike	San Luis Rey River Trail
Bike	Saturn Boulevard Bikeway
Bike	SR 125 Connector: Bonita Road to United States–Mexico Border
Bike	SR 52 Bikeway: I-5 to Santo Road
Bike	SR 94 multiuse pathway
Highway	I-15 Managed Lanes
Highway	I-5 Managed Lanes
Highway	I-5/I-805 ML connector
Highway	I-5/SR 78 ML connector
Highway	I-8 operational improvements
Highway	I-805 Managed Lanes
Highway	I-805/SR 163 ML connector
Highway	SR 15 Managed Lanes
Highway	SR 52 Managed Lanes
Highway	SR 52 operational improvements
Highway	SR 56 Managed Lanes
Highway	SR 67
Highway	SR 76
Highway	SR 78
Highway	SR 78 Managed Lanes
Highway	SR 79
Highway	SR 94
Highway	SR 94/SR 125 interchange/arterial improvements
Rail	Blue Line (San Ysidro to UTC)
Rail	Green Line (Santee to Downtown)
Rail	Light Rail 582
Rail	Orange Line (El Cajon to Downtown)
Rail	Regional Rail 398
Rail	Regional Rail 598
Rail	SPRINTER (Oceanside to Escondido)

Notes: I = Interstate; SR = State Route; ML = Managed Lane; UTC = University Town Center.

Source: FEMA 2025.

2050 Conclusion

Compliance with applicable regulatory requirements and implementation of design measures, safety ordinances and policies, and hazardous materials storage requirements described above and in Section 4.10.2, "Regulatory Setting," would ensure that regional growth and land use changes, as well as transportation network improvements, would minimize the release of pollutants due inundation of a flood hazard, tsunami, or seiche zone. Through the various requirements to incorporate floodplain management, safety ordinances, and siting requirements to prohibit development in areas prone to flooding, the proposed Plan would not substantially increase the risk of pollutant release due to inundation in a flood hazard, tsunami, or seiche zone. Therefore, this impact (HWQ-4) in the year 2050 is less than significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would result in risk of pollution from inundation in flood hazard, tsunami, and seiche zones. Climate change is increasing the risk of inundation especially in established flood hazard zones. Chollas, Mission Valley, Sorrento Valley and the Tijuana River Valley in the City of San Diego as well as Oceanside, San Marcos, Escondido, and Encinitas have been identified as the most flood-prone areas (City of San Diego n.d.-b). Parts of El Cajon, Santee, and Poway have been designated as floodplains (Caoile 2024). As stormwater travels, it collects trash, bacteria, and toxic pollutants such as detergents, fertilizers, pesticides, motor oil, heavy materials, and pet waste and distributes that into the region's water bodies. Pollution from these hazards can be minimized if development and transportation projects implemented by the proposed Plan remain in compliance with applicable regulatory requirements design measures, safety ordinances, and water quality requirements. The proposed Plan's inundation risks would be worsened by climate change; however, regulatory requirements, design measures, safety ordinances, and water quality requirements would reduce risks.

MITIGATION MEASURES

No mitigation measures are required for this impact.

4.10.5 Cumulative Impacts Analysis

C-HWQ-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO HYDROLOGY AND WATER QUALITY

The area of geographic consideration for cumulative impacts on hydrology and water quality is the Southern California and Northern Baja California region. The analysis of cumulative hydrology and water quality impacts considers how land use change and the transportation system would impact hydrology and water quality across the Southern California and Northern Baja region as a whole because the majority of water bodies in the San Diego area are part of hydrologic systems located across multiple jurisdictions. As a result, water pollution or alterations to a portion of a watershed produced by urban development in one jurisdiction can result in hydrology and water quality impacts that affect other jurisdictions or the entire region.

A projection approach for hydrology and water quality cumulative analysis allows for an overarching discussion of regional and cross-border impacts throughout multiple watersheds associated with general patterns of regional urbanization, growth, and land use changes while also allowing for specific consideration of any projects with known impacts to hydrology and water quality. Cumulative impacts on hydrology and water quality are evaluated in two steps. First, the combined effects of the proposed Plan, adopted plans, and probable future projects are considered to determine whether their impacts are collectively (i.e., cumulatively) significant. If the cumulative impact is significant, the proposed Plan's incremental contribution is then assessed to determine whether it is cumulatively considerable, which would be considered a significant cumulative impact associated with the Plan. Specifically, significant cumulative impacts related to hydrology and water quality would occur if the Plan would result in a considerable contribution to a cumulatively significant degradation of water quality in violation of any water quality standards or waste discharge requirements or substantial increased sources of polluted runoff;

substantial reduction in groundwater quantity or quality; substantial alteration of the existing drainage pattern of an area such that flood risk, erosion, or siltation would increase; exposure of people, structures, or facilities to a significant risk involving flooding; or exposure of people or structures to a significant risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone.

Impacts of the Proposed Plan

Compliance with existing regulatory requirements described in Section 4.10.2, "Regulatory Setting," would ensure that the regional growth and land use change and the transportation network improvements would not result in: substantial degradation of water quality in violation of any water quality standards or waste discharge requirements, or substantial increased sources of polluted runoff; substantial reduction in groundwater quantity or quality; substantial alteration of the existing drainage pattern of an area such that flood risk, erosion, or siltation would increase; exposure of people, structures, or facilities to a significant risk involving flooding; or exposure of people or structures to a significant risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone. These impacts would be less than significant in 2035 and 2050 (Impact HWQ-1 through HWQ-4).

Impacts of Related Projects

Projects planned in the Southern California region, such as the Navy OTC Revitalization Project, San Diego International Airport (SDIA) Airport Development Plan, California High-Speed Rail Train, Midway Rising Specific Plan, and City of San Diego Pure Water North City, would involve ground-disturbing activities that could result in impacts related to water quality and changes to drainage. Other land development and infrastructure projects throughout the region, such as transportation infrastructure, energy generation and transmission corridors, and commercial and residential land development, would also result in impacts if these projects were not in compliance with federal, state, and local water quality requirements, such as the CWA implemented by Porter-Cologne Act; Water Code Section 13000 et seq.; NPDES regulations; and the Municipal Permit.

Impacts of Projections in Adopted Plans

The Southern California Association of Governments 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (2024-2050 RTP/SCS) EIR identified the potential to violate water quality standards associated with wastewater and storm water permits. The EIR also concluded that the 2024-2050 RTP/SCS would alter the existing drainage patterns in ways that would result in substantial erosion or siltation. Implementation was found to also reduce groundwater infiltration due to increased impervious surfaces and increase flooding hazards by locating projects on alluvial fans and in 100-year flood hazard areas. These water quality and hydrology impacts would be significant and unavoidable, even with the implementation of proposed mitigation (SCAG 2024).

The 2019 IRWM Plan was prepared by the San Diego Regional Water Management Group, which consists of the San Diego County Water Authority (SDCWA), the City of San Diego, and the County of San Diego. IRWM planning is a relatively new California initiative with regional plans designed to improve collaboration in water resources management and comprehensively address all aspects of water management and planning throughout an IRWM region. IRWM plans cross jurisdictional and watershed boundaries; involve multiple agencies, stakeholders, individuals, and groups; and attempt to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions. Specific to water quality, the IRWM includes Objective H to effectively reduce sources of pollutants and environmental stressors to protect and enhance human health, safety, and the environment (Regional Water Management Group 2018).

Water quality control plans or basin plans have been written by each RWQCB. These plans determine the beneficial uses of each water body in the basin and set forth narrative and numerical WQOs for constituents that could have a substantial impact related to those beneficial uses. They also describe implementation programs to protect the beneficial uses of all water in the region, and surveillance and monitoring activities to evaluate the effectiveness of the basin plan. For example, the San Diego Basin Plan includes multiple policies specific to the protection of water quality, including Policy Three, "Point sources and nonpoint sources of pollution shall be

controlled to protect designated beneficial uses of water," and Policy Four, "Instream beneficial uses shall be maintained, and when practical, restored, and enhanced" (San Diego RWQCB 2021).

Adopted land use plans for local jurisdictions in Southern California would support the construction of new development and redevelopment through policy changes, general plan updates, and zoning amendments that encourage and facilitate population growth and land use changes. These development projects would impact hydrology and water quality. The severity of these impacts would be determined by location of the projects within the watersheds, and the sensitivity of the receiving bodies and the types of BMPs employed. All US projects would be required to adhere to all of the regulatory requirements described in Section 4.10.2, "Regulatory Setting." Projects associated with policy changes and amendments would also impact hydrology and water quality for the same reasons as discussed with infrastructure projects.

Waste discharges into some receiving waters from Northern Baja California would ultimately enter the Tijuana River and the Pacific Ocean where the waste would impact beaches in the southern part of the San Diego region. The Tijuana River is a 303(d)-listed water body for various impairments. The Tijuana River Estuary, a National Estuarine Sanctuary, supports a variety of threatened and endangered plants and animals and is 303(d)-listed for eutrophic conditions, indicator bacteria, lead, low dissolved, oxygen, nickel, pesticides, thallium, trash, toxicity, and turbidity (San Diego RWQCB 2021). Discharges from Northern Baja, which are not controlled by regional regulations, would impact these water bodies within the region.

Some of the plans considered in the cumulative analysis include the Water Quality Control Plans for the five basins in the greater region: San Diego Basin, Colorado River Basin, Santa Ana Basin, Los Angeles Basin, and the Lahontan Basin (San Diego RWQCB 2021; CRB RWQCB 2024; Santa Ana RWQCB 1995; LA RWQCB 1994; Lahontan RWQCB 2021). These basin plans set forth WQOs for constituents that could have a significant impact related to the beneficial uses of water. Although these documents do not have accompanying environmental analysis, they provide important overarching strategies, future planning considerations, and planned large projects related to water quality and hydrology throughout the region.

Cumulative Impacts and Impact Conclusions

2035

Substantial Degradation of Surface or Groundwater Quality Plans

As described above, compliance with federal, state, and local water quality requirements, such as the CWA implemented by Porter-Cologne Act, Water Code Section 13000 et seq.; NPDES regulations; and the Municipal Permit, would ensure that implementation of the proposed Plan would not result in a substantial degradation of water quality in violation of any water quality standards or waste discharge requirements. When the proposed Plan's impact are added to impacts related to surface or groundwater quality in water sources originating in the United States cumulative impacts would be less than significant due to federal and state regulatory requirements also applicable to development throughout the region for the protection of WQOs. WQOs would protect beneficial uses throughout Southern California and ensure effectiveness of regulations pertaining to water quality and hydrologic modifications.

However, contributions to cumulative water quality impacts occur in part because polluted water from Northern Baja California, which is not subject to federal and state regulatory requirements, discharges into the Tijuana River and affects receiving waters throughout the region. Although impacts exist due to unregulated polluted water that enters the region, the proposed Plan would not add to this water quality impact to produce a significant cumulative water quality impact for the reasons outlined above, including adherence to federal and state regulatory requirements.

Thus, cumulative water quality impacts would not be significant, and the proposed Plan's contribution to the cumulative water quality impact would not be cumulatively considerable in 2035.

Drainage and Release of Pollutants in Flood or Seiche Zones

As described above, in 2035, implementation of the proposed Plan would not result in ; substantial alteration of the existing drainage pattern of an area such that flood risk, erosion, or siltation would increase; would not expose e people, structures, or facilities to a significant risk involving flooding; and would not exposure of people or structures to a significant risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone. When the proposed Plan's impact is added to impacts related to substantial alteration of the existing drainage pattern of an area such that flood risk, erosion, or siltation within the Southern California and Northern Baja California region, cumulative impacts would be less than significant due to federal and state regulatory requirements, such as flood ordinances and the Municipal permit also applicable to development throughout the region for the protection of water quality from pollutants. Therefore, the proposed Plan would not result in a cumulatively considerable contribution to a cumulative impact related to adverse hydrological effects caused by depletion of groundwater, changes in drainage patterns, or the release of pollutants in flood or seiche zones.

2050

Substantial Degradation of Surface or Groundwater Quality Plans

As described above, compliance with federal, state, and local water quality requirements such as the CWA implemented by Porter-Cologne Act, Water Code Section 13000 et seq.; NPDES regulations; and the Municipal Permit, would ensure that implementation of the proposed Plan would not result in a result in a substantial degradation of water quality in violation of any water quality standards or waste discharge requirements. When the proposed Plan's impact are added to impacts related to surface or groundwater quality in water sources originating in the United States cumulative impacts would be less than significant due to federal and state regulatory requirements also applicable to development throughout the region for the protection of WQOs to protect beneficial uses throughout Southern California, and the effectiveness of regulations pertaining to water quality and hydrologic modifications.

However, contributions to cumulative water quality impacts occur in part because polluted water from Northern Baja California, which is not subject to federal and state regulatory requirements, discharges into the Tijuana River and affects receiving waters throughout the region. Although impacts exist due to unregulated polluted water that enters the region, the proposed Plan would not add to this water quality impact to produce a significant cumulative water quality impact for the reasons outlined above, including adherence to federal and state regulatory requirements. Thus, cumulative water quality impacts would not be significant, and the proposed Plan's contribution to the cumulative water quality impact would not be cumulatively considerable in 2050.

Drainage and Release of Pollutants in Flood or Seiche Zones

As described above, in 2050, implementation of the proposed Plan would not result in substantial alteration of the existing drainage pattern of an area such that flood risk, erosion, or siltation would increase; would not expose people, structures, or facilities to a significant risk involving flooding; and would not exposure of people or structures to a significant risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone. When the proposed Plan's impact is added to impacts related to substantial alteration of the existing drainage pattern of an area such that flood risk, erosion, or siltation within the Southern California and Northern Baja California region, cumulative impacts would be less than significant due to federal and state regulatory requirements, such as flood ordinances and the Municipal permit also applicable to development throughout the region for the protection of water quality from pollutants. Therefore, the proposed Plan would not result in a cumulatively considerable contribution to a cumulative impact related to adverse hydrological effects caused by depletion of groundwater, changes in drainage patterns, or the release of pollutants in flood or seiche zones.

MITIGATION MEASURES

No mitigation measures are required.

4.11 LAND USE AND PLANNING

This section evaluates the land use and planning impacts of the proposed Plan.

4.11.1 Existing Conditions

REGIONAL SETTING

Historical Land Use and Regional Growth Patterns

The San Diego region is located in the southwestern corner of the United States and is bordered by Mexico to the south, the Pacific Ocean to the west, Orange and Riverside counties to the north, and Imperial County to the east. The San Diego region encompasses over 4,260 square miles and includes 18 incorporated cities, 17 tribal governments, and unincorporated San Diego County.

Existing Land Use

There are 2,725,648 acres in the San Diego region. Approximately 799,266 acres (30%) are developed by various land uses including residential, commercial/office, and industrial or generally support human activities, such as agriculture, military use, recreation, and infrastructure (transportation, communication, utilities) (SANDAG 2021a). Open space parks account for the largest land area, with 1,374,188 acres, or about 50% of the region. Vacant land (524,010 acres) accounts for another 19%, while the remaining approximately 1% of the land area is covered by water (28,184). Table 4.11-1 breaks down the entire San Diego region by land use type for 2022. The 2022 land use pattern is shown in Figure 4.11-1.

Table 4.11-1 Existing Land Use in the San Diego Region (2022)

Land Use Type	Acres
Agriculture	110,103
Commercial and office	20,142
Education and institutions	24,302
Heavy and light industry	18,734
Military	93,286
Mixed use	223
Mobile homes	5,896
Multifamily residential	16,637
Open space parks	1,374,188
Recreation	38,946
Single-family residential	143,477
Spaced rural residential	213,476
Transportation, communications, utilities	111,564
Under construction	2,482
Vacant	524,010
Water	28,184
Total	**2,725,648**

Notes:
[1] Total is 2 acres less than the sum of each land use listed in the table, due to the rounding of acreages for each land use type.

Source: SANDAG 2025.

Regional Growth Pattern for Local Jurisdictions

The western portion of the region consists of all 18 of the region's incorporated cities and military lands. As of 2022, development in this area consisted primarily of single-family residential development interspersed with open space parks and recreation land. Most of the region's multifamily residential, commercial and office, and industrial land uses also are found in the western third of the region. The eastern portion of the region is in the jurisdiction of the unincorporated county as well as 17 tribal governments. This area is predominantly characterized by open space and parks, but also the tribal reservations, vacant land, rural residential land, agriculture, and small pockets of single-family residential. Development in the eastern two-thirds is generally rural and low-density relative to the higher density urban development of the western third. Over the last decade, many local jurisdictions have updated their land use plans and zoning ordinances, which collectively moved the region's vision of the future toward more compact development near transit with greater open space preservation. Focusing on housing and job centers in existing urbanized areas has replaced previous assumptions of more dispersed development patterns.

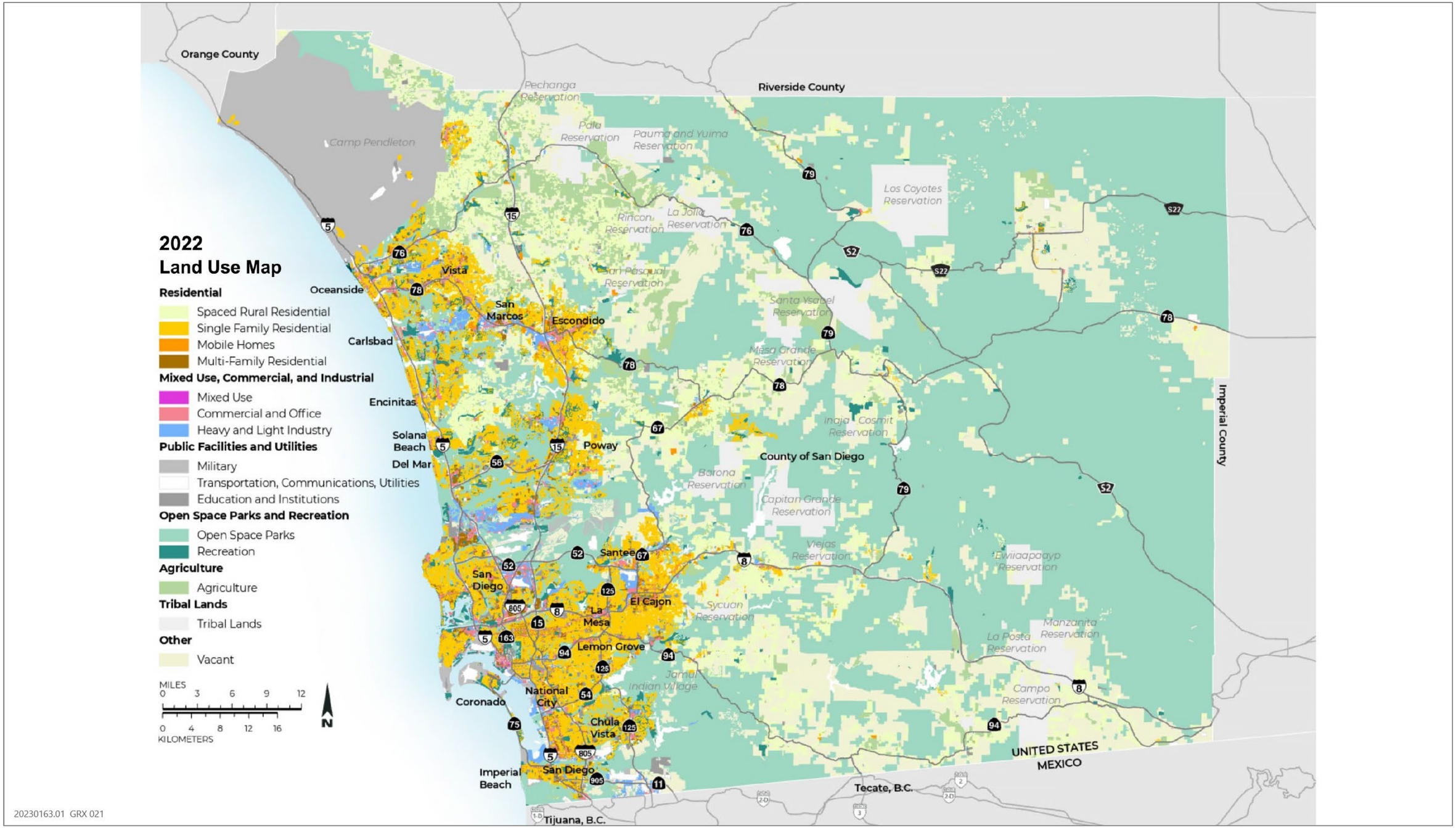
Table 4.11-2 provides details about existing population, area and transportation networks in the local jurisdictions.

Table 4.11-2 Jurisdictional Information

Jurisdiction	Size (square miles)	2022 Population	Percent of Regional Population	Major Highways	Major Transit Systems
Carlsbad	39.1	115,585	3.5	I-5, SR 78	COASTER, Amtrak, NCTD Bus
Chula Vista	50.9	276,785	8.4	I-5, I-805, SR 125, SR 54	Trolley, MTS bus
Coronado	14.0	22,277	0.7	SR 75, SR 282	MTS bus
Del Mar	1.8	3,929	0.1	None	COASTER, Amtrak, NCTD bus
El Cajon	14.4	105,638	3.2	I-8, SR 125, SR 67	Trolley, MTS bus
Encinitas	19.6	61,515	1.9	I-5	COASTER, Amtrak, NCTD bus
Escondido	36.2	150,679	4.6	I-15, SR 78	SPRINTER, NCTD bus, MTS bus
Imperial Beach	4.4	26,243	0.8	SR 75	MTS bus
La Mesa	9.0	60,472	1.8	I-8, SR 125, SR 94	Trolley, MTS bus
Lemon Grove	3.9	27,242	0.8	SR 125, SR 94	Trolley, MTS bus
National City	9.2	61,471	1.9	I-5, I-805, SR 54	Trolley, MTS bus
Oceanside	42.2	173,048	5.3	I-5, SR 78, SR 76	COASTER, Amtrak, SPRINTER, NCTD bus
Poway	39.1	48,759	1.5	SR 67	MTS bus
San Diego	342.5	1,374,790	41.8	I-5, I-8, I-15, I-805, SR 15, SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, SR 905	COASTER, Amtrak, Trolley, MTS bus
San Marcos	24.0	93,585	2.8	I-15, SR 78	SPRINTER, MTS bus
Santee	16.5	59,015	1.8	SR 125, SR 67, SR 52	Trolley, MTS bus
Solana Beach	3.4	12,812	0.4	I-5	COASTER, Amtrak, NCTD bus
Vista	18.6	100,291	3.1	SR 78	SPRINTER, NCTD bus
San Diego County	3,527.0	513,170	15.6	I-5, I-8, I-15, SR 54, SR 67, SR 76, SR 78, SR,79, SR 94, SR 125, SR 188	NCTD bus, MTS bus

Notes: I- = Interstate; MTS = Metropolitan Transportation System; NCTD = North County Traffic District; SR = State Route.

Source: SANDAG 2025; compiled by Ascent in 2025.



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.11-1 2022 Land Use

Other Public and Non-Jurisdictional Lands

Tribal Governments

The San Diego region is home to 19 Native American reservations represented by 17 tribal governments, the most in any county in the United States, as shown in Figure 4.11-2. There are more than 135,000 acres of tribal reservation lands in the region (SanGIS 2025). As sovereign domestic nations, tribal governments govern land use on their reservations and land holdings. SANDAG and the regional tribal governments work together to facilitate government-to-government planning and coordination. Table 4.11-3 details information regarding federally recognized tribal nations in the San Diego region.

Table 4.11-3 Tribal Nations in the San Diego Region

Tribal Nation	Reservation Name	Population	Housing Units	Reservation Acreage	Location
Barona Band of Mission Indians	Barona	514	157	7,434	Barona Indian Reservation near Lakeside, about 30 miles northeast of San Diego
Campo Band of Mission Indians of the Kumeyaay Nation	Campo	502	138	15,674	Southeastern San Diego County in the Laguna Mountains
Joint Power Authority between Barona and Viejas	Capitan Grande	0	0	15,632	Northwest quadrant of the Cleveland National Forest
Ewiiaapaayp Band of Kumeyaay Indians	Ewiiaapaayp	0	0	5,549	Immediately east of Cleveland National Forest and west of Anza-Borrego Desert State Park off of CR 1
Inaja Cosmit Band of Diegueño Mission Indians	Inaja and Cosmit	0	0	809	Within the boundaries of Cleveland National Forest, southwest of Julian, off SR 78
Jamul Indian Village of Kumeyaay Nation	Jamul Indian Village	0	0	6	10 miles southeast of El Cajon, along SR 94
La Jolla Band of Luiseño Indians	La Jolla	221	107	8,879	On Mount Palomar; off SR 76, 25 miles east of Escondido
La Posta Band of the Kumeyaay Nation	La Posta	65	13	3,848	56 miles east of San Diego and 46 miles west of El Centro in the Laguna Mountains
Los Coyotes Band of Cahuilla/Cupeño Indians	Los Coyotes	87	36	24,786	50 miles east of San Diego between Cleveland National Forest and Anza-Borrego Desert State Park
Manzanita Band of Diegueño Mission Indians	Manzanita	87	28	4,551	In southeastern San Diego County off of I-8, near the town of Boulevard and in the Carrizo Desert
Mesa Grande Band of Diegueño Mission Indians	Mesa Grande	60	29	1,833	Near Santa Ysabel, north of Highway 78
Pala Band of Mission Indians	Pala	924	308	14,235	40 miles northeast of San Diego, on the San Luis Rey River
Pauma Band of Luiseño Indians	Pauma and Yuima	132	48	5,982	Northeastern corner of San Diego County, in the foothills of Mount Palomar

Tribal Nation	Reservation Name	Population	Housing Units	Reservation Acreage	Location
Pechanga Band of Indians	Pechanga	337	168	88	Northwestern corner of San Diego County
Rincon Band of Luiseño Indians	Rincon	1,059	321	4,764	Northeastern corner of San Diego County, along the San Luis Rey River
San Pasqual Band of Diegueño Mission Indians	San Pasqual	1,153	319	1,967	12 miles from Escondido, adjoining the community of Valley Center and on CR S6
Iipay Nation of Santa Ysabel	Santa Ysabel	147	57	15,368	Near Santa Ysabel and Julian along SR 76
Sycuan Band of the Kumeyaay Nation	Sycuan	110	39	2,233	6 miles from El Cajon between I-8 and SR 94
Viejas Band of Kumeyaay Indians	Viejas	211	84	1,687	35 miles east of San Diego, north of I-8 and Alpine, 30 miles north of the United States–Mexico border

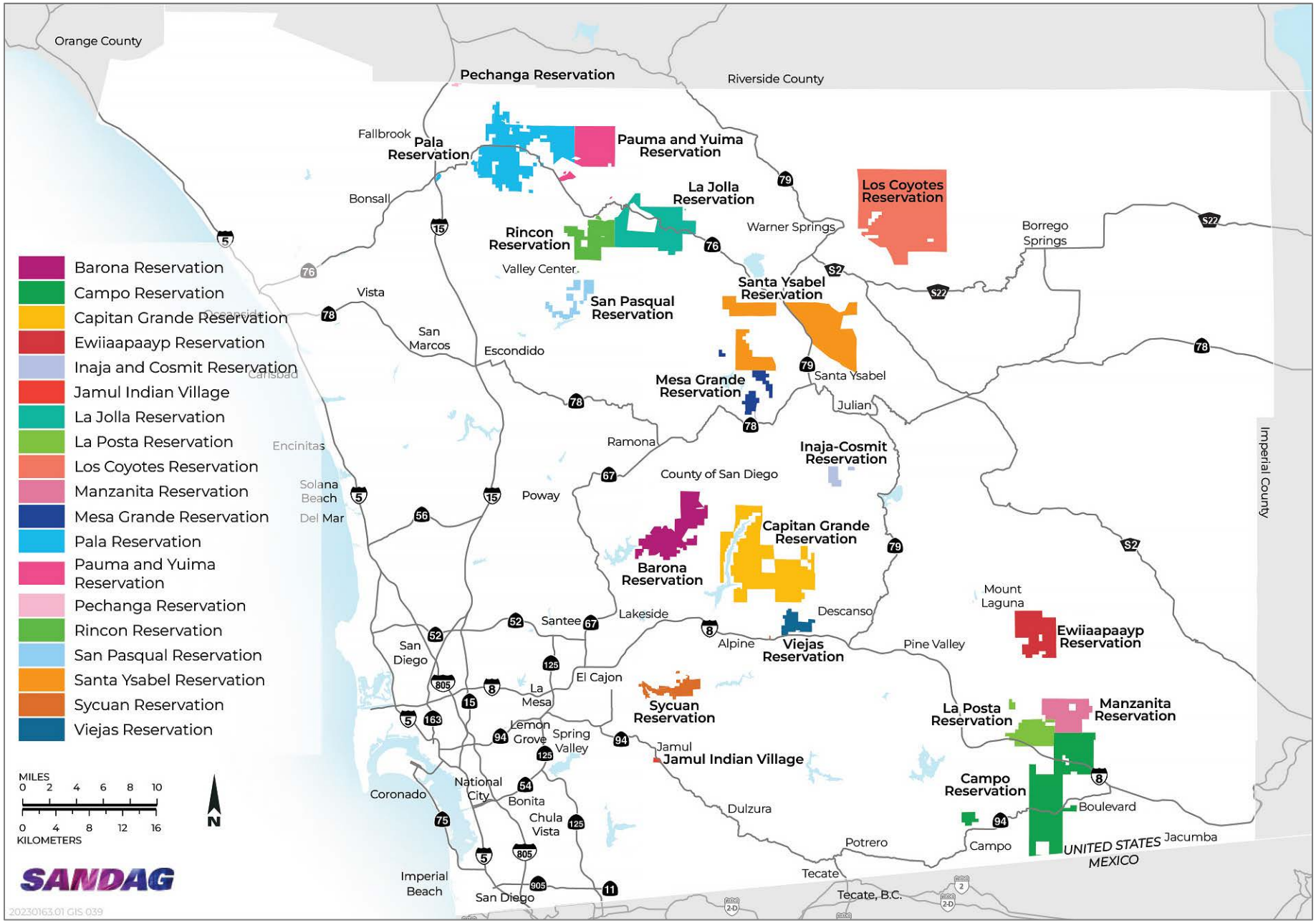
Notes: CR = County Road; SR = State Route; I = Interstate. This table provides information on residential occupancy on the reservations and not data on tribal enrollment because tribal members can and do live on and off reservations.

Sources: SANDAG 2021b; US Census Bureau 2024.

Military Installations

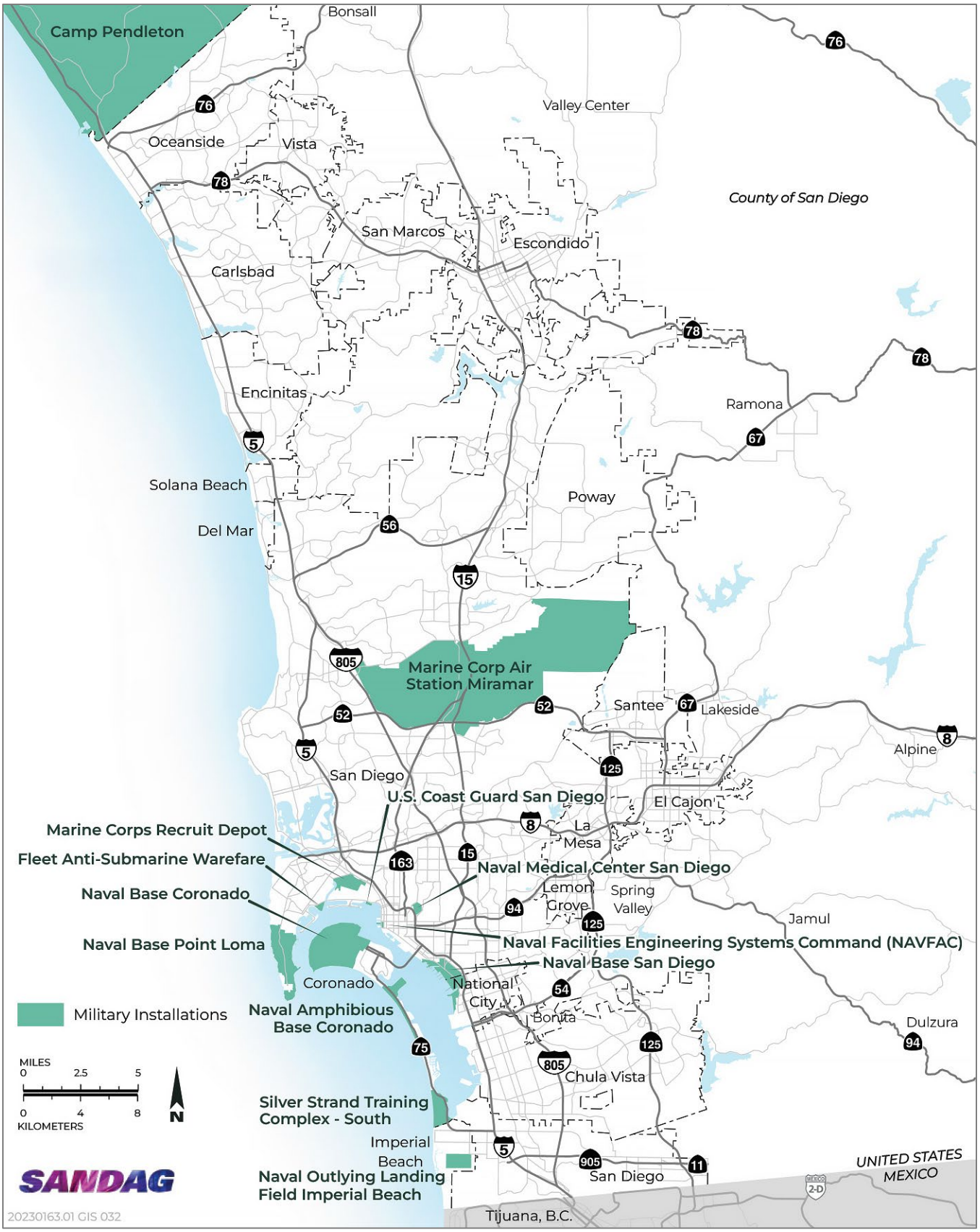
San Diego's location on the Pacific Ocean is ideal for many military operations in the southwest portion of the country. San Diego's military installations, shown in Figure 4.11-3, include a variety of sizes and uses and provide a large employment base for the region. Major military installations in the region include Marine Corps Base (MCB) Camp Pendleton, Naval Base Point Loma, Marine Corps Recruit Depot (MCRD) San Diego, Marine Corps Air Station (MCAS) Miramar, and Naval Base Coronado (NBC), as described in greater detail below:

- MCB Camp Pendleton is located at the northern boundary of San Diego County near Oceanside and encompasses more than 125,000 acres. Located approximately 38 miles north of Downtown San Diego in North County, MCB Camp Pendleton offers a broad spectrum of training facilities for many active and reserve Marine, Army, and Navy units, as well as national, State, and local agencies (MCB Camp Pendleton n.d.).
- Naval Base Point Loma is located on approximately 280 acres of coastal land just west and north of Downtown San Diego. Naval Base Point Loma provides support to 70 US Pacific Fleet afloat and shore-based tenant commands headquartered on the base and is a highly technical hub of naval activity (My Base Guide n.d.).
- MCRD San Diego is located on 506 acres northwest of downtown San Diego, adjacent to San Diego International Airport (SDIA). MCRD San Diego provides training for marines as well as military community and family services.
- MCAS Miramar is located on approximately 23,000 acres in the western central portion of the region. It is home to the 3d Marine Aircraft Wing and is centrally located near more than 10 West Coast Navy and Marine Corps installations (MCAS Miramar n.d.).
- NBC is a consolidated Navy installation encompassing eight military facilities stretching from San Clemente Island, which is located 70 miles west of San Diego, to the La Posta Mountain Warfare Training Facility, which is located 60 miles east of San Diego. Those facilities include Naval Air Station North Island; Naval Amphibious Base Coronado; Naval Outlying Landing Field Imperial Beach; Naval Auxiliary Landing Field San Clemente Island; Silver Strand Training Complex; Camp Michael Monsoor; and the Survival, Evasion, Resistance and Escape Facility in Warner Springs. Naval Air Station North Island is the anchor base of NBC (US Navy n.d.).



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.11-2 Tribal Lands in the San Diego Region



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.11-3 Military Installations in the San Diego Region

San Diego Unified Port District

The San Diego Unified Port District (Port) was created by the California State Legislature to manage San Diego Bay and surrounding waterfront land. The Port oversees two maritime cargo terminals, two cruise ship terminals, 20 public parks, various wildlife reserves and environmental initiatives, the Harbor Police department, and the leases of more than 600 tenant and subtenant businesses around San Diego Bay. The Port has been granted authority for an approximate total of 5,483 acres or about 37% of the total tidelands on San Diego Bay. The shoreline frontage approaches 33 miles, which is equivalent to 61% of the total bay shoreline (San Diego Unified Port District 2025). The Port has a Port Master Plan, which is intended to provide the official planning policies, consistent with a general statewide purpose, for the physical development of the tide and submerged lands conveyed and granted in trust to the Port District (San Diego Unified Port District 2024). The Port is currently in the process of updating its Port Master Plan (referred to as the Port Master Plan Update), where the California Coastal Commission approval is anticipated in 2025.

Airport Authority

The San Diego County Regional Airport Authority (SDCRAA) was created on January 1, 2003, as an independent agency to manage the day-to-day operations of SDIA and also serve as the region's airport land use commission (ALUC) to ensure the adoption of land use plans that protect public health and safety for areas surrounding all 16 of the San Diego region's public and private airports (SDCRAA 2025); these airports are listed in Table 4.11-4. SDCRAA accomplishes this by the orderly development of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards around airports (SDCRAA n.d.).

Table 4.11-4 San Diego Region's Public, Private, and Military Airports

Airport	Location
Agua Caliente Springs Airport	Northeast of Agua Caliente County Park, Eastern San Diego County
Borrego Valley Airport	Borrego Springs, Eastern San Diego County
Fallbrook Community Airpark	Fallbrook, North San Diego County
Ocotillo Airport	Ocotillo Wells, Eastern San Diego County
Ramona Airport	Ramona, Northeast San Diego County
Gillespie Airport	El Cajon, East San Diego County
McClellan-Palomar Airport	City of Carlsbad, North San Diego County
MCB Camp Pendleton	North San Diego County
Jacumba Airport	Jacumba, East San Diego County
Oceanside Municipal Airport	Oceanside, North San Diego County
Brown Field Municipal	Otay Mesa, South San Diego County
Montgomery Gibbs Executive Airport	Kearney Mesa, City of San Diego
MCAS Miramar	Miramar, City of San Diego
San Diego International	Downtown San Diego, City of San Diego
NOLF Imperial Beach	Imperial Beach, San Diego County
NAS North Island	Coronado, San Diego County

4.11.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Coastal Zone Management Act

The US Congress passed the 1972 Coastal Zone Management Act (CZMA) (U.S. Code, Title 16, Section 1451 et seq.) to manage the nation's coastal resources. The CZMA is administered by the US Department of Commerce, National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management. The CZMA balances competing land and water issues in coastal zones through the National Coastal Zone Management Program. Its goal is to preserve, protect, develop, and, where possible, restore or enhance the resources of the nation's coastal zone. Federal activities within or affecting the coastal zone must, to the maximum extent practicable, be consistent with the state's coastal management program (NOAA 2024).

Cleveland National Forest Plan

The US Department of Agriculture's Cleveland National Forest Plan consists of a three-part (vision, strategy, and design criteria) land and resource management plan (forest plan). The legislative mandate for the management of national forests requires that public lands be conservatively used and managed in order to ensure their sustainability and to guarantee that future generations will continue to benefit from their many values. Forest plans are founded on the concept of sustainable use of the national forests. The first part of the plan describes the national forest in the future, the niche it occupies in the community framework, and the desired conditions the Forest Service is striving to realize, as well as the challenges the national forest will resolve in getting there. The second part defines and describes each of the land use zones. The land use zones are an on-the-ground manifestation of the desired conditions and are the primary tools used to describe the strategic direction, including the management intent and suitable uses for areas of the national forest where the zone is used. The final part of the forest plan is the design criteria and constitutes the "rules" that the Forest Service will follow as it implements projects and activities over time (USFS 2005). In March 2011 the Pacific Southwest Region of the Forest Service released a statement of its Leadership Intent for Ecological Restoration, which laid out the region's guiding vision and goals for its stewardship of wildland and forests for the next 15–20 years. This plan reflects the Regional leadership's current thinking on how the Leadership Intent will be implemented (USFS 2018).

Bureau of Land Management Eastern San Diego County Resource Management Plan

The US Bureau of Land Management (BLM) has developed a Resource Management Plan (RMP) for the Eastern San Diego County Planning Area. The RMP covers approximately 102,869 acres of BLM administered lands. The Eastern San Diego County Planning Area spans an area of the eastern portion of Southern California's Peninsular Ranges. Most of the higher land to the west is a part of the Cleveland National Forest, while the low desert region to the east is included in the Anza-Borrego Desert State Park. Riverside County and the United States–Mexico border mark the northern and southern boundaries of the Planning Area, while Imperial County borders it to the east and western San Diego County to the west (BLM 2008).

The purpose of the plan is to provide guidance in the management of the lands and resources in eastern San Diego County that will achieve the following.

1. Address conflicts between motorized, mechanized, and nonmotorized/nonmechanized recreationists.
2. Protect sensitive natural and cultural resources from impacts due to recreational use, livestock grazing, and other land uses.
3. Provide guidance for renewable energy development.
4. Provide groundwater recharge and additional recreational opportunities within the Planning Area.

The Eastern San Diego County RMP is comprehensive in nature, providing guidance for management of all uses and resources in the Eastern San Diego County Planning Area (BLM 2008).

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

Regional Housing Needs Assessment

State law requires that SANDAG consider state housing goals and identify areas within the region sufficient to meet the regional housing needs allocation (RHNA) for the next 8 years. The RHNA is the state-mandated process to identify the total number of housing units (by affordability level) that every city and county must accommodate in Housing Elements.

The RHNA allocates each jurisdiction's "fair share" of the region's projected housing needs over the housing element planning period (2021-2029) for each of four household income groups as compared to the area median income (AMI) and as defined by the California Department of Housing and Community Development (i.e., extremely low-income or less than 30 percent of the AMI, very low-income or less than 50 percent of the AMI, low-income or less than 80 percent of the AMI, and moderate-income or less than 120 percent of the AMI). The RHNA is used by jurisdictions when updating their housing elements as the basis for assuring that adequate sites and zoning are available to accommodate the allocation.

SB 375 requires that the RHNA be consistent with the SCS and that the SCS identify areas sufficient to house the projected regional housing need for the region, since in most of California these documents are both prepared by the same regional organization. To ensure this consistency, SB 375 aligned the RHNA process with the SCS update, which has extended the RHNA and Housing Element update cycle in the SANDAG region from 5 years to 8 years. Because RHNA updates are required every 8 years and MTP/SCS updates are required every 4 years, the SCS and RHNA update process are linked during every other SCS cycle.

California Coastal Act

The California Coastal Act of 1976 (CCA) was enacted to "protect, maintain and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources" (Public Resources Code Section 30001.5 et seq.). The CCA applies to the Coastal Zone, which is generally defined as extending offshore to the limits of California's jurisdiction and from the shoreline 1,000 yards upland from the mean high tide line. The CCA requires each jurisdiction within the Coastal Zone to prepare a local coastal program consisting of land use plans, zoning, and other implementing actions as needed to comply with the policies set forth in CCA Chapter 3. These affect housing and other land uses, coastal access, and public works, including all types of transportation facilities. The coastal cities and the Port District are wholly or partially within the Coastal Zone and are subject to these requirements. The adopted local coastal programs are administered by the local agencies with ultimate approval by the California Coastal Commission (CCC).

Coastal Act policies that are applicable to transportation and land use projects that would implement the Plan include, but are not limited to, the following:

- **Section 30212.5.** Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social or otherwise, of overcrowding or overuse by the public of any single area.
- **Section 30213.** Lower cost visitor and recreational facilities shall be protected, encouraged, and where feasible, provided. Developments providing public recreational opportunities are preferred.
- **Section 30221.** Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided in the area.
- **Section 30222.** The use of private lands suitable for visitor serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agricultural or coastal-dependent industry.

- **Section 30222.5.** Oceanfront land that is suitable for coastal dependent aquaculture shall be protected for that use, and proposals for aquaculture facilities located on those sites shall be given priority, except over other coastal dependent developments or uses.
- **Section 30223.** Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.
- **Section 30255.** Coastal-dependent developments shall have priority over other developments on or near the shoreline, except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related development should be accommodated within reasonable proximity to the coastal-dependent uses they support.

California Planning and Zoning Law

The legal framework in which California cities and counties exercise local planning and land use functions is provided in the California Planning and Zoning Law (Government Code Section 65000 et seq.) Under State planning law, each city and county is required to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Government Code Section 65300 et seq.). The California Supreme Court has called the general plan the "constitution for future development" (*Lesher Communications, Inc. v. City of Walnut Creek* [1990] 52 Cal. 3d 531). The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private. A general plan consists of a number of elements, including land use, circulation, housing, conservation, open space, noise, and safety; other elements may be included at the discretion of the jurisdiction that relate to the physical development of the county or city. The general plan must be comprehensive and internally consistent. Of particular importance is the consistency between the circulation and land use elements; the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other public utilities and facilities must be consistent with the general distribution and intensity of land used for housing, business, industry, open space, education, public areas, waste disposal facilities, agriculture, and other public and private uses.

The Office of Land Use and Climate Innovation (LCI) is statutorily required by Government Code Section 65040.2 to adopt and periodically revise the State General Plan Guidelines for the preparation and content of general plans for all cities and counties in California. The 2017 version of the State General Plan Guidelines includes legislative changes, new guidance, policy recommendations, external links to resource documents, and additional resources (LCI 2017).

A more detailed discussion of the general plans for the individual jurisdictions within the San Diego region is included in Regional and Local Laws, Regulations, Plans, and Policies below. Local jurisdictions may also adopt specific plans, which are used to implement the general plan in particular geographic areas (Government Code Section 65450).

In addition, every local jurisdiction within the region has land use regulations that implement the general plan. The zoning ordinance is the primary land use regulation used to implement the goals and policies of its general plan. Zoning ordinances, which are required to be consistent with the general plan, provide detailed direction related to development standards; permitted, conditionally permitted, and prohibited uses; and other regulations such as parking standards and sign regulations. Zoning ordinances and land use approvals must be consistent with applicable specific plans as well as the general plan.

Cities and counties are also required to comply with the Subdivision Map Act (Government Code Section 66410 et seq.). The Subdivision Map Act sets forth the conditions for approval of a subdivision map and requires enactment of subdivision ordinances by which local governments have direct control over the types of subdivision projects to be approved and the physical improvements to be installed.

Senate Bill 375 (Chapter 728, Statutes of 2008)

Senate Bill (SB) 375 provides for a regional planning process to coordinate land use, housing, and transportation planning to help California meet State greenhouse gas (GHG) emissions reduction targets. SB 375 requires regional transportation plans developed by metropolitan planning organizations, including SANDAG, to incorporate an SCS that demonstrates how the region would achieve regional GHG emissions reduction targets for light duty vehicles set by California Air Resources Board. SB 375 does not require local governments to revise their "land use policies and regulations, including [their] general plan," to be consistent with the SCS (Government Code Section 65080 et seq.) The land use portion of the SCS is implemented through voluntary local government actions.

Local Agency Formation Commission Law

The Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code Section 56000 et seq.) requires that each county must have a local agency formation commission (LAFCO) responsible for creating orderly local government boundaries. The goals of the act include encouraging orderly growth and efficient public services for cities and special districts, preserving prime agricultural and open space lands, and discouraging urban sprawl. While LAFCOs have no direct authority over land use, their actions determine which government agency will be responsible for new planning areas. LAFCOs address a wide range of boundary actions, including creation of spheres of influence for cities, adjustment to boundaries of special districts, annexations, incorporations, detachments of areas from cities, and dissolution of cities.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

SANDAG 2021 Regional Plan

SANDAG 2021 Regional Plan is the predecessor to the proposed Plan. The 2021 Regional Plan is the long-term blueprint for the San Diego Region to meet regulatory requirements, address traffic congestion, and create equal access to jobs, education, healthcare, and other community resources. The 2021 Region Plan is the result of planning, data analysis, and community engagement to reimagine the San Diego region with a transformative transportation system, a sustainable pattern of growth and development, and innovative demand and management strategies (SANDAG 2021a). The 2021 Regional Plan also puts forth a forecasted development pattern that is driven by regional goals for sustainability, mobility, housing affordability, and economic prosperity. To achieve the goals of the 2021 Regional Plan, the plan consists of five interdependent strategies, called the 5 Big Moves, designed to address the greatest transportation and mobility challenges for the region: safety and traffic congestion, social inequities, and state and federal requirements to reduce GHG emissions and air pollution.

The 2021 Regional Plan also includes an SCS that integrates coordinated transportation and land use planning that exceeds the state's target for reducing per capita GHG emissions set by the California Air Resources Board. The SCS includes a land use pattern that forecasts growth within Mobility Hubs, which are communities with high concentrations of people, destinations, and travel choices. The Mobility Hubs offer on-demand travel options and supporting infrastructure that enhance connections to high-quality Transit Leap services, while also helping people make short trips to local destinations around the community using Flexible Fleets. Mobility Hubs can span one, two, or a few miles based on community characteristics, and are uniquely designed to fulfill a variety of travel needs while strengthening a sense of place. Additionally, the SCS land use pattern also identified areas within the region that are sufficient to house the 6th Cycle RHNA Plan allocations. The 2021 Regional Plan and its SCS are valid for State compliance, funding eligibility, and other purposes through December 31, 2025.

Airport Land Use Commission and Airport Land Use Compatibility Plans

The California State Aeronautics Act (Public Utilities Code Section 21670 et seq.) directs each county with an airport to establish an ALUC. In each county containing a public use airport, an ALUC is required to assist local agencies in ensuring compatible land uses in the vicinity of existing or proposed airports; to coordinate planning at State, regional, and local levels; to prepare and adopt an airport land use plan as required by Public Resources Code Section 21675; to review plans or regulations submitted by local agencies; and to review and make

recommendations regarding the land uses, building heights, and other issues relating to air navigation safety and promotion of air commerce. The SDCRAA is the ALUC for the San Diego region. It is responsible for the preparation of airport land use compatibility plans (ALUCPs), which identify policies and procedures for land use and airport compatibility for areas surrounding public use and military airports. Local jurisdictions are responsible for land use compatibility controls around the airports.

San Diego Unified Port District – Port Master Plan

The Port Master Plan is the land use document governing the land and water development within the jurisdiction governed by the Port District. It was originally adopted by the Board of Port Commissioners in 1980 and was certified by the CCC on January 21, 1981. The document serves as the governing planning document pursuant to the California Coastal Act for the land and water area within Port District jurisdiction, which extends from the western edge of Pacific Highway coincident with the historic mean high tide line to several hundred feet into San Diego Bay (tidelands). The Port Master Plan divides the tidelands into 10 Planning Districts, or precise plans. Each Planning District is further divided into Planning Subareas, which group together tideland properties into functional units, thereby facilitating planning efforts. The document provides the official planning policies, consistent with a general statewide purpose, for the physical development of the tidelands and submerged lands conveyed and granted in trust to the Port District.

The Port of San Diego is currently updating its Port Master Plan, which is referred to as the Port Master Plan Update (PMPU). The Port certified the Program Environmental Impact Report for the PMPU on February 28, 2024, and anticipates receiving CCC approval in 2025 (San Diego Unified Port District 2025).

General Plans and Land Use Regulations

Every city in the San Diego region, as well as San Diego County, has a general plan that designates appropriate land uses throughout the jurisdiction and identifies the community's land use, circulation, environmental, economic, and social goals and policies as they relate to land use and development. The general plans also provide a basis for local government decision-making, including decisions on development approvals and exactions, and they provide citizens with opportunities to participate in the planning and decision-making processes of their communities. The County of San Diego General Plan focuses on areas not included in city general plans (i.e., unincorporated areas). The current versions of each jurisdiction's general plan, as well as associated updates, are listed in Table 4.11-5. All of these jurisdictions have prepared or are preparing Housing Element (2021–2029) Updates with some completed and others in various stages of the drafting process.

Table 4.11-5 General Plans

Jurisdiction	General Plan	Adoption Date/Updates
Carlsbad	Carlsbad General Plan	September 2015 (Housing Element updated in April 2021, Public Safety Element updated in 2024, Land Use & Community Design Element updated in 2024)
Chula Vista	City of Chula Vista General Plan	December 2005, amended 2021 (Housing Element updated in April 2021, amended in September 2022)
Coronado	Coronado General Plan	November 1986, Revised November 2003 (Housing Element updated in April 2024)
Del Mar	The Community Plan	March 1976, amended 1985 (Housing Element updated in April 2023)
El Cajon	City of El Cajon General Plan 2000	January 2001 (Housing Element updated in July 2021, Environmental Justice Element updated in July 2021, Safety Element updated in 2021)
Encinitas	City of Encinitas General Plan	May 1995 (Housing Element being updated in July 2021, Land Use Element update in September 2024)
Escondido	General Plan	May 2012 (Housing Element being updated as of March 2021, amended in 2023, Safety Element being updated as of June 2025)

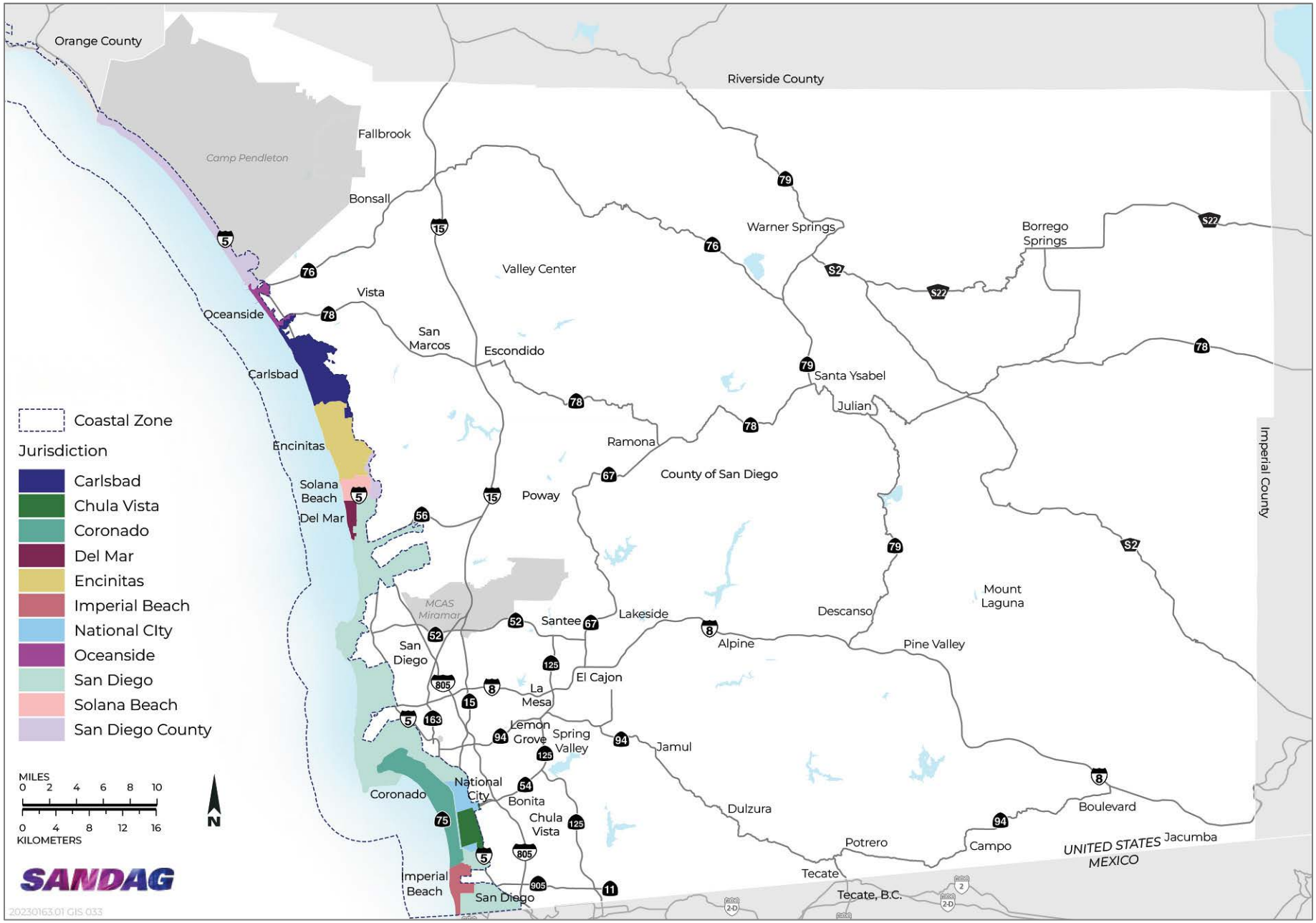
Jurisdiction	General Plan	Adoption Date/Updates
Imperial Beach	City of Imperial Beach General Plan/Local Coastal Program Land Use Plan	September 2024 (Housing Element updated in June 2021)
La Mesa	2012 General Plan	July 2013 (Housing Element updated as of April 2023, amended June 2023)
Lemon Grove	General Plan	1996 (Housing Element updated as of December 2023; Comprehensive General Plan update also underway as of 2025)
National City	National City General Plan	June 2011 (Land Use Element updated in March 2024, Safety Element updated in March 2024, Transportation Element updated in March 2024, Housing Element updated in August 2021)
Oceanside	General Plan	June 2002 (Housing Element updated in September 2023; Comprehensive General Plan update also underway as of 2025)
Poway	Poway Comprehensive General Plan	November 1991 (Housing Element updated as of April 2024; Public Safety Element being updated as of June 2025)
City of San Diego	City of San Diego General Plan	July 2024 (Housing Element updated in June 2021)
San Marcos	City of San Marcos General Plan	February 2012 (Housing Element updated as of July 2021; Comprehensive General Plan update also underway as of June 2025)
Santee	City of Santee General Plan	August 2003 (Housing Element updated as of May 2022, Safety and Environmental Justice Element updated in May 2025, Land Use Element update in progress as of June 2025)
Solana Beach	City of Solana Beach General Plan	1988, Amended 2014 (Housing Element updated as of February 2023)
Vista	Vista General Plan 2030	February 2012 (Housing Element updated as of June 2022; Comprehensive General Plan update also underway as of June 2025)
County of San Diego	San Diego County General Plan	August 2011, Amended 2020 (Housing Element updated as of July 2021)

Sources: City of Carlsbad 2015, 2021; City of Chula Vista 2020, 2021; City of Coronado 2003, 2024; City of Del Mar 1985, 2021; City of El Cajon 2001, 2022; City of Encinitas 1995, 2021; City of Escondido 2012, 2021; City of Imperial Beach 2024, 2021; City of La Mesa 2013, 2023; City of Lemon Grove 1996, 2023; City of National City 2011, 2021; City of Oceanside 2002, 2023, 2024; City of Poway 1991, 2024; City of San Diego 2024, 2020; City of San Marcos 2012, 2021, 2025; City of Santee 2003, 2022; City of Solana Beach 1988, 2023; City of Vista 2012, 2022; County of San Diego 2011, 2021.

Adopted general plan land use assumptions are used as input to develop SANDAG's regional growth forecast. The forecast is based on the most recent planning assumptions, considering local general plans and other factors, as required by SB 375 (Government Code Section 65080[b][2][B]). Also, every local jurisdiction within the region has land use regulations that implement their general plan, including a subdivision ordinance and zoning ordinance. Zoning ordinances, which are required to be consistent with the general plan, provide detailed direction related to development standards; permitted, conditionally permitted, and prohibited uses; and other regulations such as parking standards and sign regulations.

Local Coastal Plans

Each local jurisdictional authority (city or county) with lands within the coastal zone is required to develop, and comply with a coastal management plan. The Coastal Act requires that any person or public agency proposing development within the Coastal Zone obtain a coastal development permit (CDP) from either the CCC or the city or county having the jurisdictional authority to issue a CDP. To comply with the CZMA, localities develop local coastal plans (LCPs). Table 4.11-6 identifies the local jurisdictions in the San Diego region with coastal zone jurisdiction and Figure 4.11-4 shows the respective Coastal Zone boundaries.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.11-4 Local Jurisdiction Coastal Zones in San Diego Region

Table 4.11-6 Local Jurisdictions with Coastal Zone Jurisdiction

Oceanside	Del Mar	North San Diego County
Carlsbad	City of San Diego	Chula Vista
Encinitas	Coronado	Imperial Beach
Solana Beach	National City	County of San Diego

Source: California Coastal Commission 2025.

Community Plans and Specific Plans

A city or county may also provide land use planning by developing community or subregional plans, including specific plans for smaller, more specific areas within its jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan. Both the County of San Diego and the City of San Diego have numerous community and specific plans. A community plan is used to plan the future of a particular area to a finer level of detail than the general plan and supplements the policies of the general plan; however, these community and specific plans must be consistent with the jurisdiction's general plan. All of the jurisdictions within the San Diego region have developed and implemented numerous specific plans that delineate land uses, infrastructure, development standards and criteria, and environmental conservation measures.

To support the preparation of the analysis in Section 4.11.4, "Environmental Impacts and Mitigation Measures," SANDAG worked closely with each jurisdiction to gather information about adopted community plans and specific plans that have yet to be implemented to assess whether the proposed Plan has any inconsistencies with these plans, per State CEQA Guidelines Section 15125(d). Each jurisdiction compiled a list of adopted plans not yet fully implemented. Information as to the type of development allowed, buildout assumptions, development completed to date, and the buildout year of each plan was provided. A comprehensive table of community and specific plan information by jurisdiction is included in Appendix K.

4.11.3 Significance Criteria

Appendix G of the State CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts, in the form of Initial Study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions in Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique characteristics of the proposed Plan.

Checklist questions for Land Use and Planning are included in Section XI (a and b) of Appendix G of the State CEQA Guidelines. Appendix G criterion XI (a) is addressed in LU-1 and criterion XI (b) is addressed in LU-2. For the purposes of this EIR, implementation of the proposed Plan would have a significant land use and planning impact if it would:

LU-1 Physically divide an established community.

LU-2 Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation (including, but not limited to, the general plan, local coastal program, or zoning ordinance) and result in a physical change to the environment not already addressed in the other resource chapters of this EIR.

The analysis discloses impacts to land use and planning. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's land use and planning impacts would be worsened by climate change. Therefore, a climate change analysis for land use and planning impacts is not included in this section.

4.11.4 Environmental Impacts and Mitigation Measures

LU-1 PHYSICALLY DIVIDE AN ESTABLISHED COMMUNITY

Analysis Methodology

This analysis examines how regional growth and land use or transportation network improvements and programs under the proposed Plan could physically divide established communities. Forecasted regional growth that occurs in new developments outside of established communities would, by definition, not physically divide established communities, and is not addressed further under Impact LU-1. For regional growth and land use change, the analysis focuses on development within established communities.

The analysis focuses on whether the proposed Plan would introduce land uses that would result in the disruption of the physical arrangement of an existing neighborhood such that a physical separation or the creation of a barrier could disrupt the physical interaction between established land uses that comprise a neighborhood or community. The potential for community disruption was assessed by evaluating the location of substantial land use density increases in relation to established communities. A review of existing land use mapping was conducted to evaluate how the proposed Plan would affect land use patterns and the development of currently vacant and open space lands. Regional growth and land use change are analyzed based on areas with the greatest projected land use changes in term of projected population, jobs, densities, and land uses by location. The analysis also considers impacts by area to determine (1) the general amount and type of land that might be impacted, and (2) where impacts may be concentrated.

The analysis of transportation network improvements and programs considers whether new or expanded transportation projects or improvements under the proposed Plan would physically divide established communities. Increased frequencies on existing rail corridors and bus routes, new bus service on existing roadways, and transportation program investments (e.g., more flexible fleet options, Managed Lane Connectors, direct access ramps) under the proposed Plan would not physically divide established communities and are not addressed further under Impact LU-1. The analysis consists of a review of existing land use maps to evaluate the location of proposed major transportation network improvements and programs in relation to surrounding land uses and community development. The transportation network improvements and services considered include those that have the potential for physical impacts based on characteristics such as expansion, widening, new construction, or new configurations.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Physical barriers such as freeways and highways, rail lines, major heavy industrial uses, and large institutional land uses such as military facilities often form the boundaries of existing established communities in the region and also internally divide existing established communities. For example, the major interstate highways form large physical barriers that divide several established communities throughout the region, and large institutional facilities like military facilities and the San Diego Convention Center separate established communities from the San Diego Bay. The established communities of the region generally feature extensive, interconnected roadway networks. Implementation of the land use change would result in future development being integrated into existing communities along the existing transportation network and would, therefore, not physically divide established communities.

Adopted general plans and subregional or community plans for established communities routinely prevent developments that would physically divide established communities, and often include policies to remove existing physical barriers. For example, the community plan for Downtown San Diego includes policies to re-connect streets historically divided by large-scale developments and neighborhoods physically divided by the construction of I-5 (City of San Diego 2006). The proposed Plan forecasts regional growth within established communities such as the city of San Diego and Chula Vista and along key transportation corridors. The development of new housing units and employment land uses within existing established communities would typically occur on vacant or underutilized sites such as surface parking lots, low-rise commercial strips, industrial buildings, and warehouses and would also result from the conversion of low-density single-family housing properties to multifamily residences. The proposed Plan would serve to promote connectivity within an existing community by siting land uses of similar character and nature in a more compact and mixed-use pattern. Thus, it is reasonably foreseeable that the pattern of regional growth and development would result in beneficial impacts related to the connectivity of an existing community, rather than an adverse effect. Moreover, infill development in established communities would occur in accordance with the adopted general plans and other subregional or community plans of the cities and County of San Diego, as well as their zoning and subdivision ordinances.

Construction activities associated with development involve temporary disruptions within established communities such as lane or road closures and service delays or detours for bus routes. Local jurisdictions routinely require traffic control plans and related measures to ensure that construction activities accommodate vehicular, bicycle, and pedestrian access, such as designating alternate routes or scheduling disruptive activities late at night or on weekends. Without such traffic control plans and related measures, these activities could temporarily physically divide a community by eliminating access routes or introducing barriers during construction. With implementation of these plans and measures, however, construction activities would not result in the physical division of established communities.

Based on the above analysis, regional growth and land use change for 2035 would not physically divide an established community. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. While portions of these improvements to existing transportation facilities may involve temporary or permanent right-of-way acquisitions adjacent to existing facilities, the improvements to existing facilities or within existing public rights-of-way would not physically divide established communities because improvements do not include components such as the construction of a new roadway or railway within an existing community. The planned rail grade separation at certain locations on the SPRINTER, Green line, Blue Line, and Orange Trolley lines would improve connections between communities currently physically divided by rail lines. Based on the above analysis, implementation of transportation network improvements would not physically divide an established community. This impact is less than significant.

2035 Conclusion

Implementation of transportation network improvements, regional growth and land use change, would not physically divide established communities. Therefore, this impact (LU-1) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, from 2036 to 2050, the regional population is forecasted to decrease by 4,112 people (-0.1%), housing is forecast to increase by 65,577 units (4.8%), and employment is forecasted to increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, Carlsbad and El Cajon. Approximately 78.8% of new housing units are in the cities of San Diego (51.6%), and Chula Vista (17.1%), and the unincorporated jurisdictions. Similarly, these same three jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050.

As described in the 2035 analysis, physical barriers such as freeways and highways, rail lines, major industrial uses, and large institutional land uses such as military facilities often form the boundaries of existing established communities in the region, and also internally divide existing established communities. The established communities of the region generally feature extensive, interconnected roadway networks. The proposed Plan forecasts regional growth within established communities such as the city of San Diego and Chula Vista and along key transportation corridors. The development of new housing units and employment land uses within these established communities would typically occur on vacant or underutilized sites such as surface parking lots, and low-density residential properties, low-rise commercial strips, industrial buildings, and warehouses. The proposed Plan would serve to promote connectivity within an existing community by siting land uses of similar character and nature in a more compact and mixed-use pattern. Thus, it is reasonably foreseeable that the pattern of regional growth and development would result in beneficial impacts related to the connectivity of an existing community, rather than an adverse effect. Moreover, infill development in established communities would occur in accordance with the adopted general plans and other subregional and community plans of the cities and County of San Diego, as well as their zoning and subdivision ordinances. Adopted general plans and subregional and community plans for established communities routinely prevent development that would physically divide established communities, and often include policies to remove existing physical barriers.

Construction activities associated with development involve temporary disruptions within established communities such as lane or road closures and service delays or detours for bus routes. Local jurisdictions routinely require traffic control plans and related measures to ensure that construction activities accommodate vehicular and pedestrian access, such as designating alternate routes or scheduling disruptive activities late at night or on weekends. Without such traffic control plans and related measures, these activities could temporarily physically divide a community by eliminating access routes or introducing barriers during construction. With implementation of these plans and measures, however, construction activities would not result in the physical division of established communities. Based on the above analysis, regional growth and land use changes would not physically divide an established community in year 2050. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period.

Between 2036 and 2050, most transportation network improvements would affect existing transportation facilities, such as SPRINTER, Blue Line, Green Line, and Orange Line Trolley line station enhancements; rail grade separations; managed lanes, managed lane connectors, and direct access ramps along existing freeways and highways; improvements to regional arterials; and active transportation projects. While portions of these improvements to existing transportation facilities would likely involve temporary or permanent right-of-way acquisitions adjacent to existing facilities, the improvements to existing facilities or within existing public rights-of-way would not physically divide established communities. The planned rail grade separation on the SPRINTER,

Blue Line, Green Line, and Orange Trolley lines would improve connections between communities currently physically divided by rail lines.

Other planned transportation network improvements may require acquisition of new rights-of-way in highly developed established communities, such as the SPRINTER extension to North County Mall. The future alignments and engineering designs for this rail extension have not yet been determined, but are likely to be located, to the extent feasible, along existing freeways, roadways, and rail corridors in order to minimize costs associated with property acquisition and reduce impacts on owners of private property, including businesses and residents. Some segments of future rail extensions could have alignments and design features that physically divide established communities. Where applicable, these individual transportation network improvements would undergo separate environmental review under CEQA and National Environmental Policy Act (NEPA). The corresponding project-specific environmental documentation would identify significant impacts with regard to the physical division of established communities, if any, and identify mitigation measures to avoid or lessen the impact. Because the exact location of future rail extensions are unknown at this time, project-level physical division of established community impacts associated with planned commuter rail extensions may not be able to be avoided or substantially lessened. Therefore, transportation network improvements could physically divide established communities by 2050. This is a significant impact.

2050 Conclusion

Implementation of transportation network improvements, but not regional growth and land use change, could physically divide established communities. Therefore, this impact (LU-1) in the year 2050 is significant.

MITIGATION MEASURES

LU-1 PHYSICALLY DIVIDE AN ESTABLISHED COMMUNITY

2050

LU-1a Provide Access and Connections for Transportation Network Improvements.

During planning, design, and project-level CEQA review of transportation network improvements, including new rail extensions and roadway widening improvements, SANDAG shall, and other transportation project sponsors can and should, design new transportation network improvements within established communities to avoid the creation of barriers that physically divide such communities. Where avoidance is not feasible, measures to reduce the creation of barriers that physically divide such communities should be considered, including but not limited to, the following:

- Selecting alignments within or adjacent to existing public rights-of-way.
- Designing sections above- or below-grade to avoid or reduce physical division of communities, where feasible.
- Providing direct crossings, overcrossings, or undercrossings at regular intervals for various modes of travel (e.g., pedestrians/bicyclists, vehicles).

SIGNIFICANCE AFTER MITIGATION

2050

Implementation of mitigation measure LU-1a would reduce impacts regarding the physical division of established communities associated with transportation network improvements through implementation of feasible alignments, design options, and other design features that avoid or substantially reduce impacts on community division. However, there is no guarantee that the impact would be reduced to less-than-significant levels for all projects. Therefore, the physical division of established communities resulting from transportation network improvements would remain significant and unavoidable.

LU-2 CAUSE A SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO A CONFLICT WITH ANY LAND USE PLAN, POLICY OR REGULATION (INCLUDING, BUT NOT LIMITED TO, THE GENERAL PLAN, LOCAL COASTAL PROGRAM, OR ZONING ORDINANCE) AND RESULT IN A PHYSICAL CHANGE TO THE ENVIRONMENT NOT ALREADY ADDRESSED IN THE OTHER RESOURCE CHAPTERS OF THIS EIR

Analysis Methodology

The land use and planning analysis describes existing land use and zoning as well as regional and local land use plans, policies, or regulations, and is intended to help fulfill the requirements of CEQA Guidelines Section 15125(d). The analysis also describes changes in the land use due to the forecasted regional growth and land use change and planned transportation network improvements under the proposed Plan. The emphasis of the analysis is on plan consistency and potential conflicts between the proposed Plan and existing land use plans, policies, and regulations adopted to avoid or mitigate environmental effects.

The proposed Plan is considered consistent with the provisions of the identified regional and local plans if it meets the general intent of the applicable land use plans. Subregional plans that have been adopted by local jurisdictions are identified in Appendix K to this EIR. A given project need not be in perfect conformity with each and every policy nor does State law require precise conformity of a proposed project with every policy or land use designation for a site. Courts have recognized that general and specific plans attempt to balance a range of competing interests. It follows that it is nearly, if not absolutely, impossible for a project to be in perfect conformity with each and every policy set forth in the applicable plan. If the proposed Plan is determined to be inconsistent with specific individual objectives or policies of an applicable plan but is largely consistent with the land use or the other goals and policies of that plan and would not preclude the attainment of the primary intent of the land use plan, the proposed Plan would not be considered inconsistent with the plan. Furthermore, in this impact analysis, any such inconsistency would also have to result in a new physical change in the environment, not analyzed in the other resource chapters of this EIR, to result in a significant environmental impact. The discussion below provides a brief overview of the most relevant policies and development standards from the various planning documents. However, the proposed Plan's consistency conclusions are based upon the planning documents as a whole.

As described in Appendix F of the proposed Plan, the SCS land use pattern establishes a growth and development pattern that accommodates the RHNA Determination, ensuring sufficient housing capacity, and reflects the most recent planning assumptions, incorporating local land use policies and conditions. SANDAG collaborated with all 19 regional jurisdictions, including the 18 cities and the County of San Diego to develop the SCS land use pattern. This process involved holding a series of meetings to review and verify the parcel-level capacity data. The housing capacity data described in Appendix F of the proposed Plan reflects development potential and guides the allocation of forecast totals to subregional areas. During the process of developing the SCS land use pattern, it became clear that adjustments were needed for the cities of Coronado and Solana Beach, where initial housing build-out estimates were below the cities' proposed or adopted Housing Elements. For both cities, the build-out estimate for each city's adopted Housing Element was used to accommodate their 6th Cycle RHNA allocations. Therefore, the proposed land uses for the Plan are consistent with the local jurisdictions' Housing Elements.

Conflicts with land use portions of adopted general plans, local coastal programs, the Port Master Plan, or other applicable subregional plans, such as specific plans and community plans, are generally analyzed in this section. Conflicts with resource-specific plans, policies, or regulations are analyzed in the respective EIR sections. For example, consistency with ALUCPs is addressed in Sections 4.9, "Hazards and Hazardous Materials," and 4.13, "Noise and Vibration," and consistency with habitat conservation plans is addressed in Section 4.4, "Biological Resources."

For regional growth and land use change, the impact analysis uses SANDAG's forecasted growth rates as described in Chapter 2, "Project Description," to analyze forecasted development based on the SCS land use pattern throughout the region as projected under the proposed Plan, including new growth in existing urbanized areas. Land use plans, policies, and regulations by jurisdiction are considered generally and describe how the

proposed Plan may shape future development patterns that, as a consequence of the proposed Plan's implementation, might cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation that was established to avoid or mitigate an environmental effect.

Regional growth and land use change and planned transportation network improvements within federal lands would generally be consistent with the planning strategies outlined by the Cleveland National Forest Plan and the Eastern San Diego County RMP. Because regional growth and land use change and expansion of the transportation network within federal lands are generally restricted, conflicts with these existing plans would be avoided and, therefore, are not evaluated further.

The analysis of transportation network improvements focuses on the proposed Plan's new infrastructure or facilities that may conflict with adopted local land use plans, policies, or regulations. Improvements and programs involving only operational changes would not substantially affect local land use plans, policies, or regulations, and therefore are not evaluated further. Spatial analysis is used to evaluate location of large-scale transportation projects and their consistency with local land use plans, policies, or regulations.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

The forecasted development of the proposed Plan is based on the Series 15 Regional Growth Forecast SCS land use pattern, which is, in turn, based on the adopted general plans of the cities and County of San Diego and on the most recent planning assumptions, considering local general plans and other factors, as required by SB 375 (Government Code Section 65080[b][2][B]). Local coastal programs are components of local general plans. The Regional Growth Forecast is described in detail in Appendix F of the proposed Plan.

SANDAG's 6th Cycle RHNA Plan is integrated into the proposed Plan's SCS land use pattern and is consistent with updated (6th Cycle, 2021–2029) Housing Elements. As required by state law, all jurisdictions' 6th Cycle (2021–2029) Housing Element updates have been completed. Subregional plans, such as community or specific plans, are required to be consistent with adopted general plans. Because the proposed Plan is based on adopted general plans, the proposed Plan would not conflict with subregional plans. As described in Appendix F of the proposed Plan, SANDAG collaborated with all 19 regional jurisdictions, including the 18 cities and the County of San Diego. Development patterns would focus more residential, commercial, and office uses in existing urban areas; growth in the unincorporated areas would be focused within existing rural communities. These development patterns, which would be served by transit capital projects, improvements in transit service, and active transportation projects, are consistent with local land use plans, policies, and subregional plans in urban areas.

Therefore, the SCS land use pattern between 2022 and 2035 would not conflict with land use plans, policies, and regulations, including general plans, local coastal programs, specific plans, and community plans, adopted for the purpose of avoiding or mitigating an environmental effect. This impact is less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as

interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

The planned transportation improvements may require the acquisition of public rights-of-way not currently captured in all of the plans and projects in local jurisdictions. However, SANDAG's planned transportation network improvements for 2035 are intended to improve the transportation network in a manner that will efficiently serve the projected regional growth,, manage congestion, provide transportation options for residents, improve safety, and provide a plan for achieving SANDAG's state-mandated target to reduce regional emissions of GHGs. Transportation improvements are included for their potential to provide multimodal benefits, improve safety, alleviate existing or forecasted bottlenecks, connect housing to jobs, and meet future projected travel volumes in a way that manages, rather than eliminates, congestion.

However, it cannot be guaranteed that all planned rail improvements would have alignments and design features that would avoid land use conflicts with adopted plans. Individual rail improvements, such as improvements to Regional Rail 398, would undergo separate environmental review under CEQA and NEPA, where applicable. The corresponding project-specific environmental documentation would identify significant impacts with regard to conflicts with land use portions of adopted plans, if any, and identify mitigation measures to avoid or lessen significant physical impacts on the environment resulting from any conflicts.

Nevertheless, it cannot be concluded that all project-level conflicts would be avoided or substantially lessened. Therefore, transportation network improvements in year 2035 would conflict with land use plans, policies, and regulations, including general plans, specific plans, and community plans, adopted for the purpose of avoiding or mitigating an environmental effect. However, the impacts of transportation network improvements are already evaluated in other sections of this EIR, so these conflicts would not cause new significant impacts. Therefore, this impact is less than significant.

2035 Conclusion

Implementation of regional growth and land use change and transportation network improvements would not conflict with land use plans, policies, and regulations, including general plans, local coastal programs, specific plans, and community plans, adopted for the purpose of avoiding or mitigating an environmental effect, and would not result in a physical change to the environment not already addressed in the other resource chapters of this EIR. Further environmental impacts associated with policy conflicts are already evaluated in other sections of this EIR. Therefore, this impact (LU-2) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Chapter 2, "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the Cities of San Diego (51.6%), Chula Vista (17.1%), and the unincorporated jurisdictions. Similarly, these same three jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050.

As described above, SANDAG's 6th Cycle RHNA Plan is integrated into the proposed Plan's SCS land use pattern and is consistent with updated (6th Cycle, 2021–2029) Housing Elements. Because the proposed Plan is based on adopted general plans, the proposed Plan would not conflict with subregional plans. As described in Appendix F of the proposed Plan, SANDAG collaborated with all 19 regional jurisdictions, including the 18 cities and the County of San Diego. Development patterns would focus more residential, commercial, and office uses in existing

urban areas; growth in the unincorporated areas would be focused within existing rural communities. These development patterns, which would be served by transit capital projects, improvements in transit service, and active transportation projects, are consistent with local land use plans, policies. The proposed Plan's focus on development in the urbanized western portions of the San Diego region is also consistent with the planning goals of smaller rural communities in the eastern portion of the region to maintain a more rural, nonurbanized character.

Therefore, regional growth and land use change between 2036 and 2050 would not conflict with land use plans, policies, and regulations, including general plans, local coastal programs, specific plans, and community plans, adopted for the purpose of avoiding or mitigating an environmental effect. This impact is less than significant.

Transportation Network Improvements and Programs

In 2050, most transportation network improvements would affect existing transportation facilities, such as SPRINTER, Blue, Orange, and Green Trolley line station enhancements; rail grade separations; managed lanes, managed lane connectors, and direct access ramps along existing freeways and highways; improvements to regional arterials; and active transportation projects.

The planned transportation improvements may require the acquisition of public rights-of-way not currently captured in all of the plans and projects of local jurisdictions. However, SANDAG's planned transportation network improvements for 2050 are intended to improve the transportation network in a manner that will efficiently serve the projected regional growth (including in local jurisdictions), manage congestion, provide transportation options for residents, improve safety, and to provide a plan for achieving SANDAG's state-mandated target to reduce regional emissions of GHGs. Transportation improvements are included for their potential to provide multimodal benefits, improve safety, alleviate existing or forecasted bottlenecks, connect housing to jobs, and meet future projected travel volumes in a way that manages, rather than eliminates, congestion.

However, it cannot be guaranteed that all planned rail improvements would have alignments and design features that would avoid land use conflicts with adopted plans. Individual rail improvements, such as improvements to Regional Rail 398 and the SPRINTER extension to North County Mall, would undergo separate environmental review under CEQA and NEPA, where applicable. The corresponding project-specific environmental documentation would identify significant impacts with regard to conflicts with land use portions of adopted plans, if any, and identify mitigation measures to avoid or lessen significant physical impacts on the environment resulting from any conflicts.

Nevertheless, it cannot be concluded that all project-level conflicts would be avoided or substantially lessened. Therefore, transportation network improvements in year 2050 would conflict with land use plans, policies, and regulations, including general plans, specific plans, and community plans, adopted for the purpose of avoiding or mitigating an environmental effect. However, the impacts of transportation network improvements are already evaluated in other sections of this EIR, so these conflicts would not cause new significant impacts. Therefore, this impact is less than significant.

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements would not likely conflict with local jurisdictions' land use plans, including general plans, specific plans, local coastal programs, and community plans, and would not result in a physical change to the environment not already addressed in the other resource chapters of this EIR. Further, impacts related to conflicts with individual policies associated with environmental protection and mitigation are already evaluated in other sections of this EIR. Therefore, this impact (LU-2) in the year 2050 is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

4.11.5 Cumulative Impacts Analysis

C-LU-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE IMPACTS RELATED TO LAND USE AND PLANNING.

This section discusses the cumulative effects of past, present, and reasonably foreseeable future projects and the contribution of regional growth and land use change and transportation network improvements and programs included in the proposed Plan to these effects. The geographic scope for the cumulative land use and planning analysis is the Southern California region. While land uses and development patterns are typically established in local land use planning documents specific to jurisdictions, it is important to consider land use change and how the transportation system would influence the development pattern across the Southern California region as a whole because land uses merge and flow together along jurisdictional boundaries. A wide variety of land use patterns and development types can be found throughout the Southern California region including urban and rural development, commercial and industrial developments, military installations, tribal reservations, agricultural land, parks and open space, and habitat conservation areas.

The cumulative impact is the combination of the land use and planning impacts of the proposed Plan, land use impact projections in adopted plans, and impacts on land use resulting from substantial regional projects. Significant cumulative impacts related to land use would occur if established communities are physically divided, or if conflicts are created with land use plans adopted for the purpose of avoiding or mitigating an environmental effect.

This cumulative land use and planning impact assessment considers and relies on the impact analysis presented in the Southern California Association of Governments (SCAG) 2024-2050 RTP/SCS and its EIR (SCAG 2024a, 2024b). The SCAG 2024-2050 RTP/SCS and associated EIR generally encompass Imperial, Orange, San Bernardino, Riverside, Los Angeles, and Ventura counties. The San Diego County General Plan and its EIR (County of San Diego 2011) was used to consider land use effects within San Diego County. Additionally, multiple agencies and jurisdictions have land use control throughout the region, including local cities and counties, numerous military branches, tribal governments, state and federal agencies, port authorities, and airport authorities that outline their policies in various planning documents.

Impacts of the Proposed Plan

The land use patterns outlined in the proposed Plan focus greater development intensity in existing urban centers. The proposed Plan provides a strategy to accommodate population, housing, and job growth in such a way as to achieve consistency with regional planning and the SCS requirements. The pattern of more intensive land uses, along with the transit improvements is intended to accommodate regional growth in urban communities. Therefore, land use changes under the proposed plan would not physically divide an established community. However, transportation network improvements, such as new commuter rail extensions into previously unserved areas, could in some locations result in a physical division of an established community in 2050 (Impact LU-1).

Regional growth forecasted and development patterns that would occur under the proposed Plan would be consistent with applicable land use plans. During preparation of the proposed Plan, SANDAG aligned the SCS land use pattern with relevant local general plans, community plans, specific plans, and development constraints. Transportation network improvements in 2035 and 2050 would conflict with land use plans, policies, and regulations, including general plans, specific plans, and community plans, adopted for the purpose of avoiding or mitigating an environmental effect. However, the impacts of transportation network improvements are already evaluated in other sections of this EIR, so these conflicts would not cause new significant impacts. Therefore, the proposed Plan would not cause a significant environmental impact due to a conflict with any land use plan, policy or regulation and result in a physical change to the environment not already addressed in the other resource chapters of this EIR (Impact LU-2).

Impacts of Related Projects

Projects planned in the Southern California region, such as the California High Speed Rail Train (HST), airport expansions in the San Diego region, or long linear projects such as rail pipeline or energy transmission infrastructure, would result in impacts related to the physical division of established communities. For example, the HST project in the San Diego region would result in property acquisition along existing rights of way and some acquisition along new rights of way in undeveloped areas, resulting in significant displacement and land use compatibility impacts (HSRA 2005).

Projects planned in the Southern California region, such as the HST, airport expansions in the San Diego region, or long linear projects such as rail pipeline or energy transmission infrastructure, would result in impacts related to conflicts with adopted general plans or other applicable land use plans. For example, the HST project in the San Diego region would result in property acquisition along existing rights-of-way and some acquisition along new rights-of-way in undeveloped areas, resulting in land use compatibility impacts (HSRA 2005). The EIR/Environmental Impact Statement (EIS) prepared for the HST project determined that the project would result in significant cumulative impacts on land use. The EIR for the SDIA Airport Development Plan identified significant land use impacts due to conflict with certain aspects of land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The project would generate future noise and traffic impacts that are in conflict with certain community plans and policies, resulting in significant and unavoidable impacts (SDIA 2019).

The EIS for the Navy OTC Revitalization Project evaluated several alternatives and determined that the project would result in increased density under several alternative options that would contribute to significant additional proposed growth in dwelling units, population, jobs, and non-residential uses over the targets contained in the applicable community plan (US Navy 2021).

Impacts of Projections in Adopted Plans

The SCAG 2024-2050 RTP/SCS EIR found that implementation of the Connect SoCal 2024 Plan has the potential to physically divide an established community (SCAG 2024b). The County of San Diego General Plan Update EIR identified a less than significant cumulative impact associated with the physical division of an established community due to future roadway development under the proposed General Plan Update, including new roads, road extensions, and widening of existing roads throughout the county (County of San Diego 2011).

Land use impacts are typically isolated to a jurisdiction, except where land uses may interact or conflict with land uses in adjacent jurisdictions. Growth and development within the cumulative impact analysis area could result in a cumulative land use impact if the development is inconsistent with applicable land use plans or policies. The SCAG 2024-2050 RTP/SCS EIR found that implementation of the Connect SoCal 2024 Plan has the potential to conflict with existing land use plans (SCAG 2024b). The County of San Diego General Plan Update EIR identified a less than significant cumulative impact associated with the physical division of an established community due to future roadway development under the proposed General Plan Update, including new roads, road extensions, and widening of existing roads throughout the county. The EIR found that the General Plan Update would not contribute to a significant cumulative impact associated with conflicts with local plans, policies, and regulations (County of San Diego 2011).

Cumulative Impacts and Impact Conclusions

2035

Physically Divide an Established Community

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan and direct land use impacts of adopted plans and related projects described above, including the HST, SCAG 2024-2050 RTP/SCS and the County of San Diego General Plan Updated were significant when considered together. As discussed above, regional growth and land use change and implementation of the transportation network improvements in the proposed Plan would not result in the division of established communities or conflict with

land use plans in 2035. Although cumulative impacts related to the physical division of an established community would be significant, the proposed Plan's contribution would be less than significant and would not be cumulatively considerable.

Conflict with any Land Use Plan, Policy or Regulation

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan and impact projections from adopted plans within the Southern California region were significant when considered together. As described above, the proposed Plan would not conflict with land use plans in 2035. Although cumulative land use impacts throughout the Southern California region by 2035 would be significant, the proposed Plan's contribution would be less than significant and not be cumulatively considerable.

2050

Physically Divide an Established Community

As discussed above, implementation of the transportation network improvements in the proposed Plan would result in the division of established communities and conflict with land use plans in 2050. The combination of the direct land use impacts from the proposed Plan together with impacts of the adopted plans and related projects described above, including the HST, SCAG 2024-2050 RTP/SCS and the County of San Diego General Plan Update would result in significant cumulative land use impacts regarding the division of an established community by 2050. Therefore, the proposed Plan would contribute to cumulative impacts related to the physical division of an established community (Impact C-LU-1).

Conflict with any Land Use Plan, Policy or Regulation

As described above, implementation of the proposed Plan would not conflict with land use patterns of adopted general plans or other applicable land use plans in 2050. The 2050 time period is beyond the planning horizon of the adopted 2024-2050 SCAG RTP/SCS, and the County General Plan Update does not specify a planning horizon date. However, with anticipated long-term growth and development throughout the region, it can be expected that similar land use and planning impacts would continue throughout the planning area. Although cumulative land use impacts throughout the Southern California region by 2050 would be significant, the proposed Plan's contribution would be less than significant and not be cumulatively considerable.

MITIGATION MEASURES

C-LU-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO LAND USE AND PLANNING

2050

Mitigation measure LU-1a intended to reduce land use impacts due to transportation improvements in 2050 would be applicable to cumulative land use impacts. Mitigation measure LU-1 requires project-level CEQA review of transportation network improvements to avoid the creation of barriers that physically divide established communities. Implementation of mitigation measure LU-1a would not guarantee reduction of proposed Plan impacts associated with physically dividing established communities to a less-than-significant level. Therefore, the proposed Plan's incremental contributions to the cumulative land use impacts in 2050 would remain cumulatively considerable post-mitigation.

4.12 MINERAL RESOURCES

This section evaluates the potential mineral resources impacts of the proposed Plan.

4.12.1 Existing Conditions

SAN DIEGO REGION MINERAL RESOURCES

Mineral resources in the San Diego region serve various public, commercial, scientific, and recreational purposes. The term "mineral resources" refers to a concentration of naturally occurring minerals in a form and amount that make economic extraction potentially feasible (SMGB 2024). Locally important mineral resources in the San Diego region include construction aggregate materials (sand, gravel, and crushed rock), industrial and chemical mineral materials (limestone, dolomite, and marble), and metallic and rare materials (precious metals, gemstones, iron and other ferro-alloy metals, copper, lead, zinc, and optical-grade calcite) (County of San Diego 2011). These finite resources are each important to the region's economy, but due to the importance of aggregate materials in construction of vital infrastructure, aggregate materials are the most economically important mineral category. Other mineral resources in the San Diego region include the Pala Gem Mining District, which is on land governed by the Pala Band of Mission Indians (Hudson Institute of Mineralogy 2024); granite and marble dimension stone used for buildings and countertops; and a variety of industrial and chemical minerals, such as ash, boron, and clay.

The location of mineral resources is related to the geologic environments in which certain mineral deposits were formed. In the San Diego region, deposits formed during the Quaternary, Tertiary, and Cretaceous periods can be the source of mineral resources (County of San Diego 2011). For example, Quaternary alluvium is a source of sand and gravel that can be mined and processed to produce construction aggregate (Dudek 2020).

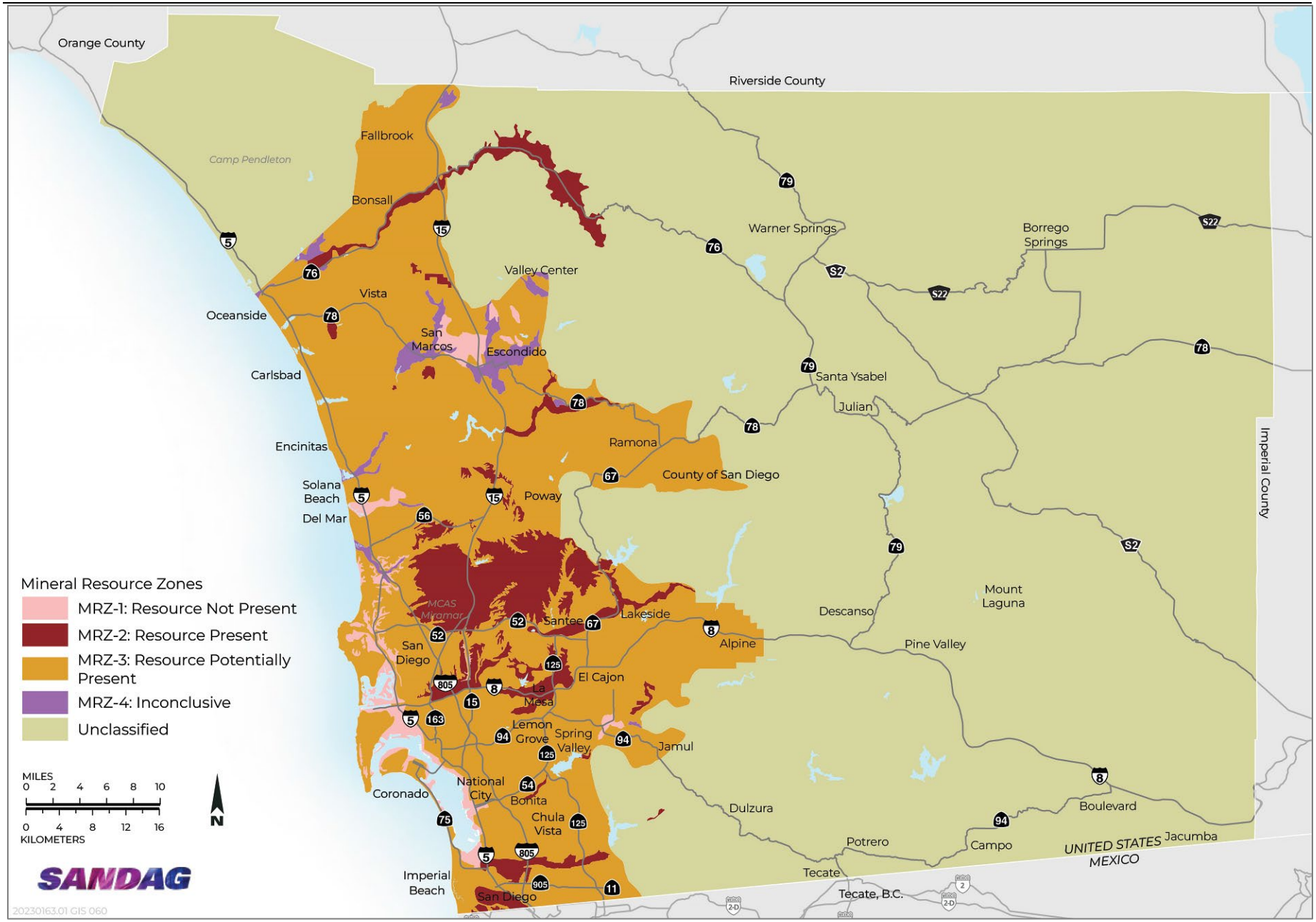
MINERAL RESOURCE ZONES

The State Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code Sections 2710–2796) establishes policies for the conservation, development, and reclamation of valuable mineral resources, and requires cities and counties to incorporate in their general plans the mapped locations of lands categorized by the State Mining and Geology Board (SMGB) as Mineral Resource Zones (MRZs). The primary objective of the classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or regional significance are available when needed. MRZs are described in Table 4.12-1. Resource recovery sites are areas where mineral resources could be extracted for use and may be designated in local land use plans. The MRZs depicted in Figure 4.12-1 only classifies the western portion of the County and is the most complete information currently available.

Table 4.12-1 Description of Mineral Zones

Zone	Description
MRZ-1	Areas where available geological information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
MRZ-2	Areas underlain by mineral deposits where geological data show that significant measured or indicated resources are present or where geological information indicates that significant inferred resources are likely to be present.
MRZ-3	Areas containing known mineral deposits that may qualify as mineral resources. These areas are considered to have a moderate potential to qualify as mineral resources or they occur in geologic settings that appear to be favorable environments for specific mineral deposits.
MRZ-4	Areas where geologic information does not rule out either the presence or absence of mineral resources.

Source: SMGB 2024.



Source: SANDAG, 2025.

Figure 4.12-1 Mineral Resource Zones

As shown in Figure 4.12-1, the majority of the western portion of the San Diego region is categorized as MRZ-3, which is a category given to areas containing known mineral deposits that have a moderate potential to qualify as mineral resources or that occur in geologic settings that appear to be favorable environments for specific mineral deposits.

The MRZ-1 and MRZ-4 areas make up a small portion of the San Diego region. It is important to note that there is a distinction between MRZ-1 and MRZ-4 categories, which is relevant for land-use considerations. The MRZ-1 category is given to areas where the available geological information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence. The MRZ-4 category, however, does not imply that there is a low likelihood for the presence of mineral resources. Rather, the MRZ-4 category indicates that there is a lack of knowledge regarding the presence of mineral resources. Further exploration would be required for the reclassification of MRZ-4 lands if there is evidence that a mineral resource is present.

Areas designated as MRZ-2 are those underlain by mineral deposits where geological data show that significant measured or indicated resources are present or where geological information indicates that significant inferred resources are likely to be present. Of the four MRZ categories, MRZ-2 has the highest potential to contain known significant mineral resource deposits. The existing MRZ-2 areas in the San Diego region are concentrated along major drainages, such as the San Luis Rey River (along SR 76 between I-15 and SR 78), Otay River, the Tijuana River, the San Diego River, Carroll Canyon, Sweetwater River, and the San Dieguito River. As a result, many of the region's existing mining operations are located along rivers and water courses.

AGGREGATE SUPPLY AND DEMAND

Construction aggregate is the largest nonfuel mineral commodity produced in California (CGS 2018). Aggregate materials include sand, gravel, and crushed stone, and are key ingredients in concrete and asphalt, which are essential for constructing and maintaining the physical framework of buildings and infrastructure. Aggregate is used for the construction of roads and rails, parking lots, buildings, homes, schools, hospitals, shopping centers, and other essential facilities. California Geological Survey completed the Aggregate Sustainability in California report in 2018 to provide general information about the current availability of, and future demand for, California's permitted aggregate reserves, which includes the San Diego region. According to the report, the Western San Diego region is projected to have a high demands for aggregate with a projection to need more than 500 million tons of aggregate in the next 50 years (CGS 2018). Figures 4.12-2 and 4.12-3 shows the locations of potential aggregate supply sites in the San Diego region.

4.12.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Indian Mineral Development Act of 1982

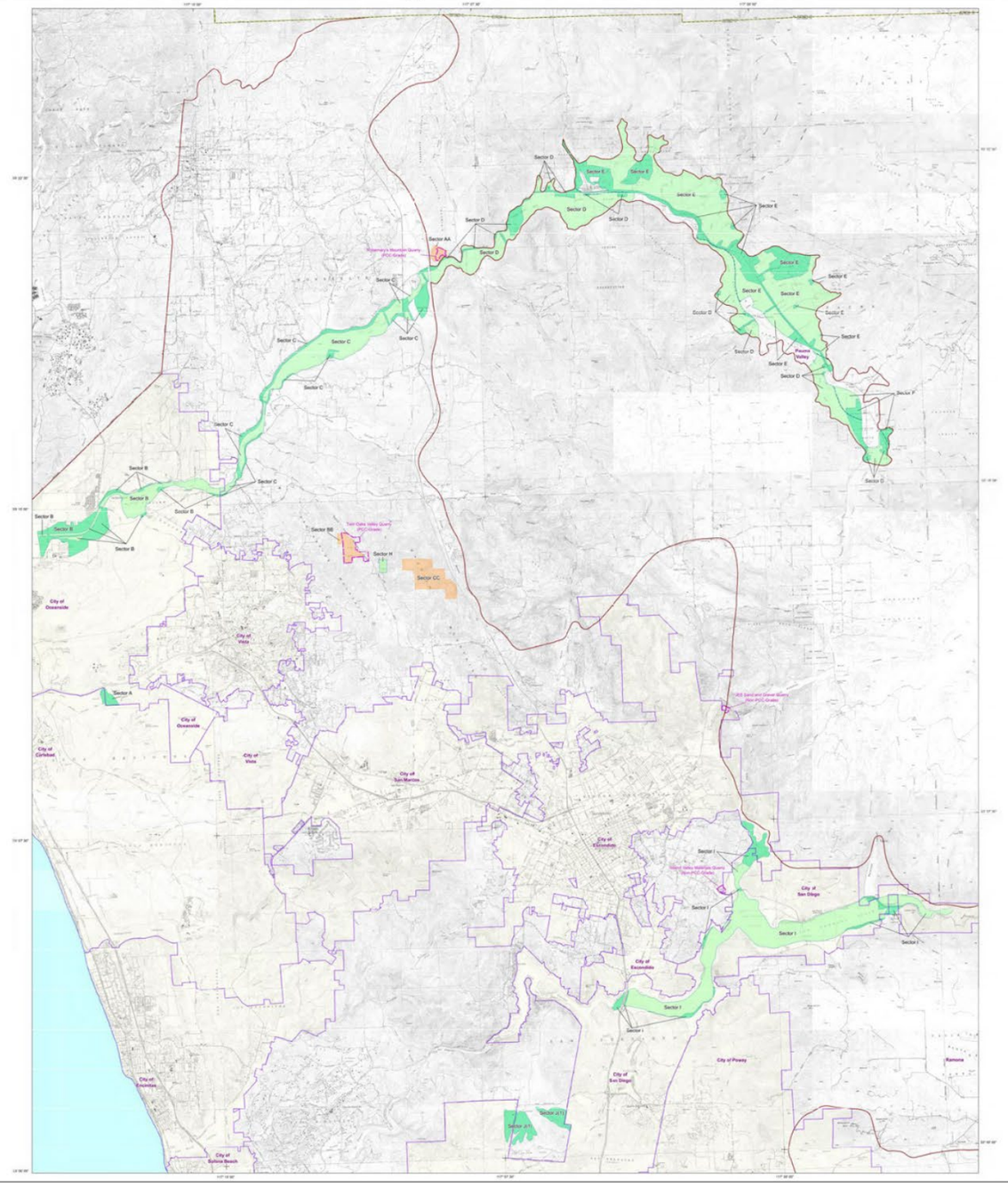
The Indian Mineral Development Act (25 U.S. Code Sections 2101–2108) outlines provisions for minerals agreement contracts for tribal nations. Subject to the approval of the Secretary of the Bureau of Indian Affairs (BIA) and any limitation or provision contained in its constitution or charter, tribes may enter into certain agreements providing for the exploration for, or extraction, processing, or other development of, energy and nonenergy mineral resources for which tribes own a beneficial or restricted interest, or providing for the sale or other disposition of the production or products of tribal mineral resources.

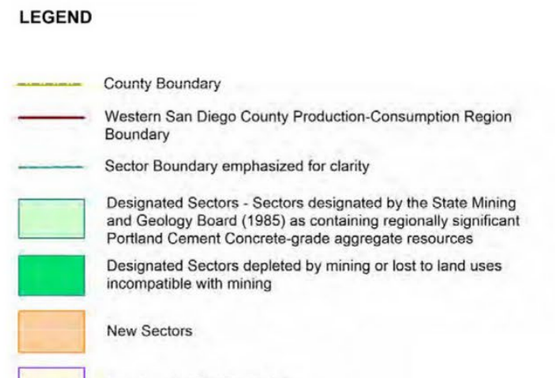
STATE LAWS, REGULATIONS, PLANS, AND POLICIES

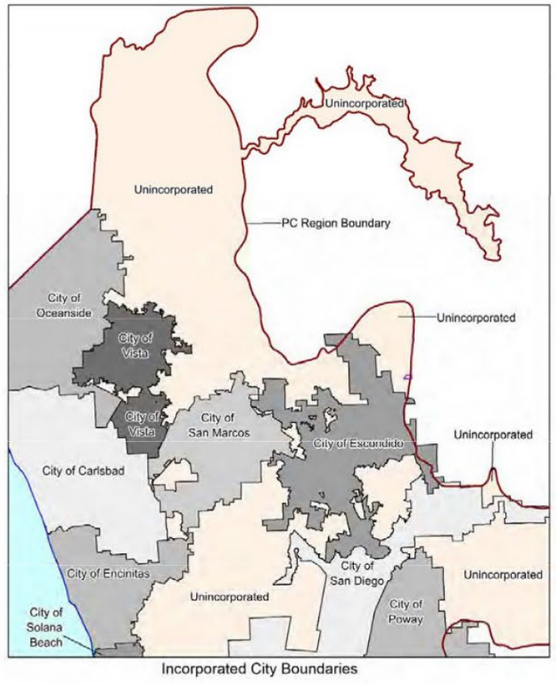
Surface Mining and Reclamation Act of 1975

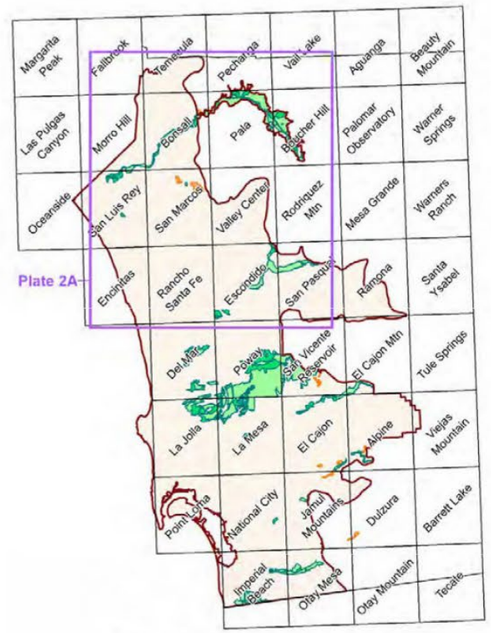
SMARA requires cities and counties to incorporate in their general plans certain mapped designations, including lands categorized as MRZs. MRZ classifications are set forth in guidelines developed by SMGB (2024) and are used to communicate information concerning the location of mineral resources.

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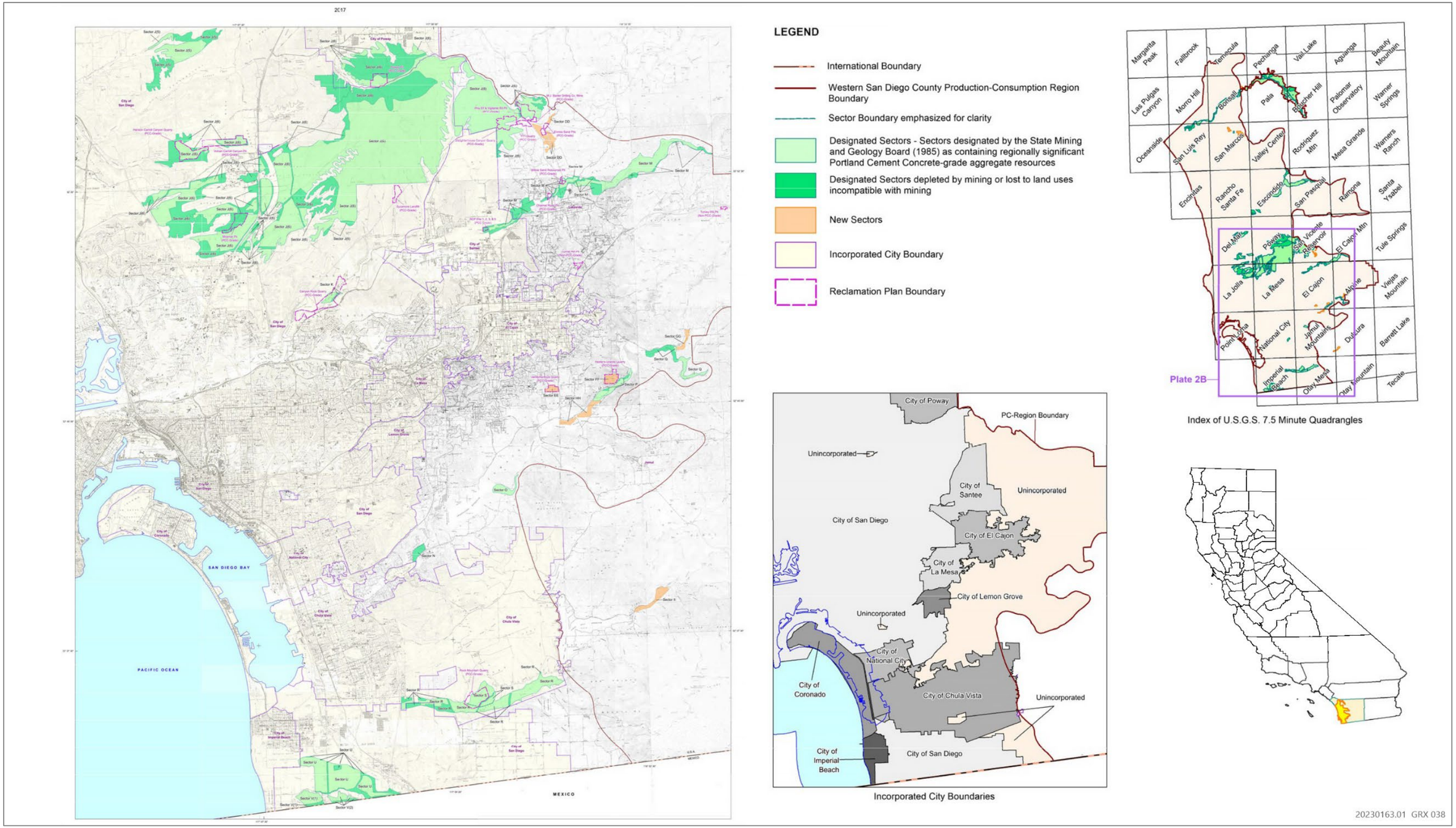




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Source: Image produced and provided by California Geologic Survey in 2018; Adapted by Ascent in 2025.

Figure 4.12-2 Potential Aggregate Supply Sites – Northern



Source: Image produced and provided by California Geologic Survey in 2018; Adapted by Ascent in 2025.

Figure 4.12-3 Potential Aggregate Supply Sites – Southern

Mineral lands are mapped according to jurisdictional boundaries (e.g., counties, groups of counties, or major parts of counties), and all mineral commodities in the area are mapped, including aggregate. Priority is given to areas where future mineral resource extraction could be precluded by incompatible land use or to mineral resources likely to be mined during the 50-year period following their classification.

Section 2762(d) of SMARA establishes specific requirements for notifying the lead agency prior to permitting a use that would threaten the potential for future extraction of identified mineral resources from either (1) MRZ-2 lands or (2) land designated in a lead agency's general plan as having important minerals to be protected. Prior to permitting a use that would threaten the potential to extract minerals on lands with either of these two designations, the lead agency must prepare a statement specifying its reasons for permitting the proposed use and provide public notice of the statement. The statement must be forwarded to the state geologist and SMGB for review and is required to comply with the public review requirements of CEQA.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

General Plans

To comply with California Government Code Section 65302, a general plan must include "[a] conservation element for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources" (Section 65302[d]). Sand, gravel, and crushed rock provide construction aggregate materials and are economically the most important mineral resource in the San Diego region (County of San Diego 2011). According to the San Diego County General Plan, locally important resource recovery sites or areas where important resource recovery sites could potentially be located, are designated by the CGS as MRZ-2 or MRZ-3, or as being underlain by Quaternary alluvium. Important mineral resource recovery sites are not identified in the San Diego County General Plan Update; however, areas designated as MRZ-2 by the CGS are areas where mines currently operate and other areas where resources are known or likely to be present (County of San Diego 2011). Per the guidance in the San Diego County General Plan, the locations of mineral resources, if any, are identified in each general plan. Policies and regulations for extraction activities are addressed in general plans and local codes, as shown in Table 4.12-2.

Table 4.12-2 Policies or Regulations by Jurisdiction

Jurisdiction	Policy or Regulation on Mineral Resources
Carlsbad	The City of Carlsbad classifies Open Space for Managed Production of Resources, including major mineral resources (City of Carlsbad 2015).
Chula Vista	City of Chula Vista Municipal Code Section 19.69 covers surface mining regulations (City of Chula Vista 2024). The Chula Vista General Plan policies concerning mineral resources include: ▶ E 5.1: Ensure that permit applications for proposed mineral resource extraction are consistent with the Chula Vista MSCP Subarea Plan. ▶ E 5.2: Consider and minimize impacts from mining operations to existing and future surrounding land uses. ▶ E 5.3: Ensure that approved mining reclamation plans fully comply with requirements of the Chula Vista MSCP Subarea Plan; Chula Vista Greenbelt Master Plan; Otay Valley Regional Park Concept Plan; and all other applicable plans regarding the restoration of biological habitats and the creation of trails and parkland (City of Chula Vista 2005).
Coronado	The City of Coronado identifies open space for the managed production of resources including areas that contain mineral deposits, such as bedrock, clay sand silts, and salt. The City recognizes salt ponds as a valuable resource not only for salt evaporation purposes, but also for providing habitat for birds and marine wildlife (City of Coronado 2003).
Del Mar	The City of Del Mar Municipal Code Chapter 23.32 contains provisions on excavating and grading permits (City of Del Mar 2024).
El Cajon	The City of El Cajon General Plan states that the City of El Cajon does not have any commercial deposits of ores or minerals (City of El Cajon 2001).

Jurisdiction	Policy or Regulation on Mineral Resources
Encinitas	The City of Encinitas General Plan contains a policy allowing mineral resource extraction within the coastal zone, except in environmentally sensitive areas (City of Encinitas 2024).
Escondido	The current City of Escondido General Plan does not include any goals or policies that specifically address mineral resources or mineral extraction (City of Escondido 2012).
Imperial Beach	The City of Imperial Beach General Plan and Local Coastal Plan do not include policies regarding mineral resources (City of Imperial Beach 2024).
La Mesa	The Conservation Element of the La Mesa General Plan states that La Mesa does not have any of the resources typically discussed in a conservation element, including mineral resources. The General Plan EIR does not discuss mineral resources, and the City of La Mesa does not have policies pertaining to mineral resources (City of La Mesa 2013).
Lemon Grove	The City of Lemon Grove does not have any known mineral deposits; therefore, there are no policies pertaining to mineral resources (City of Lemon Grove 1996).
National City	The City of National City's General Plan contains language on the salt ponds of the San Diego National Wildlife Refuge. The U.S. Fish and Wildlife Service has prepared a comprehensive conservation plan that includes a holistic habitat restoration plan for the existing salt works property (City of National City 2012).
Oceanside	The City of Oceanside General Plan's long-range policies include regulating mineral extraction activities to minimize hazards and conflicts with other land uses, as well as to preserve and enhance the appearance of the area (City of Oceanside 2002).
Poway	The City of Poway's General Plan states that the City's only known valuable mineral resource is construction-quality sand and gravel that is located in the southern area of the city. Currently, one sand and gravel extraction operation is located in Beeler Canyon on the southernmost portion of this area. The City's General Plan also states that areas designated as Region-Serving Open-Space (areas that are lightly developed with activities or facilities that serve the region as unique or outstanding recreational, safety, or managed production, such as agriculture and mineral extraction) should be retained as open space and in some cases increased to serve the region's expanding needs (City of Poway 1991). Chapter 16.54 of the City of Poway's Municipal Code contains regulations on surface mining and reclamation.
City of San Diego	The City of San Diego General Plan includes policies to balance mineral extraction with habitat conservation. These policies include: ▶ CE-K.1: Promote the recycling and reclamation of construction materials to provide for the City's current and future growth and development needs ▶ CE-K.2: Permit new or expanding mining operations within the multi-habitat planning area (MHPA) in accordance with MSCP policies and guidelines. ▶ CE-K.3: Produce sand and gravel with minimal harm and disturbance to adjacent property and communities. ▶ CE-K.4: Plan rehabilitation of depleted mineral areas to facilitate reuse consistent with state requirements, the Surface Mining and Reclamation Act (SMARA), and local planning goals and policies, including the MSCP. ▶ CE-K.5: Consider local evaporative salt production for future economic value, open space use, and for important ecological habitat. (City of San Diego 2024) Section 141.1004 of the City's Municipal Code covers regulations pertaining to mining and extractive industries.
San Marcos	According to the San Marcos General Plan, the City currently does not have active mines or quarries, although two historical mining/quarry locations exist within city limits. The City will maintain awareness of and comply with state policies regarding protection and extraction of these resources (City of San Marcos 2012). City of San Marcos Zoning Ordinance Chapter 20.460 covers regulations pertaining to surface mining.
Santee	According to the City of Santee's General Plan, Santee includes a number of areas containing valuable mineral (primarily sand and gravel) resources. These include areas along the San Diego River, within hilly areas north of Carlton Hills, south of Prospect Avenue between Mesa Road and Fanita Drive, and at the north end of Magnolia Avenue. In view of the potential environmental and flooding problems associated with the mining of these resources, the City of Santee needs to carefully review and regulate all sand mining and mineral recovery proposals (City of Santee 2003). The City's General Plan contains specific policies concerning mineral resources:

Jurisdiction	Policy or Regulation on Mineral Resources
	▶ Policy 5.1: The City shall require that all proposed mining operations are adequately reviewed during the project and environmental review processes to minimize to the greatest degree possible, all identified environmental impacts, especially water quality, habitat preservation, and bridge undermining. ▶ Policy 6.1: The City shall require the planned reclamation of mined lands following extraction of mineral resources with consideration of the land's potential for recreational, wildlife habitat, and scenic uses, as well as for residential, industrial, or commercial development (City of Santee 2003). Title 15, Chapter 15.58, Article VI of the City's Municipal Code covers regulations pertaining to surface mining and reclamation.
Solana Beach	The Conservation and Open Space Element of the City of Solana Beach General Plan states that open space is used for the managed production of resource-including areas containing mineral deposits (City of Solana Beach 2014).
Vista	The City of Vista General Plan does not have policies regarding the extraction of mineral resources; however, the General Plan Update EIR states that all future development associated with the General Plan Update would undergo individual review to ensure that significant mineral resources are protected (City of Vista 2011).
County of San Diego	San Diego County Zoning Ordinance Section 2820 et seq., known as the S82 Extractive Use Regulations, is intended to identify and create areas within the county where mining, quarrying, or oil extractive uses are permitted (County of San Diego 2011). Typically, the S82 Extractive Use Regulations would be applied to areas of mineral deposits to signify the presence of such deposit and notify adjacent or affected properties of the intention to allow extraction of minerals within the zone. These regulations are used to preserve areas with valuable mineral deposits until extraction can take place. San Diego County Zoning Ordinance Section 6550 et seq. (Extractive Use Regulations) provides the means for public review and regulation of mineral extraction and associated on site processing operations. County of San Diego Code of Regulatory Ordinances Sections 87.701–87.714 regulate all surface mining operations in the unincorporated area of the County of San Diego as authorized by the San Diego County Zoning Ordinance and SMARA. The objectives of these regulations are: a. The continued mining of minerals will be permitted in a manner that will protect the public health and safety and will provide for the protection and subsequent beneficial use of mined and reclaimed land; and b. The possible adverse effects of surface mining operations on the environment, including air pollution, impedance of groundwater movement, water quality degradation, damage to aquatic or wildlife habitat, flooding, erosion, and sedimentation, will be prevented or minimized; and c. The production and conservation of minerals will be encouraged while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment.

Note: MSCP = Multiple Species Conservation Plan; SMARA = State Surface Mining and Reclamation Act.

Source: Data compiled by Circlepoint in 2025.

4.12.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the CEQA Guidelines Appendix G checklist questions. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, the unique nature of the proposed Plan's mineral resources impacts, and the unique characteristics of the proposed Plan.

Checklist questions for mineral resources are provided in Section XII of CEQA Guidelines Appendix G. To streamline the analysis, the two separate mineral resources criteria (a) and (b) in CEQA Guidelines Appendix G, which are closely related, have been combined as MR-1 for the purposes of this EIR. Implementation of the proposed Plan would have a significant mineral resources impact if it would:

MR-1 Result in the loss of availability of known aggregate and mineral resources supply sites that would be of value to the region and the residents of the state or result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan.

The analysis discloses impacts on mineral resources. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's mineral resources impacts would be worsened by climate change. Therefore, a climate change analysis for mineral resources impacts is not included in this section.

4.12.4 Environmental Impacts and Mitigation Measures

MR-1 RESULT IN THE LOSS OF AVAILABILITY OF KNOWN AGGREGATE AND MINERAL RESOURCES SUPPLY SITES THAT WOULD BE OF VALUE TO THE REGION AND THE RESIDENTS OF THE STATE, OR RESULT IN THE LOSS OF AVAILABILITY OF A LOCALLY-IMPORTANT MINERAL RESOURCE RECOVERY SITE DELINEATED IN A LOCAL GENERAL PLAN, SPECIFIC PLAN, OR OTHER LAND USE PLAN.

ANALYSIS METHODOLOGY

A significant impact on mineral resources would occur if implementation of regional growth and land use change or transportation network improvements and programs would result in the loss of availability of known aggregate supply sites and mineral resources that would be of value to the region and the residents of the state.

Mapped MRZ-2 lands from data provided by SANDAG are used for this analysis. The regional aggregate supply site information from California Geological Survey's Aggregate Sustainability in California report prepared in 2018 is depicted in Figures 4.12-2 and 4.12-3. The analysis quantifies direct impacts of regional growth and transportation network improvements that would occur on lands designated as MRZ-2 that would potentially be available for extraction of mineral resources.

Indirect impacts on mineral resources are analyzed qualitatively by considering the effects of forecasted changes in land use and transportation network improvements that would be incompatible with current or future mining operations in locations where mineral resources are present. Incompatible land uses would include those such as residential, institutional (e.g., schools, hospitals) or environmentally sensitive open space areas, where social or environmental factors make it unlikely that resources would be mined nearby.

IMPACT ANALYSIS

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. The cities of San Diego, Oceanside, and San Marcos both overlap areas designated as MRZ-2. The city of Chula Vista does not contain overlap areas designated as MRZ-2.

Lands designated as MRZ-2 locations are areas with known mineral resources. As shown in Figure 4.12-1, MRZ-2 locations exist along many of the major waterways in San Diego County, several of which are also the route of regional highways. In the north part of the county, these include SR 76 along the San Luis Rey River and along the San Dieguito River between I-15 and SR 78. In the central part of the county, MRZ-2 areas are found in the hills north of SR 52 and east of I-805, and along the San Diego River, including along I-8. In the south part of the county they occur along the Otay River in south Chula Vista and Otay Mesa, and from Imperial Beach south to the United States–Mexico border along the Tijuana River. Resource recovery sites are areas where mineral resources

could be extracted for use. Locally important resource recovery sites or areas where important resource recovery sites could potentially be located, or where mines are currently operating, are designated by CGS as MRZ-2 or MRZ-3, as shown on Figure 4.12-1.

Permanent loss of availability to land containing mineral resources in the region is caused by the development of incompatible uses, which directly or indirectly makes the resource inaccessible for future extraction. To accommodate regional growth and land use change by 2035, portions of vacant and undeveloped land in MRZ-2 locations would be developed for land uses considered incompatible with mining operations.

Although there are several places in the San Diego region where active mining operations have functioned in proximity to urban development, such as Mission Valley or Carroll Canyon in the City of San Diego, residential development typically restricts the availability of lands for mining operations. Noise from quarry and mining activities is typically the largest environmental impact on nearby noise-sensitive land uses (such as residential developments, industrial developments, commercial developments, and major public facilities). Residents can be concerned about potential dust, noise, blasting vibrations, truck traffic, unsightly scars on the land, and loss of habitat caused by aggregate mining. Aggregate, a regionally important mineral resource, is found in portions of MRZ-2 locations, as seen in Figures 4.12-2 and 4.12-3.

In 2035, additional vacant and undeveloped land in MRZ-2 locations would be developed for uses considered incompatible with mining operations. Development to accommodate regional growth and land use change would be constructed throughout the region. As identified in Table 4.12-3, from 2022 to 2035, regional growth and land use changes would result in the loss of approximately 644 acres of undeveloped MRZ-2 land. These impacts would result in the loss of known mineral resources.

Table 4.12-3 Conversion of Undeveloped MRZ-2 Lands under the Proposed Plan 2035 Regional Growth and Land Use Change

2022 Existing Undeveloped Land within MR-Z-2 Lands	Acres to be Converted 2022 - 2035
42,963	644

Source: Compiled by Ascent in 2025.

Therefore, regional growth and land use change under the proposed Plan would result in the loss of availability of known aggregate and mineral resources that would be of value to the region and the residents of the state, and result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan as identified in the San Diego County General Plan which areas designated as MRZ-2 (County of San Diego 2011). As a result, this impact would be significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

As identified in Table 4.12-4, in 2035, transportation network improvements and programs would result in the loss of approximately 260 acres of undeveloped MRZ-2 land between 2022 and 2035. New impacts between 2022 and 2035 are primarily due to the Mast Park to Lakeside baseball park section of the San Diego River Trail in the City of Santee, and SR 52 Complete Corridor Managed Lanes. MRZ-2 overlap would not be encountered within the City of Chula Vista; however, in the cities San Marcos, Oceanside, and San Diego have areas where MRZ-2 overlap

would occur due to the Next Gen Rapid, Active Transportation, Flexible Fleet, Managed Lanes and Next Gen Rapid projects. These projects would result in the loss of known mineral resources and mineral resource recovery sites.

Table 4.12-4 Conversion of Undeveloped MRZ-2 Lands under the Proposed Plan 2035 Transportation Network Improvements and Programs

2022 Existing Undeveloped Land within MR-Z-2 Lands	Acres to be Converted 2022 - 2035
42,963	260

Source: Compiled by Ascent in 2025.

Therefore, regional growth and land use change under the proposed Plan would result in the loss of availability of known aggregate and mineral resources that would be of value to the region and the residents of the state, and result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan. The San Diego County General Plan defines locally important mineral resource recovery sites as MRZ-2 designated areas (County of San Diego 2011). As a result, this impact would be significant.

2035 Conclusion

Implementation of regional growth and land use change, as well as transportation network improvements and programs, would result in the loss of availability of known aggregate or other mineral resources, as well as the loss of availability of locally important mineral resource recovery sites, including the loss of loss of 904 acres of MRZ-2 lands as a result of transportation network improvements. Therefore, this impact (MR-1) is significant in the year 2035.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. The cities of Carlsbad, El Cajon, San Diego, and unincorporated jurisdictions overlap with areas designated as MRZ-2. The City of Chula Vista does not overlap with areas designated as MRZ-2.

In 2050, additional vacant and undeveloped land in MRZ-2 locations would be developed for uses considered incompatible with mining operations. Development to accommodate regional growth and land use change would be constructed throughout the region. As identified in Table 4.12-5, from 2036 to 2050, regional growth and land use change would result in the loss of approximately 356 acres of undeveloped MRZ-2 land. Nevertheless, these impacts would result in the loss of known mineral resources and mineral resource recovery sites. Therefore, regional growth and land use change under the proposed Plan would result in the loss of availability of known aggregate and mineral resources that would be of value to the region and the residents of the state. Additionally, the development would result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan as identified in the San Diego County General Plan which designates these areas as MRZ-2 (County of San Diego 2011). As a result, this impact would be significant.

Table 4.12-5 Conversion of Undeveloped MRZ-2 Lands under the Proposed Plan 2050 Regional Growth and Land Use Change

2035 Undeveloped Land within MR-Z-2 Lands	Acres to be Converted 2036 - 2050
42,319	356

Source: Compiled by Ascent in 2025.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

As identified in Table 4.12-6, in 2050, transportation network improvements and programs would result in the loss of 317 acres of MRZ-2 land. New impacts to mineral resources between 2035 and 2050 are primarily due to the I-5 to Santo Road segment of the SR 52 Bikeway, and the San Luis Rey River Trail. MRZ-2 overlap would not be encountered within the City of Chula Vista; however, in the cities of Carlsbad, El Cajon, San Diego, and unincorporates areas, MRZ-2 overlap would occur due to implementation projects such as Active Transportation, Managed Lanes, and Operational Improvements. These projects would result in the loss of known mineral resources and mineral resource recovery sites. This impact would be significant.

Table 4.12-6 Conversion of Undeveloped MRZ-2 Lands under the Proposed Plan 2050 Transportation Network Improvements and Programs

2036 Undeveloped Land within MR-Z-2 Lands	Acres to be Converted 2036 - 2050
42,963	317

Source: Compiled by Ascent in 2025.

2050 Conclusion

Implementation of regional growth and land use change, as well as transportation network improvements and programs, would result in the loss of availability of known aggregate or other mineral resources, as well as the loss of availability of locally important mineral resource recovery sites, including the loss of 673 acres of MRZ-2 lands. Therefore, this impact (MR-1) is significant in the year 2050.

MITIGATION MEASURES

MR-1 RESULT IN THE LOSS OF AVAILABILITY OF KNOWN AGGREGATE AND MINERAL RESOURCES SUPPLY SITES THAT WOULD BE OF VALUE TO THE REGION AND THE RESIDENTS OF THE STATE, OR RESULT IN THE LOSS OF AVAILABILITY OF A LOCALLY IMPORTANT MINERAL RESOURCE RECOVERY SITE DELINEATED IN A LOCAL GENERAL PLAN, SPECIFIC PLAN, OR OTHER LAND USE PLAN.

2035, 2050

MR-1a Conserve Aggregate and Mineral Resources During Planning and Design of Development Projects. During planning, design, and project-level CEQA review of development projects, the County of San Diego, cities, and other local jurisdictions can and should avoid or reduce impacts on known aggregate and mineral resources and locally important mineral resource recovery sites through the evaluation and selection of project sites and design features (e.g., buffers) that minimize direct and indirect impacts on these lands. Aggregate and mineral resource areas, especially MRZ-2 areas, should be maintained in open space or other general plan land use designations and zoning that allow for extraction of mineral resources.

MR-1b Conserve Aggregate and Mineral Resources During Planning and Design of Transportation Network Improvements.

During planning, design, and project-level CEQA review of transportation network improvements, SANDAG shall, and other transportation project sponsors can and should, avoid loss of known aggregate and mineral resources and locally important mineral resource recovery sites, where feasible. Where avoidance is infeasible, SANDAG

shall, and other transportation project sponsors can and should, minimize direct and indirect impacts on the availability of known resources and recovery sites through measures that include, but are not limited to, the following:

- Designing transportation network improvements in a manner (such as buffer zones or the use of screening) that do not preclude adjacent or nearby extraction of aggregate and mineral resources following completion of the improvement and during long-term operations.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in the loss of availability of known aggregate or other mineral resources, as well as the loss of availability of locally important mineral resource recovery sites. Mitigation measures MR-1a and MR-1b would reduce the impact associated with the loss of availability of known mineral resources and mineral resource recovery sites, but not to less-than-significant levels because they would not prevent impacts on all MRZ-2-zoned lands. Additionally, design features that reduce the impact associated with the loss of availability of known mineral resources and mineral resource recovery sites may not reduce impacts to less than significant for all projects. Therefore, this impact (MR-1) remains significant and unavoidable.

4.12.5 Cumulative Impacts Analysis

C-MR-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO MINERAL RESOURCES

The area of geographic consideration for cumulative impacts to mineral resources is the Southern California and Northern Baja region. While some mineral resources can be distinct to certain locations, they are not confined by jurisdictional boundaries. Thus, it is necessary to consider the availability of mineral resources in Southern California and Northern Baja as a whole.

A projection approach for cumulative analysis of mineral resources allows for an overarching discussion of regional and cross-border loss of availability of mineral resources associated with general patterns of regional urbanization, growth, and land use changes. A significant cumulative impact on mineral resources would occur if the proposed Plan would result in incremental effects that are considered cumulatively significant when considered in combination with the effects on mineral resources resulting from implementation of approved regional planning documents. Significant cumulative impacts would occur if there were cumulative risks of loss of availability of valuable mineral resources or locally important recovery sites in Southern California and Northern Baja.

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan, and SCAG 2024-2050 RTP/SCS EIR (SCAG 2024b) for the Southern California region. There are generally no regional plans pertaining to such resources for the Northern Baja California region.

Impacts of the Proposed Plan

Regional growth and land use changes and transportation network improvements associated with the proposed Plan would cause loss of availability of known mineral resources, because regional growth, land development to accommodate this growth, and transportation network improvements would encroach into MRZs and locally important resource recovery sites, resulting in the total loss of 458 acres of MRZ-2 lands by 2050. Therefore, mineral resources impacts would be significant for 2035 and 2050 (Impact MR-1).

Impacts of Projections in Adopted Plans

The EIR prepared for the SCAG 2024-2050 RTP/SCS analyzed impacts on the SCAG region up to 2050 and identified significant and unavoidable impacts related to the loss of availability of known mineral resources. The EIR also found that the updated 2024-2050 RTP/SCS would contribute to cumulatively considerable impacts on mineral resources (SCAG 2024a). Adopted land use plans for local jurisdictions in Southern California and

Northern Baja would support the construction of new development and redevelopment through policy changes, general plan updates, and zoning amendments that encourage and facilitate population growth and land use changes. Development associated with the implementation of regional planning documents would in some cases also impact availability of known mineral resources, because development would likely occur in some locations within MRZs or resource recovery sites.

Cumulative Impacts and Impact Conclusions

2035

A significant cumulative impact in the year 2035 would result if the proposed Plan's incremental effect would be cumulatively considered when considered along with the effects from adopted plans within the Southern California and Northern Baja region.

The proposed Plan would significantly impact the availability of known mineral resources due to development in locations within MRZs or resource recovery sites. Combined with the loss of the availability of mineral resources from implementation of adopted regional planning documents, such as the San Diego County's General Plan, and City of San Diego's General Plan where development from these plans have the potential to impact the availability of mineral resources, impacts from the proposed Plan would also result in significant cumulative impacts on the availability of known mineral resources in 2035.

Because cumulative mineral resources impacts throughout the Southern California and Northern Baja region by 2035 would be significant, and because the proposed Plan's incremental impacts on these resources are significant, the proposed Plan's impacts on mineral resources are also cumulatively considerable and therefore significant (Impact C-MR-1).

2050

The proposed Plan would significantly impact the availability of known mineral resources due to development in locations within MRZs or resource recovery sites. When added to the loss of the availability of mineral resources from implementation of adopted regional planning documents, such as the San Diego County's General Plan, and City of San Diego's General Plan where development from these plans have the potential to impact the availability of mineral resources, the incremental impacts from the proposed Plan would result in significant cumulative impacts on the availability of known mineral resources in 2050.

Because cumulative mineral resource impacts throughout the Southern California and Northern Baja region by 2050 would be significant, and because the proposed Plan's incremental impacts on these resources are significant, the proposed Plan's impacts on mineral resources are cumulatively considerable and therefore significant (Impact C-MR-1).

MITIGATION MEASURES

C-MR-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO MINERAL RESOURCES

2035, 2050

Mitigation measures MR-1a and MR-1b would conserve aggregate and mineral resources through avoidance of aggregate and mineral resources or through incorporation of appropriate design features to reduce impacts on resources when avoidance is not feasible. However, as outlined above, this mitigation measure would not guarantee that all proposed Plan impacts on the availability of known mineral resources would be less than significant. Therefore, the proposed Plan's incremental contributions to cumulative impacts on the availability of known mineral resources in years 2035 and 2050 would remain cumulatively considerable post mitigation.

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4.13 NOISE AND VIBRATION

This section evaluates the noise and vibration impacts of the proposed Plan.

4.13.1 Existing Conditions

Prior to discussing the noise setting for the proposed Plan, background information about sound, noise, vibration, and common noise descriptors is needed to provide context and a better understanding of the technical terms referenced throughout this section.

NOISE FUNDAMENTALS

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air or water) to a hearing organ, such as the human ear (Caltrans 2020a, 2013; FTA 2018). Noise is defined as sound that is objectionable because it is unwanted, disturbing, loud, unexpected, or annoying. In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and the obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. The following sections provide an explanation of key concepts and acoustical terms used in the analysis of environmental and community noise.

Noise Descriptors

Because sound levels can vary markedly over a short period of time, various descriptors have been developed to quantify environmental and community noise. Some of the most common descriptors used to describe environmental noise, including those used in this EIR, are described below.

- **Equivalent sound level (L_{eq})** is the most common metric used to describe short-term average noise levels. The L_{eq} describes the average acoustical energy content of noise for an identified period of time, commonly 1 hour. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013: 2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly L_{eq}, is the energy average of sound levels occurring during a 1-hour period and is the basis for noise abatement criteria used by California Department of Transportation (Caltrans) and Federal Transit Administration (FTA) (Caltrans 2013: 2-47; FTA 2018).
- **Maximum sound level (L_{max})** and **minimum sound level (L_{min})** refer to the maximum and minimum sound levels, respectively, that occur during the noise measurement period. More specifically, they describe the root-mean-square sound levels that correspond to the loudest and quietest 1-second intervals that occur during the measurement.
- **Percentile-exceeded sound level (L_x)** describes the sound level exceeded for a given percentage of a specified period. For example, L_{50} is the sound level exceeded for 50% of the time (such as 30 minutes per hour), and L_{25} is the sound level exceeded 25% of the time (such as 15 minutes per hour).
- **Community noise equivalent level (CNEL)** is a measure of the 24-hour average A-weighted sound level that is also time-weighted to "penalize" noise that occurs during the evening and nighttime hours when noise is generally recognized to be more disturbing (because people are trying to rest, relax, and sleep during these times). A 5 dBA penalty is added to the L_{eq} during the evening hours of 7:00 p.m. and 10:00 p.m., and a 10 dBA penalty is applied to the L_{eq} during the nighttime hours of 10:00 p.m. to 7:00 a.m. The energy average is then taken for the whole 24-hour day (Caltrans 2013: 2-48).
- **Day-night sound level (L_{dn} or DNL)** is also a time-weighted average of the 24-hour A-weighted noise level. The only difference is that no "penalty" is applied to the evening hours of 7:00 p.m. to 10:00 p.m. while 10 dBA

is added to the L_{eq} during the nighttime hours of 10:00 p.m. to 7:00 a.m., and the energy average is then taken for the whole 24-hour day.

Various federal, state, and local agencies have adopted CNEL or L_{dn} as the measure of community noise. Although not identical, CNEL and L_{dn} are normally within 1 dBA of each other when measured in typical community environments, and many noise standards/regulations use the two interchangeably.

Frequency, Amplitude, and Decibels

Continuous sound can be described by *frequency* (pitch) and *amplitude* (loudness). A low-frequency sound is perceived as low in pitch; a high-frequency sound is perceived as high-pitched. Frequency is expressed in terms of cycles per second, or hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz, or thousands of Hz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

The amplitude of pressure waves generated by a sound source correlates with the loudness of that source. The amplitude of a sound is described in terms of *sound pressure level* (SPL), also referred to simply as the sound level. The SPL is typically described using a logarithmic scale in terms of decibels (dB).

Because decibels represent SPL using a logarithmic scale, SPLs cannot be added, subtracted, or averaged through ordinary arithmetic. Under the dB scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing the same SPL at a given receiver location, the resulting sound level would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. For example, if one idling truck generates an SPL of 70 dB, two trucks idling simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the dB scale, three sources of equal loudness together produce a sound level approximately 5 dB louder than one source. However, where ambient noise levels are high in comparison to a new noise source, there will be only a small change in overall noise levels when the new source is added. For example, when an ambient noise level of 70 dB is combined with a new source of 60 dB, the resulting total noise level equals 70.4 dB.

Similarly, the arithmetic mean (average) of a series of noise levels does not accurately represent the overall average noise level. Instead, the values must be averaged using a linear scale before converting the result back into a logarithmic (dB) noise level. This method is typically referred to as calculating the "energy average" of the noise levels. The same decibel calculations are used for A-weighted decibels (dBA).

A-Weighting

The dB scale alone does not adequately characterize how humans perceive noise. Human hearing is limited in the range of audible frequencies, as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within this range better than sounds of the same amplitude with frequencies outside of this range. To approximate the response of the human ear, sound levels of individual frequency bands are adjusted (or "weighted"), depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of dBA) can be computed based on this information.

The resulting SPL is expressed in dBA. When people make judgments of the relative loudness or annoyance of a sound, their judgment correlates well with the A-weighted sound levels of those sounds. Table 4.13-1 describes typical A-weighted sound levels for various noise sources.

Table 4.13-1 Typical Noise Levels in the Environment

Common Outdoor Noise Source	Sound Level (dBA)	Common Indoor Noise Source
—	110	Rock band
Jet flyover at 1,000 feet	100	—
Gas lawn mower at 3 feet	90	—
Diesel truck at 50 feet at 50 miles per hour	80	Food blender at 3 feet, garbage disposal at 3 feet

Common Outdoor Noise Source	Sound Level (dBA)	Common Indoor Noise Source
Noisy urban area during daytime, gas lawn mower at 100 feet	70	Vacuum cleaner at 10 feet, normal speech at 3 feet
Commercial area, heavy traffic at 300 feet	60	—
Quiet urban daytime	50	Large business office, dishwasher next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library, bedroom at night
Quiet rural nighttime	20	—
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Note: dBA = A-weighted decibels.
Source: Caltrans 2013.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The way noise is reduced with distance depends on the following factors.

Geometric spreading. Sound from a localized source (i.e., a "point" source) radiates uniformly outward away from the source in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dBA for each doubling of distance from a point source. Road and highway noise is not a single stationary source of sound. The movement of vehicles on a road or highway makes the source of sound appear to emanate from a line (i.e., a "line" source) rather than a point. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dBA per doubling of distance from a line source.

Ground absorption. The noise path from a source to a receiver is usually very close to the ground. The excess noise attenuation from ground absorption occurs due to acoustic energy losses on sound wave reflection. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an additional ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source for propagation over soft sites.

Atmospheric effects. Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels, because wind can carry sound. Sound levels can be increased over large distances (e.g., more than 500 feet) from the source because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors, such as air temperature, humidity, and turbulence, can also affect sound attenuation.

Shielding by natural or human-made features. A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object, proximity to the noise source and the receiver, surface weight, solidity, and the frequency content of the noise source. Natural terrain features (such as hills and dense woods) and human-made features (such as buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver for the specific purpose of reducing noise. In addition to the noise that diffracts over the top of a barrier, noise will also diffract around the ends of a barrier, leading to "flanking" noise that can reduce the overall efficacy of the barrier. Assuming it is long enough to minimize the effects of flanking noise, a barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dBA of noise reduction (Caltrans 2013: 2-41; FTA 2018: 15, 16). Barriers higher than the line of sight provide increased noise reduction

(FTA 2018: 16). Vegetation between the source and receiver is rarely effective in reducing noise because it does not create a solid barrier unless there are multiple rows of vegetation (FTA 2018: 15, 104, 106).

Human Response to Noise

Noise-sensitive receptors (also called "receivers") are locations where people reside or where the presence of unwanted sound may adversely affect the use of the land (see "Noise-Sensitive Land Uses" below). Noise can have a range of effects on people, including hearing damage, sleep interference, speech interference, performance interference, physiological responses, and annoyance (Caltrans 2013; WHO 1999). Each of these effects is briefly described below.

Hearing damage. A person exposed to high noise levels can suffer either gradual or traumatic hearing damage. Gradual hearing loss occurs with repeated exposure to excessive noise levels and is most commonly associated with occupational noise exposures in heavy industry or other very noisy work environments. Traumatic hearing loss is caused by sudden exposure to an extremely high noise level, such as a gunshot or explosion at a very close range. The potential for noise-induced hearing loss is not generally a concern in typical community noise environments. Noise levels in neighborhoods, even in very noisy airport environments, are not sufficiently loud as to cause hearing loss.

Sleep interference. Exposure to excessive noise levels at night has been shown to cause sleep disturbance. Sleep disturbance refers not only to awakening from sleep, but also to effects on the quality of sleep, such as altering the pattern and stages of sleep. World Health Organization guidelines recommend noise limits of 30 dBA L_{eq} (8-hour average) for continuous noise and 45 dBA L_{max} for single sound events inside bedrooms at night to minimize sleep disturbance (WHO 1999).

Speech interference. Speech Interference can be a problem in any situation where clear communication is desired but is often of particular concern in learning environments (such as schools) or situations where poor communication could jeopardize safety. Normal conversational speech inside homes is typically in the range of 50–65 dBA (EPA 1977), and any noise in this range or louder may interfere with speech. As background noise levels rise, the intelligibility of speech decreases, and the listener will fail to recognize an increasing percentage of the words spoken. A speaker may raise his or her voice to compensate for higher background noise levels, but this in turn can lead to vocal fatigue for the speaker.

Physiological responses. Acute noise has been shown to cause measurable physiological responses in humans, including changes in stress hormone levels, pulse rate, and blood pressure. The extent to which these responses cause harm or are signs of harm is not clearly defined, but it has been postulated that they could contribute to stress-related diseases, such as hypertension, anxiety, and heart disease. In addition, statistically significant health risks have been found for extended exposure to very high noise levels, such as for workers exposed to high levels of industrial noise for 5 to 30 years (WHO 1999).

Annoyance. The subjective effects of annoyance, nuisance, and dissatisfaction are possibly the most difficult to quantify, and no completely satisfactory method exists to measure these effects. The difficulty arises primarily from differences in individual sensitivity and habituation to sound, which vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing acuity. An important tool in estimating the likelihood of annoyance due to a new sound is by comparing it to the existing baseline or "ambient" environment to which that person has adapted. In general, the more the level or tonal (frequency) variations of a sound exceeds the previously existing ambient sound level or tonal quality, the less acceptable the new sound will be, as judged by the exposed individual.

In most cases, effects from sounds typically found in the natural environment would be limited to annoyance or interference. Physiological effects and hearing loss would be more commonly associated with human-made noise, such as in an industrial or occupational setting. Studies have shown that under controlled conditions in an acoustics laboratory, a healthy human ear is able to discern changes in sound levels of 1 dBA. In the normal environment, the healthy human ear can detect changes of about 2 dBA; however, it is widely accepted that a doubling of sound energy, which results in a change of 3 dBA in the normal environment, is considered just

noticeable to most people. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as being twice as loud (Caltrans 2013).

Noise-Sensitive Land Uses

Sensitive noise receptors are generally considered people who occupy land uses where noise is an important attribute of the environment for activities that require quiet, including sleeping, convalescing, and studying. These land uses typically include residential dwellings, hotels/motels, hospitals, nursing homes, educational facilities, and libraries. Each city or county typically provides a list of noise-sensitive receptors to consider in their general plan noise element and/or noise ordinance. Protected wildlife (special-status species) and their habitat may also be considered noise-sensitive receptors, especially during the species breeding season, such as protected nesting birds.

GROUNDBORNE VIBRATION FUNDAMENTALS

Vibration is the periodic oscillation of a medium or object for a given reference point. Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground. The effects of groundborne vibrations are typically limited to causing nuisance or annoyance to people, but at extreme vibration levels, damage to buildings may also occur.

In contrast to airborne sound, groundborne vibration is not a phenomenon that most people experience every day. The ambient groundborne vibration level in residential areas is usually much lower than the threshold of human perception. Most perceptible indoor vibration is caused by sources within buildings, such as mechanical equipment while in operation, people moving, or doors slamming. Typical outdoor sources of perceptible groundborne vibration are heavy construction activity (such as blasting, pile driving, or earthmoving), steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible, even in locations close to major roads. The strength of groundborne vibration from typical environmental sources diminishes (or attenuates) rapidly over distance.

For the prediction of groundborne vibration, the fundamental model consists of a vibration source, a receptor, and the propagation path between the two. The power of the vibration source and the characteristics and geology of the intervening ground, which affect the propagation path to the receptor, determine the groundborne vibration level and the characteristics of the vibration perceived by the receptor.

Groundborne noise occurs when vibration propagating through a building causes room surfaces to vibrate and radiate noise into interior spaces. Many vibration sources, such as heavy construction and steel-wheeled trains, also generate substantial levels of airborne noise. This airborne noise typically dominates the overall noise level such that any groundborne noise contribution is negligible to a person inside the building. Groundborne noise is typically only an issue for scenarios that do not generate high levels of airborne noise at the receiver location. Examples include subway or tunnel operations where there is no airborne noise path or situations where people are in buildings with substantial sound insulation, such as recording studios. Groundborne noise is typically quantified using the A-weighted sound level.

Frequency and Amplitude

The frequency of a vibrating object describes how rapidly it is oscillating. The unit of measurement for the frequency of vibration is Hz (the same as used in the measurement of noise), which describes the number of cycles per second. The amplitude of vibration can be measured in terms of displacement, velocity, or acceleration. Displacement describes the distance that a particle moves from its resting (or equilibrium) position as it oscillates and can be measured in inches. The amplitude of vibration velocity (the speed of the movement) can be measured in inches per second (in/sec).

Vibration Descriptors

As noted above, there are various ways to quantify groundborne vibration based on its fundamental characteristics. Because vibration can vary markedly over a short period of time, various descriptors have been

developed to quantify vibration. The two most common descriptors used in the analysis of groundborne vibration are peak particle velocity and vibration velocity level, each of which are described below.

Peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak amplitude of the vibration velocity. The unit of measurement for PPV is in/sec. Unlike many quantities used in the study of environmental acoustics, PPV is typically presented using linear values and does not employ a dB scale.

Vibration velocity level (L_v) describes the root-mean-square (RMS) vibration velocity. L_v is essentially a "smoothed" value that quantifies the average vibration amplitude over a 1-second period. L_v is reported on a logarithmic decibel scale with the abbreviation vibration decibels (VdB) commonly used to distinguish vibration decibels from noise level decibels.

Vibration Propagation

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish (attenuate) with distance away from the source. High-frequency vibrations reduce much more rapidly than low frequencies so that low frequencies tend to dominate the spectrum at large distances from the source. The propagation of groundborne vibration is also influenced by geological factors, such as soil conditions, depth to bedrock, soil strata, frost conditions, and water conditions.

Effects of Groundborne Vibration

Vibration can result in effects that range from annoyance to structural damage. Annoyance or disturbance of people may occur at vibration levels substantially below those that would pose a risk of damage to buildings. Each of these effects is discussed below.

Potential Building Damage

When groundborne vibration encounters a building, vibrational energy is transmitted to the structure, causing it to vibrate, and if the vibration levels are high enough, damage to the building may occur. Depending on the type of building and the vibration levels, this damage could range from cosmetic architectural damage (e.g., cracked plaster, stucco, or tile) to more severe structural damage (e.g., cracking of floor slabs, foundations, columns, beams, or wells). (See Table 4.13-9 for vibration damage thresholds.) Buildings can typically withstand higher levels of vibration from transient sources than from continuous or frequent intermittent sources. Transient sources are those that create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Older, fragile buildings (which may include important historical buildings) are of particular concern. Modern commercial and industrial buildings can generally withstand much higher vibration levels before potential damage would occur.

Human Disturbance/Annoyance

Groundborne vibration can be annoying to people and can cause serious concern for nearby neighbors of vibration sources, even when vibration is well below levels that could cause physical damage to structures. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but there is less adverse reaction without the effects associated with the shaking of a building. When groundborne vibration waves encounter a building, vibrational energy is transmitted to the structure causing building surfaces (walls, floors, and ceilings) to vibrate. This movement may be felt directly by building occupants and may also generate a low-frequency rumbling noise as sound waves are radiated by the vibrating surfaces. At higher frequencies, building vibration can cause other audible effects, such as rattling of windows, building fixtures, or items on shelves or hanging on walls. These audible effects due to groundborne vibration are referred to as groundborne noise. Any perceptible effect (vibration or groundborne noise) can lead to annoyance. The degree to which a person is annoyed depends on the activity in which they are participating at the time of disturbance. For example, someone sleeping or reading may be more sensitive than someone who is engaged in any type of physical activity.

Vibration-Sensitive Land Uses

Because building damage would be considered a permanent negative effect at any building, regardless of land use, any type of building would typically be considered sensitive to vibration damage impacts. Fragile structures, which often include historical buildings, are most susceptible to damage and are of particular concern.

Land uses that would be considered sensitive to human annoyance caused by vibration are generally the same as those that would be sensitive to noise and would typically include residential dwellings, hotels/motels, hospitals, nursing homes, educational facilities, and libraries. It is noted, however, that vibration effects are typically only considered inside occupied buildings and not at outside areas, such as residential yards, parks, or open spaces.

AMBIENT NOISE LEVELS AND EXISTING NOISE SOURCES

Ambient noise is the background noise level of any location or environment, normally specified to compare it to a new intrusive noise source. Ambient noise includes all sounds present in an environment and can be measured at any moment in time, but it typically varies in time. Ambient noise levels are generally considered low when ambient levels are below 45 dBA CNEL, moderate in the 45–65 dBA CNEL range, and high above 65 dBA CNEL.

The existing noise environment in the Plan area is composed of transportation and nontransportation sources. Transportation sources include roadway vehicle traffic; railroad train operations, including light rail, commuter, and freight trains; and aircraft operations. Generally, transportation-related noise sources (e.g., vehicle traffic noise) characterize the ambient noise environment of an area. Nontransportation, or localized stationary/fixed sources, include mechanical equipment, commercial/industrial equipment and operations, construction equipment, and any other sources not associated with the transportation of people or goods. Existing noise exposure associated with these primary noise sources in the San Diego region is presented below.

Vehicle Traffic Noise

The ambient noise environment in the Plan area is primarily defined by roadway vehicle traffic. The traffic-noise level generated on a roadway is dependent on traffic speed, traffic volume, and the relative percentage of medium (two-axle) and heavy trucks (trucks with three or more axles). In general, the greater the traffic volume on a roadway, the higher the noise levels generated on that roadway. This holds true until the traffic volume is so great (i.e., approaching capacity) that traffic flow degrades, and traffic speeds decrease as the roadway becomes congested, which lowers traffic noise levels. All else being equal, roadways with larger percentages of trucks (particularly heavy trucks) will generate higher noise levels. A heavy truck traveling 50 miles per hour (mph) generates approximately 85 dBA at 50 feet (Caltrans 2013), whereas an automobile traveling at the same speed generates only 74 dBA (FTA 2018). As a result, the heavy truck sounds more than twice as loud as the automobile (an increase of 10 dBA is usually perceived as a "doubling" of sound).

Roadways that generate the highest noise levels in the Plan area are the interstate and state highways because they have the highest speed limits, the largest traffic volumes, and the highest percentage of trucks. Figure 2-1 in Chapter 2, "Project Description," shows the interstate and state highway network and significant arterials in the Plan area. Traffic typically generates 70–75 dBA L_{dn} at 50–100 feet from major highways. Heavily used roadways, such as arterials and major streets, also generate significant levels of noise, typically 65–70 dBA L_{dn} at similar distances (FTA 2018).

Noise from line sources, such as roadways, typically attenuate at a rate of 3–4.5 dBA per doubling of distance, depending on the ground conditions (FHWA 2011). Additional attenuation is provided by the presence of natural or human-made barriers or structures. In populated areas, a general rule for estimating noise reductions due to intervening structures is to assume one row of buildings every 100 feet from the roadway and apply a 4.5 dBA reduction in traffic noise levels for the first row and a 1.5 dBA reduction for every subsequent row, up to a maximum of -10 dBA attenuation (FTA 2018). Highway traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways or more than 100–200 feet from lightly traveled roads (FHWA 2011).

In the San Diego region, there is a wide range of land uses located adjacent to highways and major streets, including residences, schools, churches, hospitals, shopping centers, industrial parks, agriculture, parks, and open space. Of these, residences, schools, churches, and hospitals are typically considered noise sensitive by cities and the County, as defined in the noise elements of their respective general plans. Noise elements are discussed in Section 4.13.2, below.

Rail Noise

Ambient noise levels in the Plan area are also characterized by noise from rail operations. The two basic types of railroad operations are freight and passenger train operations, the latter consisting of commuter and intercity passenger trains and steel-wheel urban railway transit (i.e., trolley). Generally, freight train operations can occur at all hours of the day and night, whereas passenger train operations are concentrated within the daytime and evening periods. Train operations are intermittent, and rail lines are widely dispersed except for limited locations with a higher concentration of activity, such as freight rail/switching yards or transit centers where various railways converge (e.g., at the Santa Fe Depot in downtown San Diego). As a result, large parts of the Plan area experience little to no rail noise, and it does not contribute substantially to the ambient noise levels in these areas. Nonetheless, train operations generate substantial noise levels in the immediate vicinity of the railways.

The overall noise level from rail lines is the combination of multiple subsources. These include the propulsion systems (typically electric control systems and motors for light rail and rapid transit, and diesel engines for larger locomotives) and their ancillary devices (e.g., cooling fans and gears), and noise generated by the interaction of the wheels and tracks (rolling noise due to continuous rolling contact; impact noise when a wheel encounters a rail joint, turnout, or crossover; and squeal generated by friction on tight curves) (FTA 2018). In addition, the sounding of train air horns and crossing gate bells also contribute to higher noise levels near railway/roadway grade crossings (FTA 2018). Other sources of noise associated with rail operations are train stations, maintenance yards and shops, power substations, and switchyards.

Similar to traffic noise, described above, mobile rail noise sources are considered line sources with typical attenuation rates of 3–4.5 dBA per doubling of distance, depending on the ground conditions (FHWA 2011) and additional attenuation provided by the presence of natural or human-made barriers or structures. Stationary sources (such as crossing bells) are considered point sources with typical attenuation rates of 6–7.5 dBA per doubling of distance, depending on the ground conditions, and additional attenuation provided by the presence of natural or human-made barriers or structures.

Average railway noise levels (L_{dn}) at distances from mainline railway corridors can be estimated based on an average train traffic volume of 5–10 trains per day at speeds of 30–40 mph from the center of the railway, as shown in Table 4.13-2 (FTA 2018).

Table 4.13-2 Estimating Railway Noise Exposure for General Assessment

Distance from Railway (feet)	Noise Exposure Estimates (L_{dn})
10–30	75
30–60	70
60–120	65
120–240	60
240–500	55
500–800	50
800 and up	45

Notes: L_{dn} = day-night sound level.

Source: FTA 2018.

In the Plan area, a wide range of land uses (some noise-sensitive) are located adjacent to railways, such as residences, schools, hospitals, shopping centers, industrial parks, agriculture, parks, and open space. FTA provides "screening distances" to estimate where significant noise impacts may occur relative to various rail and other transportation facilities. Some examples are provided in Table 4.13-3 (FTA 2018). The presence of sensitive receptors within these screening distances does not mean noise impacts would occur, simply that FTA procedures require additional analysis under these conditions.

Table 4.13-3 Example FTA Screening Distances for Rail and Other Transportation Facility Noise

Type of Project	Screening Distance (feet) Unobstructed	Screening Distance (feet) with Intervening Buildings
Commuter rail mainline	750	375
Commuter Rail Station		
with horn blowing	1,600	1,200
without horn blowing	250	200
Commuter rail-highway crossing with horns and bells	1,600	1,200
Rail rapid transit (RRT)	700	350
RRT station	200	100
Light rail transit (LRT)	350	175
Streetcar	200	100
Access roads to stations	100	50
Low and Intermediate Capacity Transit		
steel wheel	125	50
rubber tire	90	40
monorail	175	70
Yards and shops	1,000	650
Parking facilities	125	75
Access roads to parking	100	50
Ventilation shafts	200	100
Power substations	250	125
Bus Systems		
Busway	500	250
Bus rapid transit (BRT) on exclusive roadway	200	100
Bus Facilities		
access roads	100	50
transit mall	225	150
transit center	225	150
storage and maintenance	350	225
Park & Ride lots with buses	225	150
Ferry boat terminals	300	150

Notes: FTA = Federal Transit Administration. Although some of the project types referenced in this table are not directly related to rail projects, the screening distances reflected as part of the FTA Transit Noise and Vibration Impact Assessment Manual may be relevant to other aspects of the proposed Plan. The screening distances are based on assumptions made using the lowest noise impact threshold (i.e., 50 dBA for all residential land use and buildings where people normally sleep).

Source: FTA 2018.

Aircraft Noise

The Plan area is also affected by noise from aircraft operations, which generate substantial noise levels in the immediate vicinity of airport runways and approach and departure flight paths. The San Diego region includes the following airports, as shown in Figure 4.9-1 in Section 4.9, "Hazards and Hazardous Materials":

- **International and domestic airports:** San Diego International Airport (SDIA), Tijuana International Airport (directly across the US border with Mexico), and McClellan-Palomar (Carlsbad) Regional Airport
- **Military airfields:** Naval Air Station North Island, Marine Corps Air Station (MCAS) Miramar, MCAS Camp Pendleton, Naval Outlying Landing Field Imperial Beach, and Coast Guard Air Station San Diego
- **Towered general aviation airports:** Brown Field, Gillespie Field, Montgomery Field, and Ramona Airport
- **Non-towered general aviation airports:** Agua Caliente Airport, Borrego Valley Airport, Fallbrook Community Airpark, Jacumba Airport, Oceanside Municipal Airport, Octotillo Airport, and Pauma Valley Airport

In addition to the numerous daily aircraft operations originating and terminating at these facilities, aircraft not utilizing these airports fly over the San Diego region at various altitudes and contribute to the overall ambient noise environment. The proximity of the noise receptor to the airport and aircraft flight path(s) determine the noise exposure. Other contributing factors include the type of aircraft, type and number of aircraft operations (e.g., takeoffs, landings, flyovers), altitude of the aircraft, and atmospheric conditions, which may alter the approach and departure direction of aircraft, as well as affect aircraft noise propagation.

As discussed in further detail below, state law requires land use commissions to prepare and adopt an airport land use compatibility plan (ALUCP) for each public-use and military airport. These plans typically include airport noise contour maps illustrating the average daily noise exposure (measured in dBA CNEL) in the airport vicinity. Copies of the available existing noise contour maps for Plan area airports are provided in Appendix L, Noise Modeling Calculations and Existing Noise Contour Maps for Plan Area Airports (Appendix L). For smaller airports (e.g., Ramona Airport), noise levels range from approximately 60–70+ dBA CNEL. Lower noise levels (60–65 dBA CNEL) may extend several thousand feet from the airport boundaries along dominant flight path(s), whereas higher noise levels (70+ dBA CNEL) do not extend much (approx. 200 feet) beyond the airport boundaries (SDCRAA 2022a). For the largest airports (e.g., SDIA) reported noise levels range from approximately 60–75 dBA CNEL. The lower noise levels from major airports (60–65 dBA CNEL) may extend several miles from the airport boundaries along dominant flight path(s), whereas higher noise levels (75 dBA CNEL) may extend several thousand feet (SDCRAA 2014).

In addition to public-use and military airports, there are numerous private and special-use airstrips and helipads in the Plan area, many which are located within the eastern areas of the region or remote vacation destinations. Several private helipads are located on the roofs of hospitals and buildings owned by large corporations or used by police stations. Private airstrips/helipads located within the San Diego region are not required to prepare noise contours because their noise levels are substantially less than airports due to lower activity levels and their use restrictions are much less defined than with public-use airports (SDCRAA 2014).

Construction Noise

Construction activities generate temporary, short-term noise levels. For large transportation projects, the total period of construction can be months or even years; however, these projects often have a large linear footprint (e.g., a stretch of freeway or railroad), which means that peak construction activities only occur adjacent to any single receptor for a limited portion of the total duration. Construction noise is of more concern when it takes place near noise-sensitive land uses or occurs at night or in early morning hours. Construction noise can also affect nearby noise-sensitive special-status wildlife species and habitat by interfering with the ability to establish territory, vocalize, or successfully reproduce. Additional discussion of noise-sensitive special-status wildlife is provided in Section 4.4, "Biological Resources." Local governments typically regulate noise associated with construction equipment and activities through enforcement of noise ordinance standards, implementation of general plan policies, and imposition of conditions of approval for building or grading permits.

Noise generated from construction equipment varies greatly depending on the construction activity being performed, equipment type, model, age, condition, and usage. High-impact construction techniques, such as pile driving, blasting, and crack-and-seat pavement breaking, produce the highest noise levels and typically dominate the local noise environment when they occur; however, these techniques are not required for all construction projects. Outside of high-impact techniques, heavy equipment operation (e.g., earthmoving) typically dominates the noise generated at construction sites. Stationary sources, such as generators, pumps, and compressors, may also produce substantial continuous noise.

The magnitude of overall construction noise levels depends on the type of construction activity, the schedule of multiple pieces of construction equipment operating simultaneously, the duration of the activity, the distance between the activity and noise-sensitive receptors, and the presence or absence of any noise attenuating features. Table 4.13-4 provides a list of typical construction equipment, their maximum operational noise level (L_{max}) at 50 feet, their typical duty cycles (i.e., percentage operated within a period of time), and the resulting average noise level (L_{eq}) at 50 feet.

Table 4.13-4 Construction Equipment Noise Levels

Equipment	L_{max} at 50 Feet, dBA	Typical Duty Cycle (Percent)	L_{eq} at 50 Feet, dBA
Auger drill rig	84	20	77
Backhoe	78	40	74
Blasting	94	1	74
Chain saw	84	20	77
Clam shovel	87	20	80
Compactor (ground)	83	20	76
Compressor (air)	78	40	74
Concrete mixer truck	79	40	75
Concrete pump	81	20	74
Concrete saw	90	20	83
Crane (mobile or stationary)	81	16	73
Dozer	82	40	78
Dump truck	77	40	73
Excavator	81	40	77
Front-end loader	79	40	75
Generator (25 kVA or less)	81	50	78
Generator (more than 25 kVA)	73	50	70
Grader	85	40	81
Hydra break ram	90	10	80
Impact pile driver (diesel or drop)	101	20	94
Jackhammer	89	20	82
Mounted impact hammer (hoe ram)	90	20	83
Paver	77	50	74
Pneumatic tools	85	50	82
Pumps	81	50	78
Rock drill	81	20	74
Scraper	84	40	80
Tractor	84	40	80

Equipment	L_{max} at 50 Feet, dBA	Typical Duty Cycle (Percent)	L_{eq} at 50 Feet, dBA
Vacuum excavator (vac-truck)	85	40	81
Vibratory concrete mixer	80	20	73
Vibratory pile driver	101	20	94

Notes: kVA = kilovolt amp; dBA= A-weighted decibels; L_{max} = maximum sound level; L_{eq} = equivalent sound level.

Source: FHWA 2006.

As shown in Table 4.13-4, maximum noise levels generated by typical construction equipment range from approximately 73–90 dBA measured at 50 feet (assuming no attenuation from intervening features, such as buildings or topography); high-impact equipment (pile driving, blasting, and impact hammers) generates 90–101 dBA at 50 feet (FHWA 2006). The noise levels vary for each type of equipment, because equipment may come in different sizes and with different engines. Construction equipment noise levels also vary as a function of the activity level or duty cycle. In a typical construction project, the loudest short-term noise levels are typically those of earthmoving equipment under full load, which typically range from 85–90 dBA at 50 feet from the source.

Noise impacts on sensitive receptors resulting from construction projects would depend on several factors, such as the type of project, land use of the given area, proximity of sensitive receptors, duration of construction activities, and presence or absence of barriers between noise source and receptor. In addition, construction noise levels would fluctuate depending on construction phase.

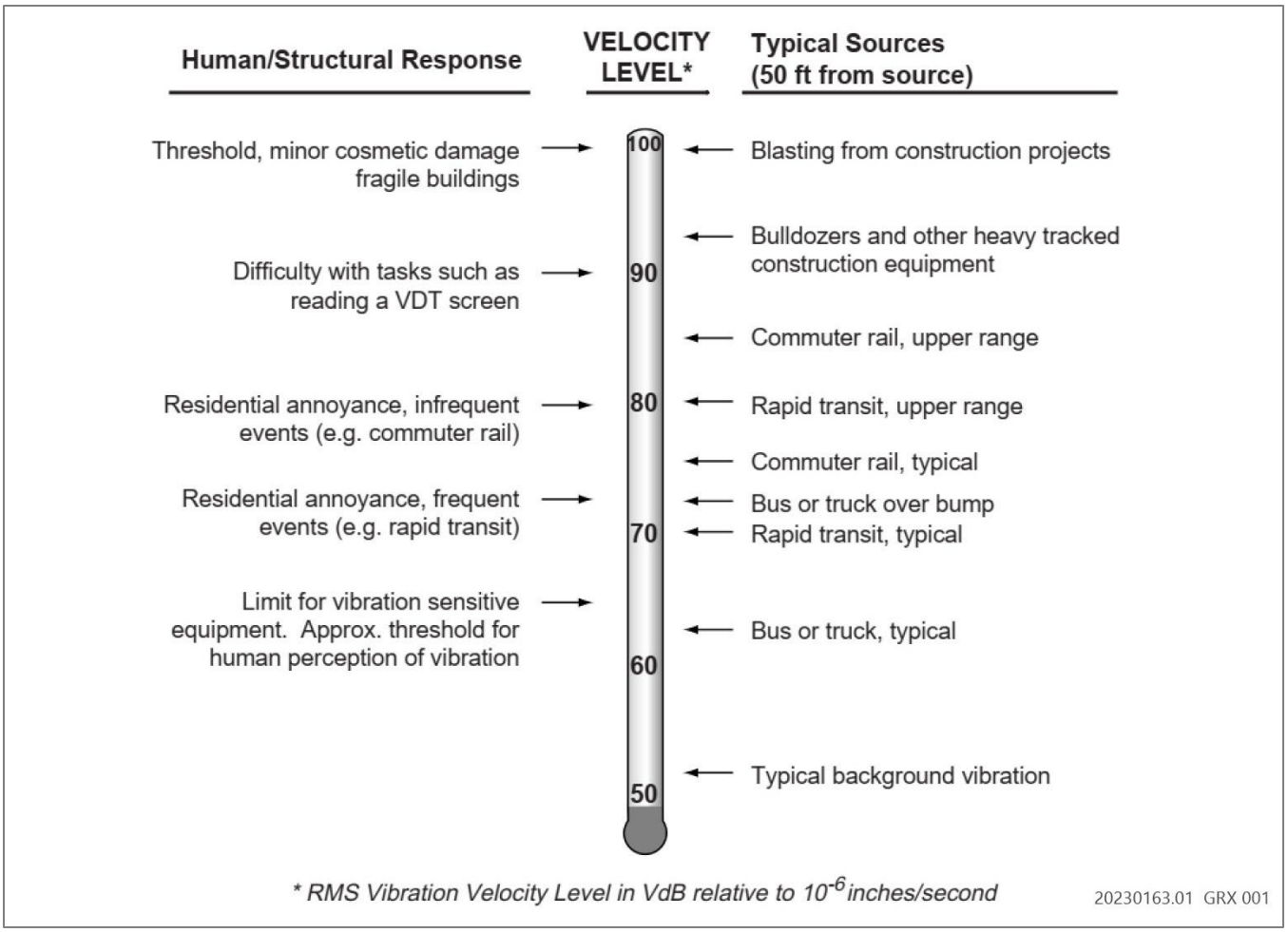
Noise levels from construction activities are typically considered point sources with typical attenuation rates of 6–7.5 dBA per doubling of distance, depending on the ground conditions, and additional attenuation provided by the presence of natural or human-made barriers or structures. Typically, construction projects involve ground conditions with a mix of acoustically soft and hard surfaces, or surfaces that fall somewhere between the two extremes (such as bare dirt); therefore, the 6 dBA attenuation rate is often conservatively assumed for construction noise impact analyses.

Commercial, Industrial, and Other Nontransportation Noise Sources

This category of ambient noise sources is extremely varied because it encompasses all the nontransportation noise sources resulting from the multitude of land uses throughout the Plan area. One major category of noise sources is mechanical equipment, which ranges from small residential heating, ventilation, and air conditioning (HVAC) units to large industrial systems with chillers, fans, compressor, cooling towers, and so forth. General noise sources associated with many different land uses include parking lot noise (e.g., opening and closing of vehicle doors, people talking, car alarms) and delivery activities (e.g., loading docks, use of forklifts, hydraulic lifts). Other noise sources include large machinery associated with industrial, manufacturing, and agricultural operations; municipal/utility operations (landfills, water treatment plants, power stations, etc.); activities at schools, parks, amphitheaters, and athletic facilities; landscape maintenance (leaf blowers and lawnmowers); and operations at port facilities. While these types of noise sources may be substantial contributors to the local ambient noise levels, their effects are generally localized and do not extend over a large geographical area in the same way as noise from transportation systems.

AMBIENT VIBRATION LEVELS AND EXISTING VIBRATION SOURCES

Background vibration is usually much lower than the threshold of human perception. The ambient vibration velocity level in residential areas is usually 50 VdB or lower, and the threshold of perception for humans is approximately 65 VdB. Low levels of background vibration are usually of concern only when the vibration affects sensitive manufacturing or research equipment (FTA 2018). Perceptible vibration is typically only part of the ambient environment at locations in proximity to specific notable vibration sources, such as uneven roads used by heavy vehicles, rapid transit lines, commuter or freight rail, or heavy industrial operations. Construction activities may also produce perceptible vibration, but these are usually short term rather than part of the permanent ambient environment. Figure 4.13-1 illustrates typical vibration velocity levels experienced by receivers in proximity to various vibration sources.



Source: FTA 2018.

Figure 4.13-1 Typical Levels of Groundborne Vibration

Existing vibration sources in the Plan area can be classified as transportation and nontransportation sources. Transportation sources include railroad train operations, including light rail, commuter, and freight trains. Nontransportation, or localized stationary/fixed sources, include construction equipment and heavy industrial machinery. Existing vibration exposure associated with these sources in the San Diego region is presented below.

Train/Rail Vibration

Rail lines, including light rail, rail rapid transit, commuter rail, and freight rail, generate vibration at land uses adjacent to their alignments. Train operations are intermittent, and rail lines are widely dispersed except for limited locations with a higher concentration of activity, such as freight rail/switching yards or transit centers where various railways converge (e.g., at the Santa Fe Depot in downtown San Diego). As a result, large parts of the Plan area experience little to no rail-related groundborne vibration or groundborne noise. Nonetheless, train operations generate substantial vibration levels in the immediate vicinity of the railways.

In the Plan area, a wide range of land uses (some vibration-sensitive) are located adjacent to railways. The FTA provides screening distances to estimate where significant vibration impacts may occur relative to various rail facilities. Some examples are provided in Table 4.13-5 (FTA 2018). The presence of sensitive receptors within these screening distances does not mean vibration impacts would occur, simply that FTA procedures require additional analysis under these conditions. The screening distances will identify most of the potentially impacted areas; however when there is evidence of efficient propagation (e.g., previous complaints about existing transit facilities or a history of problems with construction vibration), the distances in Table 4.13-5 should be increased by a factor of 1.5, in accordance with FTA guidance (FTA 2018: 135).

Table 4.13-5 Example FTA Screening Distances for Rail Vibration

Type of Project	Critical Distance for Land Use Categories[1]—Distance from Right-of-Way or Property Line (feet): Land Use Category 1	Critical Distance for Land Use Categories[1]—Distance from Right-of-Way or Property Line (feet) Land Use Category 2	Critical Distance for Land Use Categories[1]—Distance from Right-of-Way or Property Line (feet) Land Use Category 3
Conventional commuter railroad	600	200	120
Rail rapid transit	600	200	120
Light rail transit and streetcars	450	150	100
Intermediate capacity transit[2]	200	100	50
Bus projects (if not previously screened out)[3]	100	50	—

Notes: FTA = Federal Transportation Administration.

[1] For the vibration screening procedure, evaluate special buildings as follows:

Category 1 = concert halls and TV studios. Category 2 = theaters and auditoriums.

Land use category 1: High sensitivity (e.g., buildings where vibration-sensitive research and manufacturing is conducted, hospitals with vibration-sensitive equipment, and universities conducting physical research and operations).

Land use category 2: Residential (e.g., all residential land use and buildings where people normally sleep, such as hotels and hospitals).

Land use category 3: Institutional (e.g., institutions and offices that have vibration-sensitive equipment and have the potential for activity interference, such as schools, churches, and doctors' offices).

[2] Intermediate capacity transit is a transit system with less capacity than rail rapid transit but more capacity than typical bus operations, such as bus rapid transit, monorails, and trolleys (FTA 2018: 196).

[3] Projects that involve rubber-tire vehicles and do not involve roadway irregularity, operation close to vibration-sensitive buildings, or vehicles operating within buildings are not likely to result in a vibration impact and no further analysis is needed (FTA 2018: 134). These uses are considered "screened out."

Source: FTA 2018.

Construction Vibration

Construction activities generate temporary, short-term vibration levels. For large transportation projects, the total period of construction can be months or even years; however, these projects often have a large linear footprint (e.g., a stretch of freeway or railroad), which means that peak construction activities occur adjacent to any single receptor for only a limited portion of the total duration. Construction vibration is of more concern when it takes place near vibration-sensitive buildings or occurs at night or in early morning hours.

Vibration generated from construction equipment varies greatly depending on the construction activity being performed and the equipment being used. High-impact construction techniques, such as pile driving, blasting, and crack-and-seat pavement breaking, produce the highest vibration levels and typically dominate the local vibration environment when they occur (FTA 2018); however, these techniques are not required for all construction projects. Outside of high-impact techniques, heavy equipment operation (e.g., earthmoving) typically dominates the vibration generated at construction sites.

Because vibration impacts are assessed based on short-term metrics, such as the 1-second RMS vibration velocity level or the instantaneous PPV, the magnitude of the worst-case vibration level at any given receiver is typically dominated by the single most vibration-intensive task while it occurs closest to the individual receiver. Table 4.13-6 provides a list of typical construction equipment, the associated PPV (in/sec) at a reference distance of 25 feet, and the estimated distance to different levels of human response.

Table 4.13-6 Construction Equipment Vibration Levels (Peak Particle Velocity)

Equipment Item	Reference PPV at 25 Feet (in/sec)	Distance to Human Response (feet)[1] Barely Perceptible	Distance to Human Response (feet)[1] Distinctly Perceptible	Distance to Human Response (feet)[1] Strongly Perceptible	Distance to Human Response (feet)[1] Severe
Crack-and-seat operations	2.4[2]	3,646	1,034	450	128
Impact pile driver	0.65[2]	1,112	316	138	39
Vibratory pile driver	0.65[2]	1,112	316	138	39
Hydraulic breaker	0.24[2]	450	128	56	16
Vibratory roller	0.21[3]	399	113	50	14
Large bulldozer	0.089[3]	183	52	23	7
Caisson drilling	0.089[3]	183	52	23	7
Jackhammer	0.035[3]	79	23	10	3
Small bulldozer	0.003[3]	9	3	2	1

Notes: PPV = peak particle velocity; in/sec = inches per second.

[1] Distances are calculated using the Reference PPV (PPV_{ref}) at 25 feet. The equation used to calculate these distances is $PPV = PPV_{ref} * (25/D)$ (Caltrans 2020a).

Sources: Caltrans 2020a; FTA 2018.

Commercial, Industrial, and Other Nontransportation Vibration Sources

Outside of the transportation and construction sources described above, few vibration sources would affect the perceptible ambient conditions at sensitive receptors. Perceptible vibration from mechanical equipment and industrial machinery is primarily limited to the structures in which it occurs because it does not generate enough vibrational energy to propagate large distances. In addition, vibrating equipment is often treated at the source (for instance with vibration-damping mounts) specifically to minimize vibration transfer. Finally, local zoning and land use planning tend to protect against placing new vibration-sensitive uses in proximity to major industrial operations.

4.13.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Some federal regulations provide specific quantitative noise limits (such as maximum permissible noise levels for specific vehicle types), whereas others provide requirements and guidance for noise-related programs to be prepared by others (such as requirements for noise contour maps and noise compatibility programs for public-use airports). Key federal regulations are briefly described below.

Federal Aviation Authority

Airport Noise Compatibility Planning

Title 14 of the Code of Federal Regulations (CFR), Part 150 is published by the Federal Aviation Authority (FAA) and prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs for public-use airports (including heliports). The Part 150 program (Airport Noise Compatibility Planning) proposes measures to reduce the land use incompatibility. Under the program, airport projects, such as land acquisition and acoustic treatment of residences, become eligible for federal funding. The Part 150 program establishes a voluntary program that airports can utilize to conduct airport noise compatibility planning, and the program prescribes a system for measuring airport noise impacts and presents guidelines for identifying incompatible land uses. Part 150 noise

exposure maps are depicted with annual average DNL contours around an airport. DNL is equivalent to L_{dn}, and similar to CNEL, as discussed in Section 4.13.1, "Existing Conditions"; FAA accepts California's use of CNEL.

Part 150 considers all land uses with noise levels less than 65 DNL to be compatible with aircraft operations. At higher noise exposures, selected land uses are also deemed acceptable, depending upon the nature of the use and the degree of structural noise attenuation provided. However, these designations do not constitute a federal determination that any use of land covered by the Part 150 program is acceptable or unacceptable under federal, state, or local law; the responsibility for determining the acceptable and permissible land uses and the relationship with specific noise contours rests with the local authorities.

Federal Highway Administration and Environmental Protection Agency

Traffic Noise Impacts

CFR Title 23, Part 772 is published by the FHWA and is the federal regulation governing traffic noise impacts. A federal or federally funded project would have a traffic noise impact if the project involved the construction of a new highway or the significant modification of an existing freeway (a "Type I"[1] project) where the project would result in a substantial operational noise increase, or when the predicted operational noise levels approach or exceed the FHWA noise abatement criteria (NAC). A "substantial increase" is not specifically defined by FHWA but is indicated to be in the range of 5–15 dBA (FHWA 2011). Specific increase criteria are defined by the state transportation agency (see discussion relating to Caltrans below). FHWA has developed NAC for activity categories at various noise-sensitive land uses as summarized in Table 4.13-7. Noise levels that "approach" the NAC are defined as 1 dBA less than the criterion level (i.e., 66 dBA L_{eq} for activity category B land uses).

Since 2007, Caltrans has performed federal responsibilities for National Environmental Policy Act (NEPA) compliance for highway projects in California that are funded by FHWA. This legal arrangement, referred to as NEPA Assignment, eliminates FHWA's project-specific review and approval. In reviewing and approving projects under NEPA, Caltrans is responsible for complying with all applicable federal environmental laws and with FHWA NEPA regulations, policies, and guidance, such as traffic noise regulations.

Noise Emission Standards for Rail

CFR Title 40, Part 201 and Title 49, Part 210 are closely interrelated. CFR Title 40, Part 201 is published by the US Environmental Protection Agency (EPA) and establishes noise emission standards for transportation equipment used by interstate rail carriers. Equipment covered by the regulation includes locomotives (under both operation stationary and moving conditions), rail cars, retarders, car-coupling operations, and locomotive load cell tests. CFR Title 49, Part 210 is published by the Federal Railroad Administration (FRA) and prescribes minimum compliance regulations for enforcement of 40 CFR 201.

Noise Emission Standards for Trucks and Motorcycles

CFR Title 40, Part 205 is also published by the EPA and establishes noise emission standards for medium and heavy-duty trucks, motorcycles, and motorcycle exhaust systems.

[1] Type I projects include:
1. the construction of a highway on new location; or
2. the physical alteration of an existing highway where there is either:
   a. substantial horizontal alteration.; or
   b. substantial vertical alteration; or
3. the addition of a through-traffic lane(s) including the addition of a through-traffic lane that functions as a high-occupancy vehicle (HOV) lane, high-occupancy toll (HOT) lane, bus lane, or truck climbing lane; or
4. the addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or
5. the addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or
6. restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or
7. the addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza. (FHWA 2011)

Table 4.13-7 FHWA Noise Abatement Criteria[1]

Activity Category	Activity $L_{eq(h)}$	Criteria $L_{10(h)}$ [2]	Evaluation Location	Description of Activities
A[3]	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[3]	67	70	Exterior	Residential
C	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A–D or F.
F	—	—	—	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship-yards, utilities (water resources, water treatment, electrical), and warehousing.
G	—	—	—	Undeveloped lands that are not permitted.

Notes: FHWA = Federal Highway Administration; $L_{eq(h)}$ = equivalent sound level over a 1-hour period; $L_{10(h)}$ = equivalent sound level over a 10-hour period.

[1] Hourly A-weighted sound levels decibels (dBA); either $L_{eq(h)}$ or $L_{10(h)}$ (but not both) may be used on a project.

[2] The $L_{eq(h)}$ and $L_{10(h)}$ activity criteria values are for impact determination only, and are not design standards for noise abatement measures.

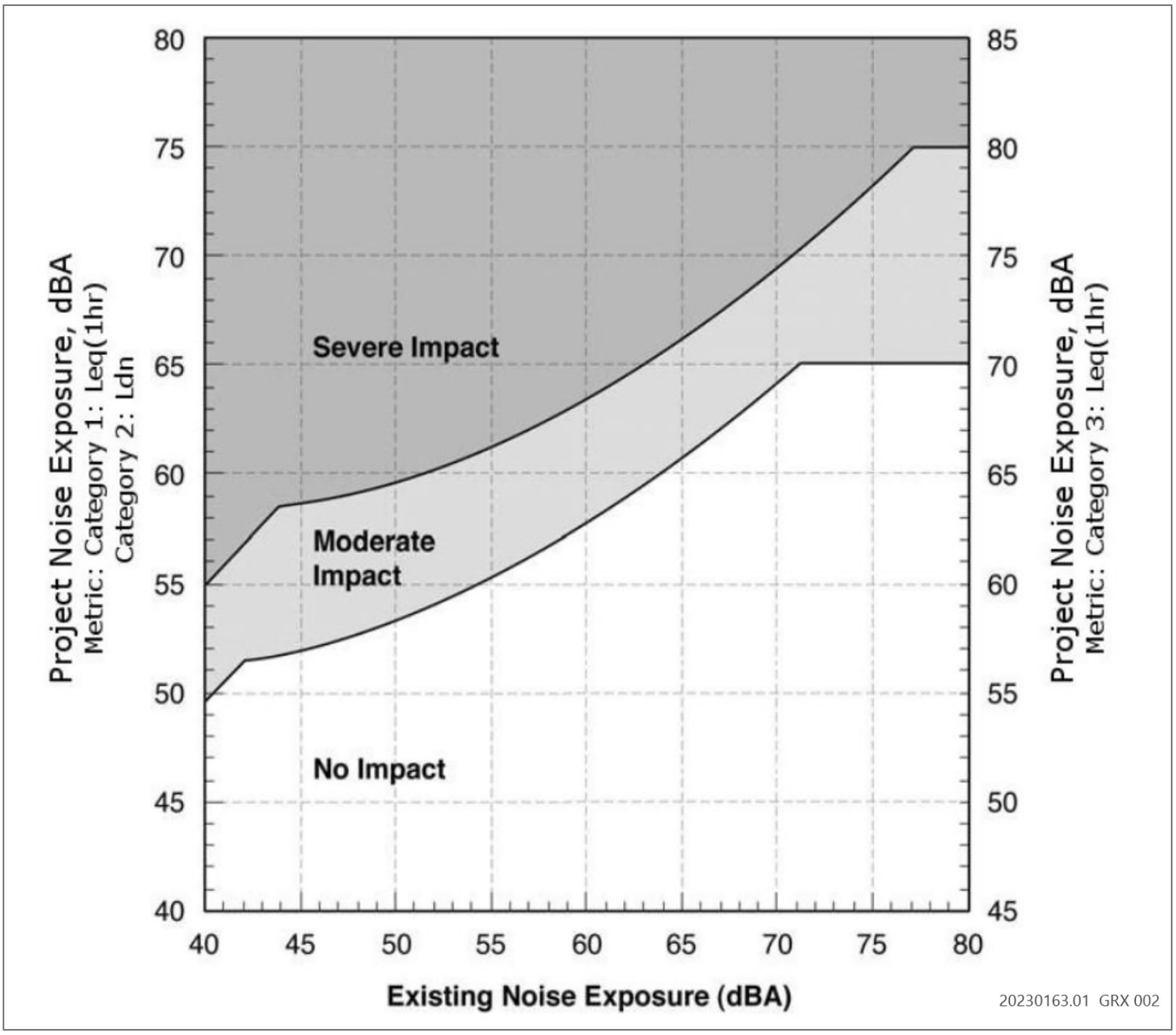
[3] Includes undeveloped lands permitted for this activity category.

Source: 23 CFR Part 772.

Federal Transit Administration and Federal Railroad Administration

FTA has prepared the *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) that presents procedures for predicting and assessing noise and vibration impacts of proposed mass transit projects. The FTA manual was originally published in 1995 and subsequently updated in 2006 and again in 2018. The manual establishes FTA's methodology for addressing potential noise impacts under NEPA and 23 CFR 771 and is generally required for federal or federally funded transit projects (analysis is not required for projects classified as categorical exclusions). FRA has adopted the FTA methodologies and significance criteria for its own guidance manual, *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA 2012) for predicting and assessing noise and vibration impacts of proposed high-speed ground transportation projects (including high-speed trains using traditional steel-wheel on steel-rail technology, as well as magnetically levitated [maglev] systems). The FRA manual was originally published in 1998 and subsequently updated in 2012.

FTA and FRA noise impact thresholds are based on a project's incremental long-term operational noise increase relative to existing noise conditions. Project operational noise levels are divided into three categories (no impact, moderate impact, and severe impact) as illustrated in Figure 4.13-2. While higher project noise levels are permitted in areas with higher existing ambient conditions, the thresholds are designed to limit the total noise increase, with the smallest allowable increase at locations already affected by the highest existing noise levels.



Source: FTA 2018.

Figure 4.13-2 FTA Noise Impact Criteria for Noise-Sensitive Uses (dBA)

Construction Noise

According to the FTA manual, "[p]roject construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use" (FTA 2018: 172). Although FTA does not specify standardized criteria for construction noise impacts, it provides varying guidelines to be considered on a case-by-case basis depending, in part, on the level of detail available regarding the anticipated construction activities and schedule.

Groundborne Noise and Vibration

The FTA manual also provides groundborne noise and vibration criteria for both project operations and construction. For operational vibration, the criteria are based on the potential for human annoyance and activity interference. The general criteria are summarized in Table 4.13-8.

Table 4.13-8 Groundborne Vibration and Groundborne Noise Impact Criteria for FTA General Assessment

Land Use Category	Groundborne Vibration Impact Levels Frequent Events[1]	Groundborne Vibration Impact Levels Occasional Events[2]	Groundborne Vibration Impact Levels Infrequent Events[3]	Groundborne Noise Impact Levels Frequent Events[1]	Groundborne Noise Impact Levels Occasional Events[2]	Groundborne Noise Impact Levels Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]	NA[5]	NA[5]	NA[5]
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Notes: FTA = Federal Transit Administration; VdB = vibration decibels; dBA = A-weighted decibels.

[1] "Frequent events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

[2] "Occasional events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.

[3] "Infrequent events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

[5] Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

Source: FTA 2018.

The FTA manual uses the following land use categories when determining transit noise and vibration impacts:

- Land use category 1: Tracts of land where quiet is an essential element in their intended purposes. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor uses. Also included are recording studios and concert halls. The noise metric for category 1 is the outdoor 1-hour L_{eq} during the noisiest hour of activity.
- Land use category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where nighttime sensitivity to noise is assumed to be of utmost importance. The noise metric for category 2 is the outdoor L_{eq} or CNEL.
- Land use category 3: Institutional land uses with primarily daytime and evening uses. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered in this category. Certain historical sites and parks are also included. The noise metric for category 3 is the outdoor 1-hour L_{eq} during the noisiest hour of activity.

Additional criteria are provided for various types of special buildings, such as concert halls, TV studios, recording studios, auditoriums, and theaters.

For vibration generated by construction, two types of potential impact are addressed: human annoyance and structural damage. Human annoyance from construction is assessed using the same general criteria discussed above for operational sources. FTA criteria for potential building damage are summarized in Table 4.13-9.

Table 4.13-9 FTA Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Notes: PPV = peak particle velocity; in/sec = inches per second.

Source: FTA 2018.

Department of Defense Instruction 4165.57

Department of Defense Instruction 4165.57 establishes policy, assigns responsibilities, and prescribes procedures for the Department of Defense Air Installations Compatible Use Zones (AICUZs) program for military air installations. It also establishes policy and assigns responsibility for educating air installation personnel and engaging local communities on issues related to noise, safety, and compatible land use in and around air installations, and prescribes procedures for plotting noise contours for land use compatibility analysis. The noise compatibility criteria are basically the same as those indicated by the FAA in 14 CFR 150. As a result, AICUZ compatibility standards identify residential land uses as being compatible with aircraft noise levels of up to 65 dBA CNEL.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California State Aeronautics Act

The California State Aeronautics Act (SAA), under Public Utilities Code (PUC), Section 21001 et seq., was established "to protect the public interest in aeronautics and aeronautical progress." Airport land use compatibility planning, as required by the SAA, outlines the statutory requirements for airport land use commissions (ALUCs) including the preparation of ALUCPs for each public-use airport in California. The Caltrans Division of Aeronautics administers much of the SAA and provides guidance for meeting the baseline safety and compatibility requirements.

Airport Land Use Compatibility Plans

The State requires that the San Diego County Regional Airport Authority (SDCRAA), as the ALUC, prepare ALUCPs for each public-use and military airport in San Diego County, as directed in PUC Section 21675. An ALUCP contains policies and criteria that address compatibility between airports and future land uses that surround them by addressing noise, overflight, safety, and airspace protection concerns to minimize the public's exposure to excessive noise and safety hazards within the airport influence area for each airport over a 20-year horizon.

ALUCPs include airport runway noise level contours typically in 5 dB increments between 50 and 75 dBA CNEL. The range varies depending on the size of the airport. These noise contours reflect the existing and anticipated growth of the airport for at least the next 20 years and include potential development planning. ALUCPs provide noise compatibility criteria, typically in the form of a table or matrix that lists various different land uses and categorizes their compatibility across a range of different noise levels in 5 dB increments. The acceptability of each land use to each 5 dB noise range is categorized as either "compatible," "conditionally compatible," or "incompatible."

Noise Insulation Standards

The California Noise Insulation Standards in Title 24 of the California Code of Regulations (CCR) set requirements for new residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For areas with exterior noise levels greater than 60 dBA, the noise insulation standard is 45 dBA in any habitable room; an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard is required where such units are proposed in such areas. CCR Title 24, Part 2, Section 1207.11.2 states, "[t]he noise metric must be either the L_{dn} or the CNEL, consistent with the noise element of the local general plan."

California Department of Transportation

Caltrans manages California's highways and freeways, provides intercity rail services, and permits public-use airports and special-use hospital heliports. Caltrans has programs and divisions with policies or regulations, including Aeronautics, Highway Transportation, Rail, and Mass Transportation. The Caltrans Division of Rail uses FRA and FTA noise criteria and methodologies for assessing rail-related noise or vibration impacts. The Caltrans Division of Aeronautics is responsible for licensing and permitting programs for airports and heliports. Assistance for the development and maintenance of aviation facilities through engineering and aviation experience is also provided, as well as systems planning and environmental and community service programs. Caltrans provides numerous noise and vibration impact guidance documents for traffic noise, rail noise, airport noise, construction noise, and vibration, including the following.

- *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (Caltrans 2013)
- *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (Caltrans 2020b) ("Protocol")
- *California Airport Land Use Planning Handbook*. Division of Aeronautics (Caltrans 2011)
- *Transportation and Construction Vibration Guidance Manual* (Caltrans 2020a)

Traffic Noise Guidance

As described previously, Caltrans is responsible for implementing 23 CFR 772 for federal or federally funded highway projects under NEPA Assignment. Therefore, the Protocol uses the same NAC as presented in 23 CFR 772 and provides further details on the policies and procedures to be used in conducting applicable traffic noise studies in California. Traffic noise impacts as defined occur when the predicted noise level in the design year approaches or exceeds the NAC, or a predicted noise level substantially exceeds the existing noise level (a "substantial" noise increase). In California, a substantial noise increase for these projects is considered to occur when the project's predicted worst-hour design-year traffic noise level exceeds the existing worst-hour traffic noise level by 12 dBA or more. The use of 12 dBA is based on the concept that a 10 dBA increase generally is perceived as a doubling of loudness (Caltrans 2020b).

According to the Protocol, the significance of noise impacts for Caltrans CEQA documents (e.g., for projects that are subject to Caltrans oversight but are not subject to NEPA because there is no federal funding) is based on the project-related increase in noise and other project-specific conditions (but not the NAC). No single numerical threshold is used on all projects, and the project threshold is developed by the project team on a case-by-case basis. The Caltrans definition for a substantial increase in noise (i.e., a 12 dBA increase between existing and design-year with-project conditions) has been used, but there would be cases where an increase less than 12 dBA would approach significance (such as a quiet rural environment) or where a 12 dBA increase would not necessarily be deemed significant (noisy urban environment) (Caltrans 2020b).

Construction Noise

As presented in the Protocol, Section 14-8.02, "Noise Control of Caltrans Standard Specifications" establishes a construction noise exposure/production limit of 86 dBA L_{max} at 50 feet from the job site from 9:00 p.m. to 6:00 a.m.

Airport Noise Guidance

Caltrans Division of Aeronautics prepared the *California Airport Land Use Planning Handbook* (Handbook), which provides guidance for conducting airport land use compatibility planning, most notably for the preparation, adoption, and amendment of an ALUCP (Caltrans 2011). The Handbook provides a checklist of typical ALUCP contents, which includes scope of the ALUCP, airport information, compatibility policies and criteria, compatibility zone maps (including CNEL contours), review policies, preliminary review of plans and projects, land use information, compatibility issues, local government implementation, and supporting materials (Caltrans 2011).

Vibration

Caltrans provides guidelines for the analysis of groundborne vibration relating to transportation and construction-induced vibration, including guideline criteria for potential building damage and human annoyance, as shown in Tables 4.13-10 and 4.13-11.

Table 4.13-10 Caltrans Guideline Vibration Building Damage Criteria

Structure and Condition	Maximum PPV (in/sec) Transient Sources	Maximum PPV (in/sec) Continuous/ Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Notes: PPV = peak particle velocity; in/sec = inches per second. Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2020a.

Table 4.13-11 Caltrans Guideline Vibration Human Annoyance Criteria

Human Response	Maximum PPV (in/sec) Transient Sources	Maximum PPV (in/sec) Continuous/ Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Notes: Notes: PPV = peak particle velocity; in/sec = inches per second. Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2020a.

General Plan Guidelines

The Governor's Office of Planning and Research (OPR) (now known as the Governor's Office of Land Use and Climate Innovation) is required to adopt and periodically revise guidelines for the preparation and content of local general plans. OPR's 2017 State of California General Plan Guidelines include noise/land use compatibility guidelines, which are shown in Figure 4.13-3.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

General Plan Noise Elements

Local jurisdictions (cities and the County of San Diego) within the Plan area adopt a noise element as part of their general plan to identify, appraise, and remedy noise in local communities. Noise elements analyze and quantify current and projected noise levels associated with local noise sources, including, but not limited to, highways and freeways, primary arterials and major local streets, rail operations, air traffic associated with airports, local industrial and commercial land uses, and other ground stationary sources that contribute to the community noise environment. Beyond statutory federal standards, local jurisdictions can adopt their own noise goals and policies in their noise elements or adopt noise and land use compatibility guidelines similar to or the same as those recommended by the State (see Figure 4.13-3).

Land Use Category	Community Noise Exposure, L_{dn} or CNEL, dB													
		55		60		65		70		75		80		
Residential – Low Density Single Family, Duplex, Mobile Homes														
Residential – Multifamily														
Transient Lodging – Motels, Hotels														
Schools, Libraries, Churches, Hospitals, Nursing Homes														
Auditoriums, Concert Halls, Amphitheaters														
Sports Arena, Outdoor Spectator Sports														
Playgrounds, Neighborhood Parks														
Golf Courses, Riding Stables, Water Recreation, Cemeteries														
Office Buildings, Business Commercial and Professional														
Industrial, Manufacturing, Utilities, Agriculture														

Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.	New construction or development should generally not be undertaken.

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Note: OPR = Governor's Office of Planning and Research (now known as Governor's Office of Land Use and Climate Innovation).
Source: OPR 2017.

Figure 4.13-3 OPR Noise/Land Use Compatibility Guidelines

The County of San Diego and all the cities in the San Diego region, apart from Del Mar and Oceanside, have adopted the 2017 OPR Noise and Land Use Compatibility Guidelines as their land use compatibility noise standards, including the 60 dBA CNEL "normally acceptable" noise level for residential uses. The cities of Del Mar and Oceanside have adopted 65 dBA CNEL as the maximum noise level compatible with residential land uses (City of Del Mar 1985; City of Oceanside 2002). For the purposes of assessing noise impacts, standards in the noise element are commonly applied to transportation noise sources. The assessment of nontransportation noise levels is typically based on standards provided in the municipal code.

Local Noise/Vibration Ordinances/Municipal Code

In addition to noise element policies of general plans, local jurisdictions regulate noise through enforcement of their noise ordinances, which are typically contained in the municipal code. Many noise ordinances provide separate standards to control noise from construction activities that typically include a combination of construction noise level limits and restrictions on the hours during which construction is permitted. Tables 4.13-12 and 4.13-13 summarize the municipal noise level limits and the construction noise regulations, respectively, for each jurisdiction within the San Diego region. Some local jurisdictions also have regulations related to vibration, as summarized in Table 4.13-14.

Table 4.13-12 Summary of Applicable Property Line Noise Level Limits

Jurisdiction	GLU Zone Residential Daytime	GLU Zone Residential Evening	GLU Zone Residential Nighttime	GLU Zone Commercial Daytime	GLU Zone Commercial Evening	GLU Zone Commercial Nighttime	GLU Zone Industrial Daytime	GLU Zone Industrial Evening	GLU Zone Industrial Nighttime
Carlsbad	55	—	45	55	—	45	55	—	45
Chula Vista	45–50	45–50	55–60	65	65	60	70/80[1]	70/80[1]	70/80[1]
Coronado	50–55	45–50	40–45	60	60	50	—	—	—
Del Mar	50	50	40	60	60	50	60[1]	60[1]	50[1]
El Cajon	60	55	50	65	60	55	75	75	75
Encinitas	50–55	50–55	45–50	60	60	55	60	60	55
Escondido	50–55	50–55	45–50	60	60	55	70–75[2]	70–75[2]	70–75[2]
Imperial Beach[3]	—	—	—	—	—	—	—	—	—
La Mesa	60	55	55	65	60	60	70	70	70
Lemon Grove	50–60	45–55	40–50	60	55	55	70	70	70
National City	55–60	55–60	45–50	65	65	60	70/80[1]	70/80[1]	70/80[1]
Oceanside	50–55	45–50	45–50	65	65	60	70	70	65
Poway	50–55	50	45–50	60	55	55	70	70	70
San Diego, City	50–60	45–55	40–50	65	60	60	75	75	75
San Diego, County	50–55	50–55	45–50	60	60	55	70–75	70–75	70–75
San Marcos	60–65	50–55	50–55	55	55	65	60	60	65
Santee[4]	—	—	—	—	—	—	—	—	—
Solana Beach	50–55	50–55	45	60	60	55	70	70	60
Vista	50–55	45–50	45–50	60	60	55	70	70	70

Notes: GLU = General Land Use.

[1] Light industrial/heavy industrial

[2] Railroad right-of-way zone

[3] The City of Imperial Beach noise ordinance does not contain quantifiable noise level limits at property lines but regulates noise based on disturbance of "the peace, quiet and comfort of the community by creating unreasonably loud or disturbing unnecessary noises."

[4] The City of Santee noise ordinance does not contain quantifiable noise level limits at property lines but regulates noise based on that "which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in the area."

Sources: City of Carlsbad 2015, City of Chula Vista 2025, City of Coronado 2025, City of Del Mar 2024, City of El Cajon 2024, City of Encinitas 2024, City of Escondido 2024, City of Imperial Beach 2024, City of La Mesa 2024, City of Lemon Grove 2024, City of National City 2024, City of Oceanside 2024, City of Poway 2024, City of San Diego 2024, County of San Diego 2024, City of San Marcos 2024, City of Santee 2025; City of Solana Beach 2025; City of Vista 2025.

Table 4.13-13 Summary of Local Construction Noise Standards

Jurisdiction	Municipal Code Chapter	Prohibited Hours of Construction	Construction Noise Level Limits
Carlsbad	8.48	After 6:00 p.m. on any day and before 7:00 a.m. Monday through Friday and before 8:00 a.m. on Saturday; Sundays; federal holidays	None
Chula Vista	17.24.040	10:00 p.m.–7:00 a.m. Monday Through Friday and 10:00 p.m.–8:00 a.m. Saturday and Sunday	None
Coronado	41.10.040	7:00 p.m.–7:00 a.m. Monday through Saturday; Sundays; legal holidays	75 dBA $L_{eq(1)}$ at any property zoned residential
Del Mar	9.20.050	7:00 p.m.–7:00 a.m. Monday through Friday, and before 9:00 a.m. or after 7:00 p.m. Saturdays; Sundays; City holidays	75 dBA L_{eq}
El Cajon	17.115.130	7:00 p.m.–7:00 a.m. within 500 feet from any residential zone	None
Encinitas	9.32.410	7:00 p.m.–7:00 a.m. Mondays through Saturdays; Sundays, federal holidays	75 dBA $L_{eq(8)}$
Escondido	17-234	6:00 p.m.–7:00 a.m. Monday through Friday and 5:00 p.m.–9:00 a.m. Saturdays, Sundays, and holidays	75 dBA $L_{eq(1)}$
Imperial Beach	9.32.020	7:00 p.m.–7:00 a.m. Monday through Friday and 5:00 p.m.–8:00 a.m. on Saturday; Sundays; federal holidays	None
La Mesa	10.80.100	10:00 p.m.–7:00 a.m. Monday through Saturdays; Sundays	None
Lemon Grove	9.24.120	7:00 p.m.–7:00 a.m. Monday through Saturday; Sundays; legal holidays	75 dBA $L_{eq(8)}$
National City	12.10.160	7:00 p.m.–7:00 a.m. Monday through Friday; Saturdays, Sundays, and holidays	60–75 dBA L_{max} at residential properties, 70–85 dBA L_{max} at semi-residential/commercial properties
Oceanside	38.15	Case-by-case basis	Case-by-case basis
Poway	8.08.100	5:00 p.m.–7:00 a.m. Monday through Saturday; Sundays; federal holidays	75 dBA $L_{eq(8)}$ at residences
San Diego, City	59.5.0404	7:00 p.m.–7:00 a.m. Monday through Saturday; specific legal holidays; Sundays	75 dBA $L_{eq(12)}$ at any property zoned residential
San Diego, County	36.408	7:00 p.m.–7:00 a.m. Monday through Saturday; Sundays; legal holidays	75 dBA $L_{eq(8)}$
San Marcos	10.24.020	6:00 p.m.–7:00 a.m. Monday through Friday and 5:00 p.m. – 8:00 a.m. on Saturdays; Sundays	None

Jurisdiction	Municipal Code Chapter	Prohibited Hours of Construction	Construction Noise Level Limits
Santee	5.04.090	7:00 p.m.–7:00 a.m. Mondays through Saturdays; Sundays; holidays	Construction equipment with a manufacturer's noise rating of 85 dBA L_{max} or greater may only operate at a specific location for 10 consecutive workdays. If work will involve more than 10 consecutive workdays, notice must be provided to all property owners and residents within 300 feet of the site.
Solana Beach	7.34.100	7:00 p.m.–7:00 a.m. Monday through Friday and before 8:00 a.m. or after 7:00 p.m. on Saturday; Sundays; nine holidays	75 dB $L_{eq(8)}$ at any property used in part or in whole for residential purposes
Vista	NA	None	None

Notes: L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level; dBA = A-weighted decibels.

Sources: City of Carlsbad 2024, City of Chula Vista 2025, City of Del Mar 2024, City of El Cajon 2024, City of Encinitas 2024, City of Escondido 2024, City of La Mesa 2024, City of Lemon Grove 2024, City of National City 2024, City of Oceanside 2024, City of Poway 2024, City of San Diego 2024, County of San Diego 2024, City of San Marcos 2024, City of Santee 2025, City of Solana Beach 2025; City of Vista 2025.

Table 4.13-14 Summary of Local Vibration Standards

Jurisdiction	Municipal Code/General Plan	Vibration Regulation
Carlsbad	21.34.090	All industrial uses shall comply with the following performance standards: All uses shall be so operated as not to generate vibration discernible without instruments by the average person while on or beyond the lot upon which the source is located or within an adjoining enclosed space if more than one establishment occupies a structure. Vibration caused by motor vehicles, trains and temporary construction is exempted from this standard.
Chula Vista	19.68.050	Vibration. Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or public right-of-way.
County of San Diego	General Plan Policy N-3.1	N-3.1 Groundborne Vibration. Use the Federal Transit Administration and Federal Railroad Administration guidelines, where appropriate, to limit the extent of exposure that sensitive uses may have to groundborne vibration from trains, construction equipment, and other sources.
El Cajon	17.115.130	Every use shall be so operated that the ground vibration generated by such use is not harmful or injurious to the use or development of surrounding properties. No vibration shall be permitted which is perceptible without instruments at any use along the property line on which such use is located. For the purpose of this determination, the boundary of any lease agreement or operating unit or properties operating as a unit shall be considered the same as the property line.
Encinitas	30.40.010	Every use shall be so operated that the ground vibration generated at any time and measured at any point along the lot line of the lot on which the use is located shall not be perceptible and shall not exceed the vibration levels set forth in the regulation.
Lemon Grove	17.24.080	Vibrations. No detectable vibrations shall be permitted off the development site.
National City	12.10.180	It is unlawful to operate or permit the operation of any device that creates a vibration which exceeds the vibration perception threshold at or beyond the property boundary of the source originates on private property, or at a distance of one hundred fifty feet or more from the source if originating from a location on a public space or public right-of-way. Vibration that occurs as an incidental result of sound generation shall not be governed by this section only, but also by the prohibitions or restrictions applicable to the source of the sound.

Jurisdiction	Municipal Code/General Plan	Vibration Regulation
San Marcos	20.300.070	Vibration may disturb the conduct of certain activities and create discomfort for some individuals. To minimize the disturbance and inconvenience from vibrations, no person or use shall create, maintain, or cause ground vibration that is discernible without instruments to a person of normal sensitivity at any point on a property that is adjacent to the property of the vibration source. The ground vibration caused by moving vehicles, trains, aircraft, or temporary construction or demolition is exempted.
Santee	13.30.030	Vibration. No operation or activity is permitted which will create vibration noticeable without instruments at the perimeter of the subject property.

Sources: City of Carlsbad 2024, City of Chula Vista 2025, County of San Diego 2011, City of El Cajon 2024, City of Encinitas 2024, City of Lemon Grove 2024, City of San Marcos 2024, City of Santee 2025.

San Diego County Regional Airport Authority

In the San Diego region, the relationships of transportation, transit, and mobility, and of population growth to noise associated with aircraft in flight are the responsibility of the SDCRAA, established under state law to protect the safety and welfare of the general public and the ability of airports to operate now and in the future (SDCRAA 2025). One of the SDCRAA responsibilities is to serve as the ALUC for San Diego and create, adopt, and update the airport land use compatibility plans (ALUCPs) for the region's 16 public-use and military airports in accordance with applicable state and federal laws, consisting of the following airports (with year of the latest update):

- Agua Caliente Springs Airport (2022),
- Borrego Valley Airport (2022),
- Brown Field (2010),
- Fallbrook Community Airpark (2022),
- Gillespie Field (2010),
- Jacumba Airport (2022),
- MCAS Camp Pendelton (2008),
- MCAS Miramar (2011),
- McClellan-Palomar Airport (2011),
- Montgomery Field (2010),
- Naval Air Station North Island (2020),
- Naval Outlying Landing Field – Imperial Beach (2015),
- Oceanside Municipal Airport (2010),
- Ocotillo Airport (2022),
- Ramona Airport (2022), and
- San Diego International Airport (2014).

The other remaining airports in the San Diego region include Tijuana International Airport (under the authority of Mexico), Coast Guard Air Station San Diego (military airfield), and Pauma Valley Airport (private airfield), which are not required to prepare an ALUCP. The adopted ALUCPs of public-use airports in the San Diego region include an analysis of the existing and future aircraft noise level contours to assist local agencies in developing land use plans for areas surrounding the airports. ALUCPs differentiate allowed and prohibited land uses according to noise and land use compatibility guidelines. AICUZ studies also include contour maps, which are included in the noise element of general plans of each jurisdiction affected by public-use and military airports and are considered in the development of land use plans at the local level.

4.13.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for evaluating the significance of a project's environmental impacts on noise, in the form of initial study checklist questions. Checklist questions for noise and vibration are provided in Section XIII of the CEQA Guidelines Appendix G. The significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. For the purposes of this EIR, the proposed Plan would have a significant noise impact if it would result in:

NOI-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or generate a substantial absolute increase in ambient noise.

NOI-2 Generation of excessive groundborne vibration or groundborne noise levels.

NOI-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public-use airport, the project would expose people residing or working in the project area to excessive noise levels.

The analysis discloses impacts to noise and vibration. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's noise and vibration impacts would be worsened by climate change. Therefore, a climate change analysis for noise and vibration impacts is not included in this section.

4.13.4 Environmental Impacts and Mitigation Measures

NOI-1 GENERATION OF A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES; OR GENERATE A SUBSTANTIAL ABSOLUTE INCREASE IN AMBIENT NOISE.

Analysis Methodology

This section discusses the construction and operations noise impacts of forecasted regional growth and land use change and planned transportation network improvements and programs. Due to the programmatic nature of the proposed Plan, the precise locations, construction techniques, extent of individual site development, and project timelines are currently unknown. Thus, for construction impacts this analysis uses reference noise levels associated with two of the loudest pieces (i.e., an impact pile driver and a bulldozer) of common construction equipment (Table 4.13-4) that could be used simultaneously during construction activities to model construction noise levels associated with the types of projects anticipated to be developed under the proposed Plan. The modeling results were used to assess potential short-term construction-related noise impacts. Construction source noise levels were determined based on methodologies, reference emission levels, and usage factors from the FTA manual (FTA 2018) and FHWA *Roadway Construction Noise Model User's Guide* (FHWA 2006). See Appendix L for detailed construction noise modeling inputs. Reference noise levels for specific equipment and activity types are well documented, and the usage thereof is common practice in the field of acoustics.

A comprehensive review of construction noise standards established by cities and counties within the proposed Plan area was conducted. As shown in Table 4.13-13, some noise ordinances contain performance standards for construction equipment relative to the surrounding land use and time of day (e.g., National City Municipal Code Section 12.10.160), and some establish limitations for consecutive construction workdays after which notice must be provided to surrounding property owners and residents (i.e., City of Santee Municipal Code Section 5.04.090). Most jurisdictions establish restrictions on construction-related activities during certain hours of the day. In addition, as shown in Table 4.13-13, most jurisdictions in the region that established a construction noise level limit set this limit at 75 dBA L_{eq}, and thus this noise level is used in this analysis as a threshold to evaluate the potential effects of construction noise associated with development implementing regional growth and land use

changes under the proposed Plan. Projects under the proposed Plan would have a significant impact if associated construction noise exceeded 75 dBA L_{eq}, measured at the property line of the nearest sensitive receptor, or as otherwise determined by the local jurisdiction.

Projects under the proposed Plan with federal involvement or located on the state highway system would be required to comply with specific noise standards of the respective agency (i.e., FTA, Caltrans). Caltrans establishes a construction noise production limit of 86 dBA L_{max} at 50 feet from the jobsite (Caltrans 2020b); thus, construction noise resulting from implementation of the proposed Plan is also evaluated using this noise level as the threshold above which construction noise associated with transportation network improvements would be considered significant, as measured at the nearest receptor. FTA limits the total noise increase from existing noise levels and FHWA suggests that a 5 to 15 dBA increase could be considered substantial (FHWA 2011). In this analysis, a substantial increase in ambient noise from construction activities is defined as an increase in 5 dBA or more above ambient levels, as this is generally perceived as a distinctly noticeable noise increase (Caltrans 2013: 2-10). However, because the exact locations of projects associated with the proposed Plan are currently unknown, in this analysis, compliance with FTA and FHWA substantial noise increase standards is assessed qualitatively.

Local operations noise standards, determined at the project level, may apply to regional growth and land use change, as well as to local transportation network improvements and programs. As outlined under "Local Laws, Regulations, Plans, and Policies," these local standards are typically supplied by the local noise element (noise/land use compatibility) and municipal code. A comprehensive review of noise standards established by jurisdictions within the proposed Plan area was conducted. As shown in Table 4.13-12, residential daytime noise standards typically range from 45 to 60 dBA L_{eq}. As stated above, the County of San Diego and all the cities in the San Diego region, apart from Del Mar and Oceanside, have adopted the 2017 OPR Noise and Land Use Compatibility Guidelines as their land use compatibility noise standards, including the 60 dBA CNEL "normally acceptable" noise level for residential uses. The cities of Del Mar and Oceanside have adopted 65 dBA CNEL as the maximum noise level compatible with residential land uses (City of Del Mar 1985; City of Oceanside 2002). Local jurisdictions do not typically provide impact thresholds to guide CEQA analysis of construction and operations noise impacts that would cause temporary or permanent increases in ambient noise levels at sensitive receptors. Rather, the noise levels are considered substantial when they exceed the applicable regulatory standard.

In addition, certain project types would be subject to the requirements or guidelines of other (regional, state, or federal) agencies including:

- Caltrans/FHWA traffic noise criteria for federal and federally funded highway projects;
- Caltrans substantial noise increase standards for state highway projects or local roadway projects with Caltrans oversight that are not subject to NEPA;
- Caltrans construction noise criteria and specifications;
- FTA criteria (for construction and operations noise) for federal or federally funded, rail, high-speed rail, and other transit projects; and
- ALUCP or AICUZ criteria for public-use and military airports (discussed under threshold NOI-3, below).

Detailed quantitative analyses of potential impacts associated with implementation of the proposed Plan are not practical given the programmatic nature of the proposed Plan and the lack of specific project details. Therefore, the analysis of construction and operations noise impacts is largely qualitative and, where possible, is supplemented with published data or sample calculations to illustrate the points discussed in the analysis.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to increase by 117,056 people (3.6%), 137,242 housing units (11.1%), and 67,297 jobs (4.2%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. To accommodate regional growth by 2035, new development, including housing units, commercial areas, industrial centers, and civic facilities, would be constructed. New development would occur throughout the region and could result in new or increased temporary and operations noise at nearby land uses. Noise effects would be variable and dependent on the location of improvements relative to the land uses, presence of shielding between the sources and receiver, and the existing ambient noise level from other nearby noise sources.

Construction noise is an unavoidable result of planned growth within a given location, and implementation of the proposed Plan's forecasted land use growth would be expected to generate short-term noise increases during construction. Short-term construction noise levels would fluctuate depending on the type, quantity, and duration of usage of the various types of heavy-duty equipment. Because of the regional scale of the proposed Plan and the programmatic level of this analysis, specific construction-related details (e.g., location, schedule) for individual land use projects are not available. Construction of projects under the proposed Plan would require the use of conventional construction equipment (e.g., bulldozers, graders, backhoes) that generate noise in the immediate vicinity of the source, often resulting in temporary noise levels that are substantially higher than existing conditions. In addition to the use of conventional construction equipment, depending on the soil type and development height, some projects under the proposed Plan could require the use of high impact construction equipment, such as pile drivers. As discussed above in Section 4.13-1, "Existing Conditions," noise levels, including construction-related noise, dissipate rapidly from the source. Thus, sensitive land uses closest to construction activities are typically of greatest concern when evaluating construction noise. However, when the use of high-impact equipment (e.g., for pile driving or rock drilling) is necessary, a temporary increase in noise would occur at nearby development as well as at land uses farther away.

Table 4.13-4 summarizes typical construction noise levels for various construction activities. As shown in Table 4.13-4, construction equipment noise levels range from 70 dBA L_{eq} (generator more than 25 kilovolt amps [kVA]) to 94 dBA L_{eq} (impact pile driver) at 50 feet (FHWA 2006). As described above under "Analysis Methodology," the simultaneous operation of two of the loudest pieces of construction equipment (i.e., an impact pile driver and a bulldozer) that could be used simultaneously during construction activities are assumed. As shown in Table 4.13-13, most jurisdictions in the region establish a construction noise level limit of 75 dBA L_{eq}. Therefore, this noise level is used as a threshold to evaluate potential construction noise effects associated with land use growth. Noise levels associated with the simultaneous operation of a bulldozer and impact pile driver would attenuate to 75 dBA L_{eq} at 71 feet and 446 feet, respectively (see Appendix L for detailed modeling inputs). Thus, depending on the proximity to existing sensitive land uses, duration of construction activities, and types of equipment required, construction-related noise levels could exceed applicable local construction-related noise standards and thresholds.

In addition to short-term construction noise, regional growth and land use change could result in new operations noise sources and increased operations noise levels. As shown in Table 4.13-12, residential daytime noise standards established by jurisdictions within the region range from 45 to 60 dBA L_{eq}, and nighttime noise standards range from 40 to 50 dBA L_{eq}. As previously described, the effects of operations noise would be variable and dependent on the types of sources (e.g., loading docks, HVAC equipment), noise levels generated by such sources, distances to noise-sensitive receptors, the presence of shielding (e.g., existing structures) between the sources and receiver, and the existing ambient noise levels. However, the extent of new stationary noise from these land uses cannot

currently be quantified because the quantity, magnitude, and specific location of specific stationary noise sources are unknown. Development projects associated with the proposed Plan would be required to adhere to local standards pertaining to setbacks, permissible hours of operation, and noise, which could limit the exposure of existing sensitive receptors to excessive noise levels or substantial (e.g., 5+ dBA) increases in noise. Although adherence to applicable noise standards could reduce noise exposure at nearby sensitive receptors, in certain locations, noise associated with new stationary noise sources could exceed an acceptable noise standard or result in a permanent substantial (e.g., 5+ dBA) noise increase in noise at nearby land uses.

As discussed in Section 4.13.2, "Regulatory Setting," federal, state, and local regulations exist that reduce the potential for noise impacts during construction and operations of new land uses by establishing noise standards specific to the noise source, limiting construction and operations activities during sensitive times of day (i.e., evening and nighttime), and requiring the implementation of measures, when necessary, to reduce adverse effects from increased noise. Several local jurisdictions have adopted allowable noise limits specifically for construction activities (e.g., City of Coronado, City of Encinitas), and almost all jurisdictions limit construction activities to times when noise would have the least effect on nearby land uses (i.e., during the daytime). Adherence to applicable noise regulations would be required during construction and operations to minimize the potential for adverse effects from increased noise. Although adherence to applicable regulations would be required and would reduce noise impacts associated with land use growth, construction and operations noise levels could exceed applicable thresholds, and could substantially increase from ambient levels. Therefore, impacts of regional growth and land use change as they relate to noise would be significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Transportation network improvements by 2035 would include arterial improvements, development of circulator routes, highway intersection improvements, and multimodal corridor improvements. Upgrades to certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

The construction of transportation network improvements would require the use of heavy construction equipment (e.g., bulldozers, graders, backhoes) and high-impact equipment (e.g., pile drivers, rock drilling equipment). Transportation improvement projects typically progress in a linear fashion (i.e., along the right-of-way), and thus elevated noise levels would occur only temporarily in the location where the construction occurs before moving along the right-of-way. However, construction is sometimes required during evening and nighttime hours to accommodate time-sensitive activities (e.g., concrete pours) or to minimize traffic congestion during peak travel periods. Therefore, construction activities could affect nearby sensitive receptors for shorter periods of time as construction moves along the linear right-of-way but could result in greater disturbance if construction were to occur during evening and nighttime hours.

As described above, most jurisdictions in the region establish a construction noise level limit of 75 dBA L_{eq}. To determine the effects of construction noise generated by transportation improvement projects, two of the loudest pieces of construction equipment (i.e., an impact pile driver and a bulldozer) that could be used simultaneously during construction activities are assumed. Noise levels associated with the simultaneous operation of a bulldozer and impact pile driver would attenuate to 75 dBA L_{eq} within 71 feet and 446 feet, respectively (see Appendix L for

detailed modeling inputs). Thus, construction-related noise levels could exceed local construction-related noise standards depending on proximity to existing land uses and duration of construction activities. Transportation network improvement projects with federal involvement or located on the state highway system would be required to comply with the specific noise standards of the respective agency. As detailed in Section 4.13.2, "Regulatory Setting," Caltrans establishes a construction noise production limit of 86 dBA L_{max} at 50 feet from the jobsite. Noise levels associated with the operation of a bulldozer and impact pile driver would attenuate to 86 dBA L_{max} within 32 feet and 281 feet, respectively (see Appendix L for detailed modeling inputs).

FTA construction noise criteria define a substantial noise increase based on existing noise levels. Although specific construction-related details (e.g., location, schedule, equipment) for individual projects under the proposed Plan are unknown, construction activity could result in a substantial (e.g., 5+ dBA) increase over existing noise levels. Projects under the proposed Plan that meet the definition of a Type I project (as defined in Section 4.13.1), such as a federal or federally funded highway project that involves the widening of an existing highway, would be subject to the requirements of 23 CFR 772. In addition to outlining procedures for analyzing traffic and construction noise impacts, 23 CFR 772 establishes requirements for developing and implementing noise abatement measures to reduce traffic noise impacts on federal or federally funded highway projects. If a project were to meet the definition, it would require noise analysis regardless of any federal nexus.

As discussed above, adherence to federal, state, and local regulations would be required. While adherence to regulations would reduce noise impacts, depending on the proximity to existing sensitive land uses, duration of construction activities, and types of equipment required, construction-related noise levels could exceed applicable construction-related noise standards and thresholds, and impacts could exceed levels of significance.

Extension of rail transit, as well as increases in transit frequency, could result in increased noise levels that exceed applicable local, state, or federal thresholds. Similar to construction noise, operations noise increases would be variable and dependent on the location of improvements relative to the land uses, the presence of shielding between the sources and receiver, and the existing ambient noise level from other nearby noise sources. In addition, the severity of new transit network improvement projects would depend upon the type (diesel or electric powered),frequency of rail pass-by events and the existing ambient noise level at the existing receptor. For example, a doubling of sound energy (e.g., doubling of passenger trains from double-tracking) would result in a 3 dBA increase in sound and would generally be perceived as barely detectable.

As discussed in Section 4.13.2, "Regulatory Setting," federal, state, and local agencies have established noise standards, developed requirements for evaluating noise impacts, and put forth guidance for developing measures to reduce noise impacts and protect public health. Transportation network projects with federal involvement or located on the state highway system would be required to comply with 23 CFR 772, which establishes standards for the analysis and abatement of highway traffic noise, and state (Caltrans) guidance, which outlines policies and procedures for applying 23 CFR 772 in California (Caltrans 2020b). In addition, federal or state requirements for noise reduction could be required dependent on the type of project and the presence of a federal action or nexus. Examples of noise abatement measures include the construction of noise barriers, which shield receptors from noise sources and traffic management measures (e.g., traffic control devices, time-use restrictions, speed limit modifications), which would reduce traffic noise by slowing vehicles down or limiting the use of specific roadways during sensitive hours (Caltrans 2020b). Although the exact noise reduction associated with implementation of such abatement measures would vary, in accordance with 23 CFR 772, for noise abatement to be considered acoustically feasible, it must provide at least a 5 dBA minimum reduction at an impacted receptor (Caltrans 2020b: 3-8). Therefore, adherence to federal or state requirements for noise abatement would result in at least a 5 dBA noise reduction. However, there could be instances where a 5 dBA reduction from implementation of abatement measures would not be sufficient to reduce noise to an acceptable level. Many local jurisdictions have established noise compatibility standards in their municipal codes or general plans which limit sensitive development within incompatible zones and establish noise standards to ensure that sensitive land uses are not exposed to excessive transportation noise levels. Compliance with these regulations would minimize the potential for adverse transportation noise impacts that could result from implementation of the proposed Plan. Although adherence to regulations would reduce noise impacts, noise impacts may not be reduced to below levels of significance.

2035 Conclusion

Between 2022 and 2035, regional growth and land use change and transportation network improvements could increase noise levels throughout the region, resulting in new or increased noise that exceed applicable standards or represent substantial increases in ambient noise levels. Therefore, this impact (NOI-1) in 2035 would be significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the regional population is forecast to decrease by 4,112 people (-0.1%), while housing units are projected to increase by 65,577 (4.8%) and jobs by 103,460 (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions.

As described in the 2035 analysis, construction of new land use development could result in temporary noise levels that exceed applicable thresholds or result in a temporary substantial (e.g., 5+ dBA) increase in noise. According to the noise levels in Table 4.13-4, construction equipment noise levels would range from 70 (generator more than 25 kVA) to 94 dBA L_{eq} (impact pile driver) at 50 feet. As described above and shown in Table 4.13-13, most jurisdictions in the region establish a construction noise level limit of 75 dBA L_{eq}, and thus, this noise level is used to evaluate potential construction noise effects associated with land use growth. Noise levels associated with the operation of a bulldozer and impact pile driver would attenuate to 75 dBA L_{eq} within 71 feet and 446 feet, respectively (see Appendix L for detailed modeling inputs). The severity of construction noise effects would vary depending on the existing noise levels, proximity to sensitive uses, and presence of barriers that attenuate noise. As discussed in the 2035 analysis, adherence to applicable regulations (e.g., limited construction hours or operational standards) related to construction noise would be required. Although adherence to regulations would reduce noise impacts, depending on the proximity to existing sensitive land uses, duration of construction activities, and types of equipment required, construction-related noise levels could exceed applicable local construction-related noise standards and thresholds.

In addition to short-term construction noise, regional growth and land use change could result in new operations noise sources and increased operations noise levels. As discussed above in the 2035 analysis, the proposed Plan development pattern would result in new land uses that include stationary noise sources (e.g., HVAC equipment). While the exact magnitude of increased noise from the introduction of new land uses is speculative, certain locations, noise associated with new stationary noise sources could exceed an acceptable noise standard or result in a permanent increase in noise at nearby land uses. In addition, because of the anticipated growth within the region, an absolute increase in roadway traffic volumes is anticipated. Noise increases would be variable and depend upon the location of improvements relative to land uses, the presence of shielding between the sources and receiver, and the existing ambient noise level from other nearby noise sources. However, traffic noise associated with development in this time horizon could exceed an acceptable noise standard or result in a permanent substantial (e.g., 5+ dBA) increase in noise at nearby land uses.

Federal, state, and local regulations described in Section 4.13.2, "Regulatory Setting," reduce the potential for noise impacts during construction and operations of new land uses by establishing noise standards to limit excessive noise levels, limiting construction and operations activities during sensitive times of day (i.e., evening and nighttime), and requiring the implementation of measures, when necessary, to reduce adverse effects from increased noise. Adherence to applicable noise policies and procedures would be required during construction and operations. In addition, federal or state requirements for noise reduction may be required depending on the type of development and the presence of a federal action or nexus. Although adherence to applicable regulations would be required and would reduce temporary and long-term noise impacts associated with land use growth, construction and operations noise levels could exceed applicable thresholds, and ambient noise could substantially increase. Therefore, impacts of regional growth and land use change as they relate to noise would be significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period.

Similar to the 2035 analysis, construction and operations of transportation network improvements during the 2050 horizon year could result in new or increased noise at nearby land uses. The construction of transportation network improvements would require the use of heavy construction equipment (e.g., bulldozers, graders, backhoes) and high-impact equipment (e.g., pile drivers, rock drilling equipment). Noise levels associated with the operation of a bulldozer and impact pile driver would attenuate to 75 dBA L_{eq} within 71 feet and 446 feet, respectively (see Appendix L for detailed modeling inputs).

Transportation network improvement projects with federal involvement or located on the state highway system would be required to comply with the specific noise standards of the respective agency. Caltrans establishes a construction noise production limit of 86 dBA L_{max} at 50 feet from the jobsite. Noise levels associated with the operation of a bulldozer and impact pile driver would attenuate to 86 dBA L_{max} within 32 feet and 281 feet, respectively (see Appendix L for detailed modeling inputs). Thus, if construction of transportation network improvements were to occur within these distances of a sensitive receptor, construction could exceed Caltrans-recommended noise levels. In addition, according to the modeling conducted, construction-related noise levels could exceed FTA construction noise criteria, which limit the total noise increase based on existing noise levels. Projects that meet the definition of a Type I project (as defined in Section 4.13.1) would be subject to the requirements of 23 CFR 772, which outlines procedures for analyzing traffic and construction noise impacts on federal or federally funded highway projects. If a project associated with the proposed Plan met the definition, it would require additional noise analysis.

Similar to the 2035 analysis, transportation improvement projects could result in increased noise levels that exceed applicable local, state, or federal thresholds. Transportation network projects with federal involvement or located on the state highway system would be required to comply with federal (23 CFR 772) and state (Caltrans) guidance for analyzing noise impacts and developing noise abatement measures to reduce any adverse impacts to sensitive receptors. In addition, federal or state requirements for noise reduction could be required dependent on the type of project and the presence of a federal action or nexus. Examples of noise abatement measures include the construction of noise barriers, which shield receptors from noise sources, and traffic management measures (e.g., traffic control devices, time-use restrictions, speed limit modifications), which would reduce traffic noise by slowing vehicles down or limiting the use of specific roadways during sensitive hours (Caltrans 2020b). Although the exact noise reduction associated with implementation of such abatement measures would vary, in accordance with 23 CFR 772, for noise abatement to be considered acoustically feasible, it must provide at least a 5 dBA minimum reduction at an impacted receptor (Caltrans 2020b: 3-8). Therefore, adherence to federal or state requirements for noise abatement would result in at least a 5 dBA noise reduction. However, there could be instances where a 5 dBA reduction from implementation of abatement measures would not be sufficient to reduce noise to an acceptable level. Transportation improvement projects would be subject to applicable local, state, and federal regulations for assessing and abating transportation noise impacts. However, noise impacts from the implementation of all transportation improvement projects and programs could exceed levels of significance.

2050 Conclusion

Between 2036 and 2050, regional growth and land use change and transportation network improvements could increase noise levels throughout the region, resulting in new or increased noise impacts that exceed applicable standards or represent substantial increases in ambient noise levels. Therefore, this impact (NOI-1) is significant.

MITIGATION MEASURES

NOI-1 GENERATION OF A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES; OR GENERATE A SUBSTANTIAL ABSOLUTE INCREASE IN AMBIENT NOISE.

2035, 2050

NOI-1a Implement Construction Noise Reduction Measures for Development Projects and Transportation Network Improvements.

During project-level CEQA review and during construction of development projects and transportation network improvements, local jurisdictions and transportation project sponsors can and should, and SANDAG shall, implement construction noise reduction measures to substantially lessen the exposure of noise-sensitive receptors to construction noise levels to achieve applicable noise standards or prevent substantial temporary increases in noise levels in the planning, design, project-level CEQA review, and construction of development projects or transportation network improvements. These measures should consist of, but are not limited to, the following.

- Maintain construction equipment and vehicles per manufacturers' specifications and fit equipment with noise-suppression devices (e.g., improved mufflers, equipment redesign, intake silencers, wraps, ducts, engine enclosures).
- Minimize construction equipment idling when equipment is not in use.
- Provide buffer zones or other techniques between stationary equipment (such as generators, compressors, rock crushers, and cement mixers) and the noise receptor.
- For impact tools (e.g., jack hammers, pavement breakers, rock drills), use hydraulically or electrically powered tools; where use of pneumatic tools is unavoidable, use an exhaust muffler on the compressed air exhaust. Use external jackets on the tools themselves. Use quieter procedures, such as drills rather than impact equipment.
- For rock-crushing or screening operations, place material stockpiles as a noise barrier blocking line-of sight between the operations and receptors.

In addition, to substantially lessen the exposure of noise-sensitive receptors to construction noise levels from pile driving or other activities generating noise levels greater than 90 dBA L_{eq} at 50 feet during construction of development projects or transportation network improvements, local jurisdictions and other transportation project sponsors can and should, and SANDAG shall, implement noise reduction measures to achieve applicable noise standards or prevent substantial increases in noise levels. These measures should consist of, but are not limited to, the following.

- Erect temporary noise barriers around the noise-generating activities, particularly adjacent to residential buildings. When installed properly, acoustic barriers can reduction construction noise levels by approximately 8 to 10 dBA (EPA 1971).
- Implement "quiet" pile-driving technology (such as predrilling of piles, the use of more than one pile driver to shorten the total pile-driving duration) or vibratory pile driving, where feasible, in consideration of geotechnical and structural requirements and conditions.
- Monitor the effectiveness of noise-attenuation measures by performing compliance noise monitoring at noise-sensitive receptors during construction.

NOI-1b Implement Operational Noise Reduction Measures for Transportation Network Improvements.
During the planning, design, and project-level CEQA review and construction of transportation network improvements, SANDAG shall, and other transportation project sponsors can and should, implement operations noise-reduction measures to substantially lessen the exposure of noise-sensitive receptors to noise levels to achieve applicable noise standards or prevent substantial permanent increases in noise levels. These measures should consist of, but are not limited to, the following.

- Utilize techniques such as grade separation, buffer zones, landscaped berms, sound walls, reduced-noise paving materials, building insulation, and traffic calming measures.

In addition, for railway projects, SANDAG shall, and other transportation project sponsors can and should, implement measures to substantially lessen noise levels to achieve FTA/FRA railway noise-exposure thresholds during planning, design, and project-level CEQA review. These measures should consist of, but are not limited to, the following.

- Use wheel treatments, such as damped wheels and resilient wheels.
- Use vehicle treatments, such as vehicle skirts and under car acoustically absorptive material.
- Establish sufficient buffer zones between railroad and receptors.
- Use sound-reduction barriers, such as landscaped berms.
- Install sound insulation treatments for impacted structures.
- Implement FRA "quiet zone" requirements in cooperation with local jurisdictions (i.e., reducing or eliminating the requirement for train locomotives to blast their horns) for Plan improvements at new and existing at-grade rail crossings.
- Conduct project-level noise analysis for new and expanded rail corridors and features such as new rail tracks and double-tracking to ensure that measures are implemented to substantially lessen noise levels that exceed applicable standards.

NOI-1c Implement Operational Noise Reduction Measures for Development Projects.
During planning, design, and project-level CEQA review of development projects, the County of San Diego, cities, and other local jurisdictions can and should implement noise reduction measures to meet local noise standards, consisting of, but not limited to, the following.

- Use land use measures, such as zoning, site design, and buffers, to ensure that future development is noise compatible with adjacent transportation facilities and land uses.
- Site noise-sensitive land uses away from noise-generating facilities. Once sited, orient outdoor use areas of land uses (e.g., backyards) away from adjacent noise sources to shield area with buildings, or construct noise barriers to reduce exterior noise levels.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation Measure NOI-1a would provide substantial reductions in construction noise levels by ensuring proper equipment use, locating equipment away from sensitive receptors, and requiring the use of enclosures and noise barriers. Implementation of these noise-reduction measures could reduce construction noise levels by up to approximately 10 dBA (NCHRP 1999; EPA 1971). Mitigation Measures NOI-1b and NOI-1c would reduce exposure of sensitive receptors to excessive transportation and stationary noise levels through site design and building construction, based on site-specific parameters, though the noise reduction would vary depending on the specific measure. For example, the implementation of vehicle skirts for rail projects under Mitigation Measure NOI-1b could result in a 6 to 10 dBA noise reduction (FTA 2018: 97) and shielding from intervening buildings under Mitigation Measure NOI-1c could reduce noise by up to 10 dBA (FTA 2018: 49). Mitigation measures NOI-1a, NOI-1b, and NOI-

1c would substantially reduce significant noise impacts caused by exceedances of noise standards. However, because project-specific information, such as the presence and proximity of sensitive receptors, are currently unknown, implementation of these measures does not guarantee that all future project-level impacts could be mitigated to a less than significant level. Therefore, this impact (NOI-1) would remain significant and unavoidable.

NOI-2 GENERATION OF EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS.

Analysis Methodology

This section discusses the construction and operations vibration impacts of forecasted regional growth and land use change and planned transportation network improvements in comparison to the applicable standards and guidelines. Construction activities could potentially expose nearby buildings to ground-vibration levels that result in structural damage or negative human response. Buildings containing vibration-sensitive uses (e.g., residential, research and development, institutional) could be exposed to disturbing vibration levels if located in proximity to major operations vibration sources (e.g., rail, bus transit centers).

Typical construction activities associated with the proposed Plan would include the use of bulldozers, graders, and loaded trucks. In addition, some construction activity could require the use of high-impact equipment (e.g., pile drivers, crack-and-seat breakers, vibratory rollers). Pile drivers are often used in the construction of bridges and multistory buildings and could be required depending on the soil type. Crack-and-seat operations are used to repair roadways and involve impact breaker equipment to crack the roadway and then heavy rollers to compact and install new overlays. Crack-and-seat operations and pile driving activities generate the highest vibration levels associated with construction equipment.

As shown in Table 4.13-14, several counties and cities within the region establish guidance related to operations vibration sources. However, few of the local jurisdictions (cities and county) provide quantitative vibration criteria; therefore, in this analysis, guidance and criteria from FTA and Caltrans were used. Specifically, to evaluate the effects of construction vibration, the Caltrans threshold of 0.04 in/sec PPV for distinctly perceptible vibration effects from continuous/frequent intermittent sources (Table 4.13-11) is used to evaluate human annoyance and the Caltrans thresholds of 0.1 in/sec PPV and 0.3 in/sec PPV for structural damage to fragile buildings and older residential structures, respectively, are used (Table 4.13-10). These two thresholds were selected to represent the types of buildings generally found throughout the plan area (i.e., fragile buildings, older buildings, older residential buildings, and newer residential and commercial buildings). Construction vibration contour distances for structural damage and human annoyance were modeled based on reference vibration levels for construction equipment that could be used and would generate the greatest levels of ground vibration and were based on methodologies and usage factors from the FTA's *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018). To evaluate the effects of operational vibration associated with transportation improvement projects, the FTA screening distances for vibration are used (Table 4.13-5).

FTA's screening distances (Table 4.13-5) for major vibration sources (e.g., rail, bus transit centers) were applied for evaluating the potential for exposure from these sources to sensitive land uses.

Vibration impacts (NOI-2) are considered significant if they exceed the criteria provided by FTA and Caltrans (as applicable, depending on the project type) for human disturbance or structural damage. Detailed quantitative analyses of potential impacts are not practical given the high-level (programmatic) nature of the proposed Plan and the lack of specific project details. For this reason, the analysis is largely qualitative, supplemented with published data or sample calculations, where possible, to illustrate the points discussed in the analysis.

Impact Analysis

2035

Regional Growth and Land Use Change

As identified in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted to increase by 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown on Figure 2-4. To accommodate regional growth by 2035, new development including new housing units, commercial areas, industrial centers, and civic uses would be developed.

Construction activities associated with additional development and redevelopment could include site preparation, excavation, grading, building construction, and other related construction activities. These types of construction activities require the use of heavy-duty construction equipment (e.g., backhoes, jackhammers) that typically generate significant amounts of vibration in the immediate vicinity (e.g., exceed the FTA threshold for structural damage to non-engineered timber and masonry buildings of 0.20 in/sec PPV [FTA 2018] within 15 feet) of the source.

Reference vibration levels are shown in Table 4.13-6 for various equipment types. According to these reference levels, crack-and-seat operations, used for repairing roadways, generate the highest levels of vibration.

Development projects may require the use of vibration-intensive construction equipment, such as crack-and-seat operations (which could be used for roadway repairs), pile drivers (which could be used for multistory development), and vibratory rollers (which could be used for foundation work or roadway construction). The effects of vibration generated by construction activities depend on several factors, including the duration and type of construction activities and the distance between source and receptor.

As shown in Table 4.13-6, of the construction equipment that would likely be used during land use development, pile driving generates the highest vibration levels (i.e., 0.65 in/sec PPV at 25 feet) and can be necessary in the construction of multistory buildings depending on the soil type and building structure. In addition, less-intensive impact equipment, such as a vibratory roller, could be used during construction activities. As detailed above under "Analysis Methodology," although some local jurisdictions have established operations vibration regulations, local quantitative vibration standards related to construction do not exist. Therefore, in this analysis, the Caltrans-recommended vibration thresholds for structural damage (i.e., 0.1 in/sec PPV for fragile buildings and 0.3 in/sec PPV for older residential structures) and human annoyance to continuous/frequent intermittent sources (i.e., 0.04 in/sec PPV) are used. According to FTA-recommended procedures for applying a propagation adjustment to these reference levels, vibration levels from impact pile driving could exceed the recommended level for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 88 feet of equipment operation and the recommended threshold for structural damage to older residential buildings (i.e., 0.30 in/sec PPV) within 42 feet (see Appendix L for detailed modeling inputs). Vibration levels from a vibratory roller could exceed the recommended level for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 42 feet of equipment operation and the recommended threshold for older residential buildings (i.e., 0.30 in/sec PPV) within 20 feet (see Appendix L for detailed modeling inputs). As shown in Table 4.13-6, an impact pile driver would exceed the threshold of 0.04 in/sec PPV for distinctly perceptible vibration effects from continuous/frequent intermittent sources within 316 feet, and a vibratory roller would exceed the threshold of 0.04 in/sec PPV for distinctly perceptible vibration effects from continuous/frequent intermittent sources within 113 feet of operation.

Because the proposed Plan promotes development in areas with access to public transit and other sustainable transportation choices, (including ones that exist now and in the future), most projected development would likely occur in developed areas; thus, the likelihood exists for impact pile driving to occur within 88 feet of a fragile building and within 42 feet of older residential buildings, potentially posing structural damage issues. In addition, the likelihood exists for impact pile driving and other intensive construction activities (e.g., vibratory rolling) to occur within 316 feet of an existing vibration-sensitive land use. Therefore, construction of development projects associated with regional growth and land use change under the proposed Plan could exceed recommended vibration thresholds for structural damage and adverse human response.

New development, such as residential, commercial, and civic land uses, generally do not produce noticeable levels of vibration; operational vibration from these land uses is generally associated with vehicles such as trucks accessing local roadway networks which rarely produce a cumulative increase in ground vibration (Caltrans 2020b). These sources generally do not produce noticeable levels of vibration and thus are not expected to exceed applicable thresholds for structural damage or adverse human response. In addition, new development associated with the proposed Plan would occur in accordance with adopted land use plans and zoning ordinances of the cities and counties in the Plan area, which typically prohibit vibration-intensive land use (e.g., industrial) within incompatible (e.g., residential) zones. Because vibration decreases rapidly with distance (Caltrans 2020b), separating vibration-intensive land uses from sensitive land uses (e.g., residential) can minimize annoyance-related vibration impacts. For these reasons, operations vibration associated with regional growth and land use change is not expected to create a significant vibration impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Construction of transportation network improvements under the proposed Plan could result in temporary increases in vibration associated with the use of vibration-intensive equipment. As shown in Table 4.13-6, of the construction equipment that would likely be used during transportation network improvements, crack-and-seat operations generate the highest vibration levels (i.e., 2.40 in/sec PPV at 25 feet). Crack-and-seat operations can be necessary for roadway repairs and thus are of greatest concern when evaluating construction-related vibration impacts associated with implementation of the proposed Plan. Pile driving generates the second highest vibration levels (i.e., 0.65 in/sec PPV at 25 feet) and can be necessary in the construction or repair of bridges and roadways. In addition, less-intensive impact equipment such as a vibratory roller could be used during construction activities. Construction-related vibration impacts from transportation project implementation would be similar to those described above for land use change. Crack-and-seat operations could exceed the recommended thresholds for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 210 feet of equipment operation and the recommended threshold for structural damage to older residences (i.e., 0.30 in/sec PPV) within 100 feet (see Appendix L for detailed modeling inputs). In addition, crack-and-seat operations, an impact pile driver, and a vibratory roller would exceed the threshold of 0.04 in/sec PPV for distinctly perceptible vibration effects from continuous/frequent intermittent sources within 1,034 feet, 316 feet, and 113 feet of operation, respectively (Table 4.13-6). Because most projected transportation network improvement projects would occur in developed areas, the likelihood exists for crack-and-seat operations to occur within 210 feet of a fragile building and within 100 feet of older residential buildings. In addition, the likelihood exists for crack-and-seat operations and other intensive construction activities (i.e., impact pile driving and vibratory rolling) to occur within 1,034 feet, 316 feet, and 113 feet, respectively, of an existing land use, and therefore could result in human annoyance.

Transportation projects (e.g., roadway expansion) typically progress in a linear fashion (i.e., along the right-of-way); thus, construction activities could affect individual receptors for shorter periods of time as elevated vibration levels would occur only temporarily in the location where the construction occurs before moving along the right-of-way. However, transportation network improvement projects are sometimes required to occur during the night to minimize traffic congestion during peak travel periods and therefore, could result in greater disturbance (e.g., sleep disruption) to nearby sensitive receptors if construction were to occur during evening and nighttime hours. For these reasons, construction of transportation improvement projects associated with the proposed Plan could exceed recommended vibration thresholds for structural damage and adverse human response.

Transportation network improvements under the proposed Plan include new Managed Lanes and Managed Lane connectors, double-tracking at certain locations on the LOSSAN Rail Corridor along with increases in COASTER frequencies, and new *Rapid* bus routes. These improvements could result in exposure of nearby land uses to new or increased levels of vibration. In addition, groundborne vibration associated with construction and operation of improvement projects in proximity to coastal bluffs could result in adverse impacts if vibration from construction equipment or transportation are significant enough to contribute to erosion. However, vibration levels and the degree of impacts would vary greatly depending on the type of transit facility, geologic factors such as soil type, and proximity to existing sensitive land uses (FTA 2018). For example, the geologic profile of San Diego County's coastline ranges from low bluffs or cliffs cut into uplifted marine terraces typically consisting of erosion-prone Tertiary sedimentary rocks, to high relief, steep-cliffed outcrops and headlands such as Point Loma that typically consist of older, harder and more erosion-resistant rock types (National Research Council 1999.) The likelihood of vibration from Project improvements adversely impacting coastal bluffs would vary based on location-specific factors affecting efficiency of vibration propagation, such as soil stiffness and internal damping (FTA 2018). FTA's *Transit Noise and Vibration Impact Assessment Manual* includes a screening distance tool that identifies distances to different land uses at which vibration would generally attenuate to below impact levels. According to the screening distances shown in Table 4.13-5, residential land uses within 200 feet of rail rapid transit, within 150 feet of light rail transit, or within 50 feet of bus projects would be exposed to vibration exceeding the recommended thresholds for human annoyance and structural damage. Transportation improvement projects associated with the proposed Plan that are located outside the screening distances would likely not generate vibration levels that exceed applicable thresholds for structural damage or adverse human response at nearby land uses. However, because the proposed Plan emphasizes compact development within developed communities, some improvement projects could be located close to vibration-sensitive land uses, including coastal bluffs. Transportation improvement projects would be required to adhere to local, state, and federal requirements, which typically prohibit vibration-intensive projects within incompatible (e.g., residential) zones. However, vibration impacts from the implementation of all transportation improvement projects and programs could exceed levels of significance for structural damage and adverse human response.

2035 Conclusion

Improvements associated with regional growth and land use changes and transportation network improvements could generate substantial increases in ground vibration or groundborne noise levels during construction and operations. Although adherence to local, state, and federal regulations and standards which typically prohibit vibration-intensive projects within incompatible zones would be required, vibration impacts associated with the proposed Plan could exceed applicable thresholds and thus be excessive. Therefore, this impact (NOI-2) in 2035 would be significant.

2050

Regional Growth and Land Use Change

As identified in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, the regional population is forecast to decrease by 4,112 people (-0.1%), while housing units are projected to increase by 65,577 (4.8%) and jobs by 103,460 (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. To accommodate regional growth by 2050, new development would include new housing units, services, commercial areas, industrial centers, schools, and civic facilities.

As described in the 2035 analysis, construction of new land use developments could result in temporary vibration impacts that exceed applicable thresholds. According to the vibration levels in Table 4.13-6, of the construction equipment that would likely be used during land use development, impact pile driving generates the highest vibration levels (i.e., 0.65 in/sec PPV at 25 feet). According to FTA-recommended procedures for applying a

propagation adjustment to these reference levels, vibration levels from an impact pile driver could exceed the recommended level for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 88 feet of equipment operation and the recommended threshold for older residential buildings (i.e., 0.30 in/sec PPV) within 42 feet (see Appendix L for detailed modeling inputs). Vibration levels from a vibratory roller could exceed the recommended level for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 42 feet of equipment operation and the recommended threshold for older residential buildings (i.e., 0.30 in/sec PPV) within 20 feet (see Appendix L for detailed modeling inputs). As shown in Table 4.13-6, vibration from an impact pile driver and a vibratory roller would exceed the threshold of 0.04 in/sec PPV for distinctly perceptible vibration effects from continuous/frequent intermittent sources within 316 feet and 113 feet of operation, respectively.

By 2050, areas throughout the region would likely be more developed, thus increasing the likelihood for construction activities to occur near sensitive receptors as compared to 2035. Specifically, because the proposed Plan promotes more development in areas with access to public transit and other sustainable transportation choices, the likelihood exists for impact pile driving to occur within 88 feet of a fragile building and within 42 feet of older residential buildings. In addition, the likelihood exists for impact pile driving and other intensive construction activities (e.g., vibratory rolling) to occur within 316 feet and 113 feet, respectively, of an existing land use. Therefore, construction of development projects associated with regional growth and land use change under the proposed Plan could exceed recommended vibration thresholds for structural damage and adverse human response.

New development, such as residential, commercial, and civic land uses, generally do not produce noticeable levels of vibration; operations vibration from these land uses is generally associated with vehicles such as trucks accessing local roadway networks which rarely produce a cumulative increase in ground vibration (Caltrans 2020b). These sources generally do not produce noticeable levels of vibration and thus are not expected to exceed applicable thresholds for structural damage or adverse human response. In addition, new development associated with the proposed Plan would occur in accordance with adopted land use plans and zoning ordinances of the cities and counties in the Plan area, which typically prohibit vibration-intensive projects within incompatible (e.g., residential) zones. Because vibration decreases rapidly with distance (Caltrans 2020b), separating vibration-intensive land uses from sensitive land uses (e.g., residential) can minimize annoyance-related vibration impacts. For these reasons, operational vibration associated with regional growth and land use change is not expected to create a significant vibration impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

By 2050, areas throughout the region would likely be more developed (e.g., there would be more housing units as compared to 2035), thus increasing the likelihood for construction activities to occur near sensitive receptors as compared to 2035. Similar to the 2035 analysis, construction and operations of transportation network improvements during the 2050 horizon year could result in new or increased vibration levels at nearby land uses. The construction of transportation network improvements would require the use of heavy construction equipment (e.g., bulldozers, graders, backhoes) and high-impact equipment (e.g., crack-and-seat operations, pile drivers, rock drilling). As shown in Table 4.13-6, of the construction equipment that would likely be used during transportation network improvements, crack-and-seat operations generate the highest vibration levels (i.e., 2.40 in/sec PPV at 25 feet). Crack-and-seat operations can be necessary for roadway repairs and thus are of greatest concern when evaluating construction-related vibration impacts associated with implementation of the proposed Plan. Pile driving generates the second highest vibration levels (i.e., 0.65 in/sec PPV at 25 feet) and can be necessary in the construction or repair of bridges and roadways. In addition, less-intensive impact equipment such as a vibratory

roller could be used during construction activities. Construction-related vibration impacts from transportation project implementation would be similar to those described above for land use change. Crack-and-seat operations could exceed the recommended thresholds for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 210 feet of equipment operation and the recommended threshold for structural damage to older residences (i.e., 0.30 in/sec PPV) within 100 feet (see Appendix L for detailed modeling inputs). Vibration levels from an impact pile driver could exceed the recommended level for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 88 feet of equipment operation and the recommended threshold for older residential buildings (i.e., 0.30 in/sec PPV) within 42 feet (see Appendix L for detailed modeling inputs). Vibration levels from a vibratory roller could exceed the recommended level for structural damage to fragile buildings (i.e., 0.10 in/sec PPV) within 42 feet of equipment operation and the recommended threshold for older residential buildings (i.e., 0.30 in/sec PPV) within 20 feet (see Appendix L for detailed modeling inputs). In addition, as shown in Table 4.13-6, crack-and-seat operations would exceed the threshold of 0.04 in/sec PPV for distinctly perceptible vibration effects from continuous/frequent intermittent sources within 1,034 feet; and an impact pile driver and a vibratory roller would exceed the threshold of 0.04 in/sec PPV for distinctly perceptible vibration effects from continuous/frequent intermittent sources within 316 feet and 113 feet of operation, respectively.

Because most projected transportation network improvement projects would occur in developed areas, the likelihood exists for crack-and-seat operations to occur within 210 feet of a fragile building and within 100 feet of older residential buildings. In addition, the likelihood exists for pile driving and other intensive construction activities (i.e., impact pile driving and vibratory rolling) to occur within 1,034 feet, 316 feet, and 113 feet, respectively, of an existing land use. Therefore, construction of transportation improvement projects associated with the proposed Plan could exceed recommended vibration thresholds for structural damage and adverse human response.

Transportation network improvements under the proposed Plan could result in exposure of nearby land uses to new or increased levels of vibration. In addition, vibration associated with improvement projects in proximity to coastal bluffs could result in adverse impacts, as discussed above. However, vibration levels would vary greatly depending on the type of transit facility and proximity to existing sensitive land uses. As detailed above, FTA establishes screening distances to evaluate impacts from transportation vibration. According to the screening distances shown in Table 4.13-5, residential land uses within 200 feet of rail rapid transit, within 150 feet of light rail transit, or within 50 feet of bus projects would be exposed to vibration exceeding the recommended thresholds for human annoyance and structural damage. Transportation improvement projects associated with the proposed Plan that are located outside the screening distances would likely not generate vibration levels that exceed applicable thresholds for structural damage or adverse human response at nearby land uses. However, because the proposed Plan emphasizes compact development within developed communities, some improvement projects could be located close to vibration-sensitive land uses, including coastal bluffs. Transportation improvement projects would be required to adhere to local, state, and federal requirements, which typically prohibit vibration-intensive projects within incompatible (e.g., residential) zones. However, vibration impacts from the implementation of all transportation improvement projects and programs could exceed levels of significance for structural damage and adverse human response.

2050 Conclusion

Regional growth, land use development, and transportation network improvements would increase by 2050. Improvements associated with regional growth and land use changes and transportation network improvements could generate substantial increases in ground vibration or groundborne noise levels during construction and operation. Although adherence to local, state, and federal regulations and standards which typically prohibit vibration-intensive projects within incompatible zones, would be required, vibration impacts associated with the proposed Plan could exceed applicable thresholds and thus be excessive. Therefore, this impact (NOI-2) in 2050 would be significant.

MITIGATION MEASURES

NOI-2 GENERATION OF EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS.

2035, 2050

NOI-2a Implement Construction Groundborne Vibration and Noise Reduction Measures.
SANDAG shall, and other public agencies and transportation project sponsors can and should, implement measures during design, project-level CEQA review, and construction of transportation network improvements and development projects, to reduce groundborne vibration and noise levels generated by on site construction equipment consisting of, but not limited to, the following:

- Where feasible, use soil mix wall for excavation.
- Incorporate a comprehensive construction vibration specification into all construction bid documents.
- Require a contractor to assess the potential for damage to buildings within 88 feet of areas where excavation requires the use of driven piles either by impact or vibratory methods.
- To prevent structural damage, minimum setback requirements for different types of ground vibration-producing activities (e.g., pile driving) for the purpose of preventing damage to nearby structures shall be established based on the proposed activities and locations, once determined. Factors to be considered shall include the specific nature of the vibration-producing activity (e.g., type and duration of pile driving), the proximity of existing structures, and the fragility/resiliency of nearby structures. Established setback requirements can be breached if a project-specific, site-specific vibration analysis is conducted by a qualified geotechnical engineer or ground vibration specialist that indicates that no structural damage would occur at nearby buildings or structures.
- If crack-and-seat operations, pile driving, or other vibration-generating construction activities are to occur within 210 feet of a fragile building (e.g., based on building/structural category under Caltrans Guideline Vibration Damage Potential Threshold Criteria [Caltrans Transportation and Construction Vibration Guidance Manual, Table 19]) that would likely be damaged by exceeding the applicable vibration threshold, implement measures to reduce vibration, consisting of, but not limited to, the following:
  - Retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that would damage any fragile structure, and design construction methods to not exceed the thresholds.
  - Require groundborne-vibration monitoring of nearby fragile structures. Implement a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of pile-driving activities and identify corrective measures to be taken should monitored vibration levels indicate the potential for vibration damage to historic structures.
- To prevent disturbance to sensitive land uses associated with construction activity within the impact distances shown in Table NOI-2a below, the following measures shall be implemented:
  - Alternatives to impact pile driving (e.g., sonic pile driving, jetting, cast-in-place or auger cast piles) shall be considered and implemented where feasible to reduce vibration levels.
  - Phase pile driving and other high-impact activities (i.e., equipment or activity with a reference PPV of 0.20 in/sec at 25 feet or higher, the FTA threshold for structural damage to non-engineered timber and masonry buildings) so as not to occur simultaneously with other construction activities, to the extent feasible, to reduce total vibration from construction sources.
  - Construction operations that include high-impact activities (i.e., the use of equipment or activity with a reference PPV of 0.20 in/sec at 25 feet or higher) shall be limited to daytime hours, with daylight hours being defined by the applicable jurisdiction or agency.

Table NOI-2a Construction Equipment Vibration Levels and Impact Distances[1]

Equipment Item	Reference PPV (in/sec) at 25 feet	Distance to Human Response (feet), Distinctly Perceptible Threshold[2]
Crack-and-seat operations	2.4	1,034
Impact pile driver	0.65	316
Vibratory pile driver	0.65	316
Hydraulic breaker	0.24	128
Vibratory roller	0.21	113
Large bulldozer	0.089	52
Caisson drilling	0.089	52
Jackhammer	0.035	23
Small bulldozer	0.003	3

Notes: PPV = peak particle velocity; in/sec = inches per second.

[1] Distances are calculated using the Reference PPV (PPV_{ref}) at 25 feet. The equation used to calculate these distances is $PPV = PPV_{ref} * (25/D)^n$ (Caltrans 2020a).

[2] Caltrans threshold of 0.04 in/sec PPV applied as distinctly perceptible threshold.

Sources: Caltrans 2020a; FTA 2018.

NOI-2b Implement Groundborne-Vibration and Noise Reduction Measures for Rail Operations.
SANDAG shall, and other transportation project sponsors can and should, implement vibration-reducing measures to meet FTA vibration guidelines (FTA 2018) during the planning, design, project-level CEQA review, construction, and operation of rail projects, consisting of, but not limited to, providing special track support systems, such as floating slabs, resiliently supported ties, high-resilience fasteners, and ballast mats.

In addition, rail operators can and should implement groundborne-vibration and noise-reducing measures to meet FTA vibration guidelines (FTA 2018) during the planning, design, project-level CEQA review, construction, and operation of rail projects, consisting of, but not limited to, the following:

- Conduct rail grinding on a regular basis to keep tracks smooth.
- Conduct wheel truing to recontour wheels to provide a smooth running surface and removing wheel flats.
- To reduce groundborne noise, achieve vibration isolation of the track from underlying surface using the following:
  - highly resilient direct fixation fasteners
  - tail suspended fastener system
  - isolated slab track system
  - floating slab track system

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measure NOI-2a would reduce construction vibration impacts by ensuring proper actions (e.g., setbacks, vibration monitoring, limiting construction hours) are taken to prevent structural damage to nearby buildings and to minimize disturbance to sensitive uses. Mitigation Measure NOI-2b would require the implementation of vibration-reduction measures, such as providing special track support systems and ballast mats, to ensure transportation projects meet FTA vibration guidelines. Mitigation measures NOI-2a and NOI-2b would substantially reduce significant vibration impacts caused by exceedances of groundborne vibration criteria.

However, all future project-level impacts may not be mitigated to a less-than-significant level by NOI-2a and 2b. Therefore, this impact (NOI-2) would remain significant and unavoidable.

NOI-3 FOR A PROJECT LOCATED WITHIN THE VICINITY OF A PRIVATE AIRSTRIP OR AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC-USE AIRPORT, THE PROJECT WOULD EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS.

Analysis Methodology

This section discusses the potential noise impacts of locating land development and transportation improvements of the proposed Plan in proximity to public-use and military airports or private airstrips and helipads in the San Diego region. The locations of forecasted regional growth and land use change, as well as planned transportation improvements associated with the proposed Plan, are analyzed to determine whether people residing by or working near public-use airports and military airfields, or private airstrips and helipads, would be exposed to excessive noise levels from aircraft noise. "Excessive" is defined as exceeding land use compatibility noise level limits in ALUCPs or AICUZ studies for public-use and military airports and in FAA and Caltrans Aeronautics Division regulations and permitting for private airstrips or helipads. For example, based on FAA guidelines, residential land uses within the existing 65 CNEL or greater noise contours are not compatible with the aircraft noise exposure unless the residence has sound attenuation features that reduce interior noise to requisite levels (SDCRAA 2022b).

Detailed quantitative analysis of potential impacts is not practical given the high-level (programmatic) nature of the proposed Plan and the lack of specific project details. For this reason, the analysis is largely qualitative and is supplemented with published data or simple calculations where possible to illustrate the points discussed in the analysis.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (3.6%), 137,242 housing units (11.1%), and 67,297 jobs (4.2%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. To accommodate regional growth by 2035, new development would include new housing units, services, commercial areas, industrial centers, schools, and civic facilities.

As indicated in Section 4.13.1, "Existing Conditions," there are 16 public-use and military airports in the San Diego region. The regional growth plans would not result in operations changes to flight plans, ALUCPs, or AICUZs. However, regional growth could result in noise-sensitive (generally residential) land uses being developed along the flight paths of some of the regional airports or within ALUCP or AICUZ traffic zones. Because the locations of new development are unknown, if new development were to occur in areas close to other public or military airports or in flight, people residing or working in the area could be exposed to excessive noise levels.

To prevent incompatible uses in areas with higher aircraft noise, ALUCPs and AICUZs establish land use policies and criteria (e.g., noise compatibility zones) to limit future incompatible uses in certain areas to minimize noise impacts to people living and working within the ALUCP or AICUZ. In addition, many local jurisdictions' general plans include land use compatibility guidelines that designate acceptable levels of noise based on the type of development. As described in Sections 4.13.1 and 4.13.2, SDCRAA, the ALUC for the San Diego region, is required

to assist local agencies in ensuring compatible land uses in the vicinity of existing or proposed airports; to coordinate planning at state, regional, and local levels; to review plans or regulations submitted by local agencies; and to review and make recommendations regarding the land uses (SDIA 2025). The ALUC would identify the land use compatibility standards that apply to the project and determine whether the project is compatible, incompatible subject to specific conditions, or incompatible.

For airstrips, separation between developed land uses and the facilities would be identified in project-level planning or CEQA review. Separation between private airports and development is identified in accordance with FAA standards. Compliance with local jurisdiction general plans and FAA standards would reduce noise from airstrips and ensure land use compatibility. Regional growth and land use change could result in new developments close to public, private, or military airports. However, new development would be required to comply with existing regulations, including land use compatibility policies established in ALUCPs and AICUZs. Compliance with such standards would ensure that people working at or living in new developments would not be exposed to excessive noise from public or military airfields or private airstrips. Therefore, impacts would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Transportation network improvements would include arterial improvements, development of circulator routes, highway intersection improvements, and multimodal corridor improvements. The transportation network improvement projects could potentially be located within areas close to existing airports or airstrips; however, they would not consist of habitable structures and are not considered noise-sensitive development. Therefore, no sensitive receptors would be exposed to excessive noise levels generated by nearby aircraft, and this impact would be less than significant.

2035 Conclusion

By 2035, increased development would occur near public, private, or military airports. To prevent incompatible uses in areas with higher aircraft noise, ALUCPs and AICUZs establish land use policies and criteria (e.g., noise compatibility zones) to limit future incompatible uses in certain areas to minimize noise impacts to people living and working within the ALUCP or AICUZ. Adherence to the regulations and land use compatibility standards within ALUCPs and AICUZs would ensure that residents and workers occupying noise-sensitive land uses are not exposed to noise levels that exceed applicable standards. Therefore, this impact (NOI-3) in the year 2035 would be less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. As described in the 2035 analysis, a portion of this growth would occur near public-use or military airports, particularly those located near existing urban development. ALUCPs and AICUZs establish land use policies and criteria (e.g., noise compatibility zones)

that discourage incompatible uses in certain areas to minimize noise impacts on people living and working within the ALUCP or AICUZ. In addition, many local jurisdictions' general plans include land use compatibility guidelines that designate acceptable levels of noise based on the type of development. Adherence to these regulations and programs would ensure that people working at or living in new developments would not be exposed to excessive noise from public or military airfields, or private airstrips. Therefore, impacts would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, the transportation network improvement projects implemented during this time horizon could potentially be located in areas close to existing airports or airstrips; however, they would not consist of habitable structures and are not considered noise-sensitive development. Therefore, no sensitive receptors would be exposed to excessive noise levels generated by nearby aircraft, and this impact would be less than significant.

2050 Conclusion

By 2050, increased development would occur near public, private, or military airports. To prevent incompatible uses in areas with higher aircraft noise, ALUCPs and AICUZs establish land use policies and criteria (e.g., noise compatibility zones) to limit future incompatible uses in certain areas to minimize noise impacts to people living and working within the ALUCP or AICUZ. Adherence to regulations and land use compatibility standards within ALUCPs and AICUZs would ensure that residents and workers occupying noise-sensitive land uses are not exposed to noise levels that exceed applicable standards. Therefore, this impact (NOI-3) is less than significant for this period.

MITIGATION MEASURES

No mitigation measures are required for this impact.

4.13.5 Cumulative Impacts Analysis

C-NOI-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO NOISE AND VIBRATION

This section discusses the cumulative effects of past, present, and reasonably foreseeable future projects and the contribution of regional growth and land use change and transportation network improvements and programs included in the proposed Plan to these effects. The geographic scope for the cumulative noise and vibration analysis is the Southern California and Northern Baja California region. Transportation networks, including the regional roadway/interstate networks, rail lines, and airports, are prominent sources of environmental noise in the region. Development, growth, population increase, and land use change can contribute to an increase in ambient noise and vibration directly related to the type of development, increased use of transportation facilities, and the general introduction of new sources of noise and vibration.

Generally, the geographic scope of the cumulative impact analysis for noise and vibration is limited to the area immediately surrounding the project site. However, increases in ambient noise and vibration can occur on regional roadway and interstate networks, rail lines, and airports as a result of growth, population increase, or land use change. Thus, consideration of the Southern California and Northern Baja California region is appropriate.

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan; the EIR for Connect SoCal 2024, the current RTP/SCS for the SCAG region (SCAG 2024); and the EIR for the

2019 SDIA Development Plan (SDCRAA 2019). Other plans with applicable information but no associated environmental analysis include the California-Baja California Border Master Plan (SANDAG 2021).

Impacts of the Proposed Plan

Regional growth and land use change and the transportation network improvements associated with the proposed Plan would generate construction and operations noise levels that would expose noise-sensitive receptors (e.g., residences, churches, hospitals) to noise levels that exceed applicable noise standards. In addition, construction and operations of projects associated with the proposed Plan could result in substantial increases in ambient noise levels. This exposure of people to, or generation of, noise levels exceeding applicable noise standards established by local jurisdictions or other agencies is considered a significant and unavoidable impact in horizon years 2035 and 2050 (Impact NOI-1).

Regional growth land use change and transportation network improvements under the proposed Plan in horizon years 2035 and 2050 would also result in conditions where construction of new development and transportation network improvements could also expose vibration-sensitive receptors (e.g., residences, churches, hospitals) to vibration levels that exceed applicable standards. This exposure of people to, or generation of, vibration levels exceeding applicable noise standards established in state and federal guidance is considered a significant and unavoidable impact in horizon years 2035 and 2050 (Impact NOI-2).

Future development under the proposed Plan would likely occur near public-use or military airports and private airstrips or helipads; however, compliance with existing aviation regulations, procedures, and ALUCPs and AICUZ policies would ensure project compatibility with public-use or military airports and private airstrips or helipads. Therefore, the impact of exposing people to excessive aviation noise would be less than significant in 2035 and 2050 (Impact NOI-3).

Due to the distribution characteristics of sound and vibration, construction and operational noise and vibration are generally limited to the vicinity of individual project sites. As discussed in this section, the effects of noise and vibration associated with implementation of the proposed Plan would vary depending on project- and site-specific conditions. When required, mitigation measures would reduce the noise and vibration impacts associated with projects under the proposed Plan. However, because it cannot be assured that applicable noise standards would be met, implementation of the proposed Plan would result in a substantial increase in noise and vibration within the region and thus would result in considerable contribution to a cumulatively significant impact.

Impacts of Related Projects

Other related regional transportation improvement projects, such as the California High-Speed Rail project, could have localized construction and operational noise impacts along the project alignment. Land development projects throughout the region would also generate localized construction and operations noise impacts. All regional projects would be required to adhere to existing regulations discussed in Section 4.13.2, "Regulatory Setting," and to implement mitigation measures if noise and vibration levels exceed applicable thresholds. However, if these projects were to occur in close proximity to one another and within the same time frame, they could combine to create cumulative impacts.

Impacts of Projections in Adopted Plans

The SCAG Connect SoCal 2024 Program EIR found that implementation of Connect SoCal 2024 could result in exposure of persons to, or generation of, noise levels in excess of applicable noise standards established in general plans, noise ordinances, or applicable standards of other agencies. Thus, Connect SoCal 2024 would contribute to substantial noise impacts in the region. The SCAG Connect SoCal 2024 Program EIR also determined that Connect SoCal 2024 could result in the exposure of people to excessive vibration and groundborne noise levels. Thus, SCAG Connect SoCal 2024 would contribute to significant vibration impacts in the region. Finally, the SCAG Connect SoCal 2024 Program EIR determined that Connect SoCal 2024 had the potential to expose people to excessive aviation-related noise (SCAG 2024).

The 2019 SDIA Development Plan EIR considered potential aviation, surface transportation, construction, and cumulative noise impacts associated with the Airport Development Plan and its alternatives. The EIR found that the Airport Development Plan's cumulative noise impact would be cumulatively considerable in combination with operational aircraft and roadway noise exposure levels. Construction noise changes due to the Airport Development Plan were found to be less than significant (SDCRAA 2019).

The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land ports of entry and transportation infrastructure serving those ports of entry in the California-Baja California region (SANDAG 2021). The Master Plan does not have an associated environmental analysis document; however, it is reasonable to assume that projects included in the Master Plan could have adverse impacts related to noise and vibration levels that exceed applicable thresholds or result in a substantial increase above existing ambient levels as result of the expansion of existing transportation facilities and the development of new transportation facilities.

Cumulative Impacts and Impact Conclusions

2035

A significant cumulative impact in 2035 would result if the combined impacts of the proposed Plan, impacts of cumulative projects, and impacts of projections from adopted plans within the Southern California and Northern Baja California region were significant when considered together, even if not independently significant. As described above, future development and transportation network improvements associated with the proposed Plan would cause exceedances of noise standards and result in the exposure of sensitive receptors to substantial short-term and permanent noise increases. Future development and transportation network improvements associated with the proposed Plan would also cause vibration impacts that could exceed applicable thresholds and thus be excessive.

Significant noise and vibration impacts have been identified in other environmental analysis documents for cumulative projects and adopted plans. The combination of the direct noise and vibration impacts from the proposed Plan and other cumulative projects adopted plans that would affect the San Diego and Northern Baja California region would, therefore, result in significant cumulative noise and vibration impacts based on exposure to, or generation of, noise levels that exceed applicable standards, substantial temporary and permanent increases in noise levels, and excessive vibration and groundborne noise. Because the proposed Plan's noise and vibration impacts are significant, the proposed Plan would contribute to cumulatively considerable noise and vibration impact in 2035 (Impact C-NOI-1).

As described above, future development and transportation network improvements forecasted in the proposed Plan would occur near public airports and private airstrips, but residents and workers would not be exposed to excessive noise levels. As discussed above, while the 2019 SDIA Development Plan EIR identified a cumulative aircraft-induced noise exposure due to the Airport Development Plan (SDCRAA 2019), the proposed Plan's impacts related to aircraft noise would continue be less than significant because residents and workers would continue not be exposed to excessive noise levels. Therefore, cumulative aircraft noise exposure impacts would not be significant, and the proposed Plan would not result in a cumulatively considerable contribution to aircraft noise exposure.

2050

The cumulative analyses presented above for the horizon year 2035 would be applicable to 2050. Because cumulative noise and vibration impacts throughout the San Diego and Northern Baja California region would be significant by 2050 and because the proposed Plan's noise and vibration impacts are significant, the proposed Plan would contribute to a cumulatively considerable noise and vibration impact in 2050 (Impact C-NOI-1). As described for 2035, the proposed Plan would not result in a cumulatively considerable contribution to aircraft noise exposure.

MITIGATION MEASURES

C-NOI-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO NOISE AND VIBRATION

Mitigation Measure NOI-1a calls for construction noise reduction measures to meet local standards and reduce temporary noise levels during construction, and Mitigation Measures NOI-1b and NOI-1c call for operations noise-reduction measures to be implemented to meet local standards and reduce permanent noise levels during operations for transportation network improvements and development projects, respectively. As discussed previously, mitigation measures would reduce noise impacts but would not guarantee reduction of all projects associated with the proposed Plan to below applicable levels of significance. Therefore, the proposed Plan's contributions to cumulative noise impacts in 2035 and 2050 would remain cumulatively considerable with mitigation.

Mitigation Measure NOI-2a calls for groundborne vibration-reduction and groundborne noise-reduction measures to be implemented during construction activities, and Mitigation Measure NOI-2b requires groundborne vibration- reduction and groundborne noise-reduction measures for operations. As discussed above, mitigation measures would reduce significant increases in vibration and groundborne noise for some projects; however, they would not guarantee that vibration associated with all future projects would be reduced to a less-than-significant level. Therefore, the proposed Plan's contributions to cumulative vibration and groundborne noise in 2035 and 2050 would remain cumulatively considerable with mitigation.

2035, 2050

For the reasons discussed above, the proposed Project's contribution to cumulative noise and vibration impacts in 2035 and 2050 would remain cumulatively considerable with mitigation.

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4.14 POPULATION AND HOUSING

This section evaluates the potential population and housing impacts of the proposed Plan.

4.14.1 Existing Conditions

The following discussion describes the existing population, housing units, and jobs in the San Diego region and describes SANDAG's growth forecasting process.

EXISTING POPULATION, HOUSING UNITS, AND EMPLOYMENT

Table 4.14-1 details the existing regional population, housing units, and jobs for the 18 incorporated cities and unincorporated county.

Table 4.14-1 Existing Population, Housing Units, and Employment by Jurisdiction

Jurisdiction	2022 Population	2022 Housing Units	2022 Jobs
Carlsbad	115,585	48,104	79,382
Chula Vista	276,785	88,143	74,728
Coronado	22,277	9,665	31,257
Del Mar	3,929	2,629	3,799
El Cajon	105,638	36,590	43,824
Encinitas	61,515	26,665	26,140
Escondido	150,679	49,500	53,869
Imperial Beach	26,243	10,034	5,074
La Mesa	60,472	26,265	25,250
Lemon Grove	27,242	9,186	7,972
National City	61,471	17,776	38,802
Oceanside	173,048	67,676	48,112
Poway	48,759	16,782	33,786
San Diego	1,374,790	553,921	876,977
San Marcos	93,585	32,314	40,133
Santee	59,015	21,427	17,838
Solana Beach	12,812	6,528	9,255
Vista	100,291	33,663	39,015
Unincorporated	513,170	178,774	156,419
Region Total	3,287,306	1,235,642	1,611,632

Source: Data provided by SANDAG from the SANDAG 2025 Regional Plan Appendix F: Regional Growth Forecast, Sustainable Communities Land Use Pattern.

Population

The existing (2022) population of the San Diego region is 3,287,306. The city of San Diego is the most populous in the region with a population of 1,374,790, which is 42% of the regional total. The unincorporated county (513,170; 16%) and Chula Vista (276,785; 8%) have the second- and third-largest populations in the region, respectively. Approximately 66% of regional population is in these three jurisdictions. The cities of Oceanside (173,048; 5%) and Escondido (150,679; 5%) are the next most populated jurisdictions.

Existing Housing Units/Affordable Housing

As of 2022, there are 1,235,642 existing housing units in the San Diego region. Similar to existing population distribution, approximately 66% of existing housing units are in the city of San Diego (553,921; 45%), the unincorporated county (178,774; 14%), and Chula Vista (88,143; 7%). After these three jurisdictions, the cities of Oceanside (67,676; 5%) and Escondido (49,500; 4%) account for the most housing units. Figure 4.14-1 and 4.14-2 identify the location of housing and employment for 2035 and 2050, respectively.

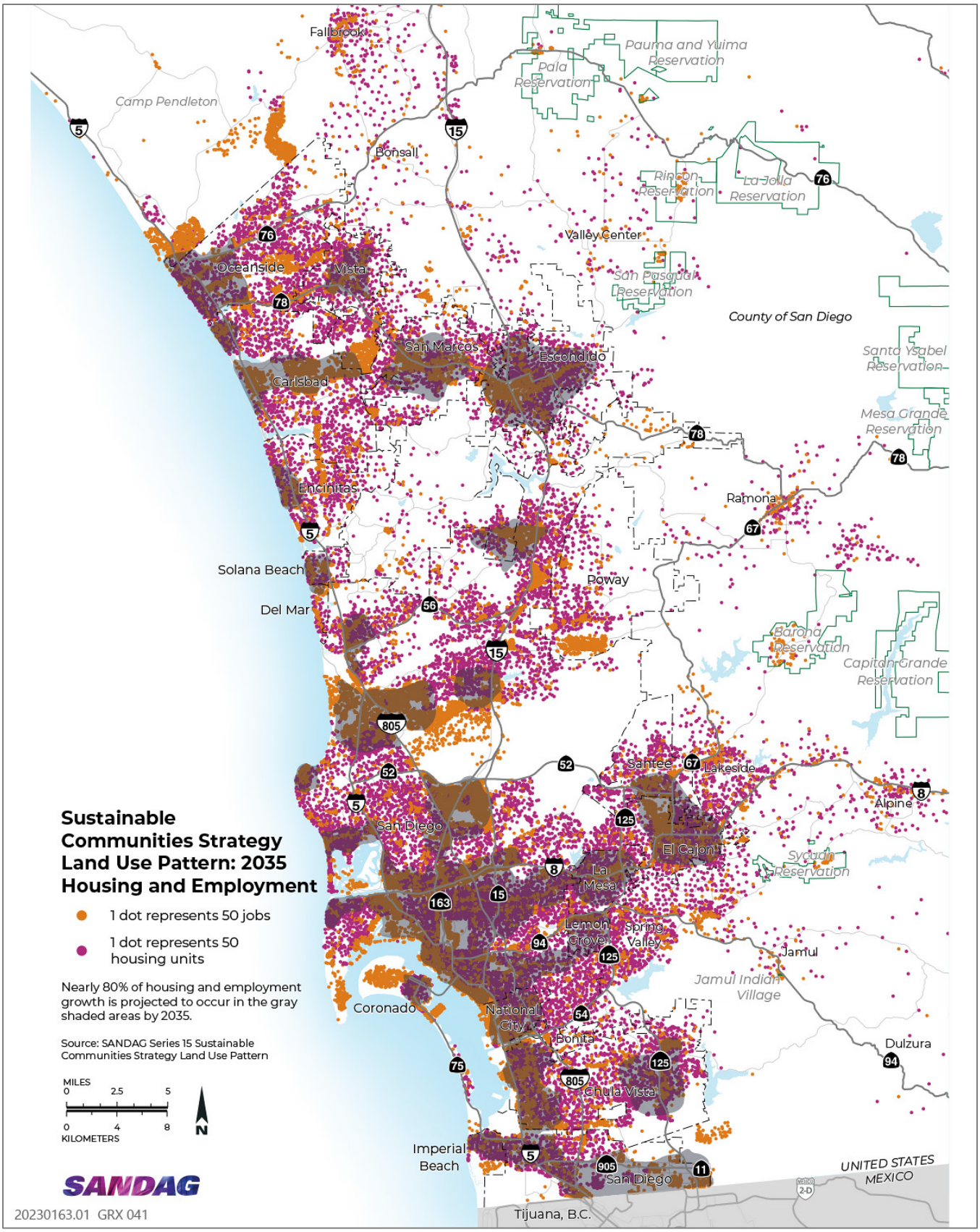
The state of California faces a persistent housing crisis, and San Diego County is no exception. Between 1950 and 2019, the housing supply has not kept pace with the growing population of the San Diego region, resulting in rising housing prices. More affordable housing is needed for extremely low-, very low-, low-, and middle-income households. Steps at the local, regional, and state levels are being taken to address the availability and affordability of housing. For example, cities in the San Diego region have taken steps to increase affordable housing by making the development process faster and easier (City of San Diego 2020). The State of California offers Regional Early Action Planning (REAP) funds, which SANDAG uses for the Housing Acceleration Program (HAP) to provide grants to local jurisdictions to fund planning and capital projects related to the acceleration of housing production in smart growth planning areas. These grants can be used to fund infrastructure improvements to increase housing density (SANDAG 2025a). At the local level, agencies, such as the San Diego Housing Commission, work with developers to build deed-restricted units. Deed-restricted units have maximum rent restrictions, often based on federal, state, or city programs that subsidize the development or operation of the units. Depending on the type of affordability program and subsidy, rental housing regulations on units often have a set time period for affordability, which can be as long as 55 years (San Diego Housing Commission 2020).

Housing affordability is the product of two factors: household incomes and housing costs. Housing is considered affordable if total housing costs are below 30% of total household pretax income. In most U.S. cities, housing costs have grown faster than household incomes over the last decade, leading to a growing affordability challenge for low- and middle-income households. San Diego follows this trend, with the increase in median household income between 2010 and 2018 (15% inflation-adjusted; $69,200 to $79,700) lagging rent growth (17% inflation-adjusted; $1,450 to $1,700). In the same period, median home values increased by 31% (inflation-adjusted), from $469,300 to $614,000. This caused many households with moderate income (81–120% of area median income [AMI]) and above-moderate income (more than 120% of AMI) who may have previously purchased a home to remain in the rental market. As more of these households with moderate incomes and above continue to remain in the rental market, either due to a lack of homeownership options or changing preferences, households with low incomes and below compete for the same rental housing units. This further reduces rental vacancy rates, drives up rents, and increases the housing cost burden on those at the lower end of the income spectrum (San Diego Housing Commission 2020).

According to the California Housing Partnership Corporation, 134,537 low-income renter households lack access to affordable homes. State and federal funding for housing production and preservation decreased by 13% to $631 million. The burden is especially heavy on extremely low-income households, 81% of whom pay more than half their income on housing, compared to 2% of moderate-income households. In 2023, there were only 9,226 beds available for those experiencing homelessness. To afford the average rent of $2,479, renters must earn $47.67 per hour—2.8 times the city's minimum wage (CHPC 2024).

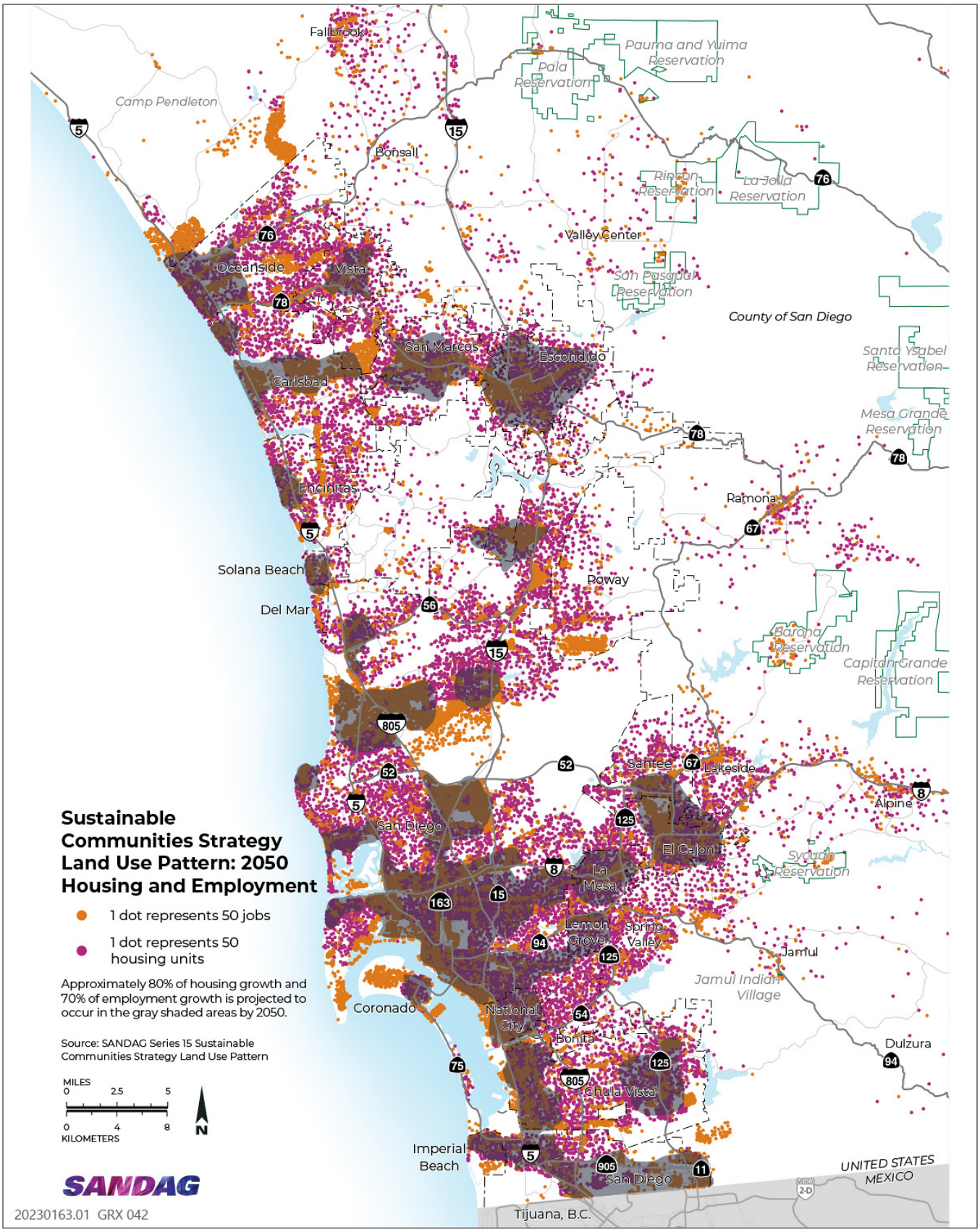
Employment

There are 1,611,632 existing (2022) jobs in the San Diego region. With 876,977 jobs, the jobs in city of San Diego account for 54% of regional employment. The next largest job centers are the unincorporated county (156,419; 10%), Carlsbad (79,382; 5%), and Chula Vista (74,728; 5%). According to the State of California Employment Development Department, the San Diego region had an unemployment rate of 4.4% and an available labor force of 1,671,000 (EDD 2025).



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.14-1 Projected 2035 Housing and Employment Density



Source: Image produced and provided by SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.14-2 Projected 2050 Housing and Employment Density

SANDAG REGIONAL GROWTH FORECAST SUMMARY

SANDAG has prepared regional growth forecasts for the San Diego region since the 1970s. The SANDAG forecasts are intended to help policy- and decision-makers prepare for the future and are not an expression for or against growth. The forecasts are developed through a collaborative effort with experts in demography, housing, the economy, and other disciplines, with the close cooperation of local planning directors and their staffs.

The Series 15 Regional Growth Forecast (Series 15 Forecast) projects a slower population growth rate compared to previous forecasts. The population forecast also highlights the shift in the drivers of population growth. Historically, natural change (births minus deaths) was the primary contributor to regional population increases, but this trend has been slowing. As illustrated in Figure 2-2 in Chapter 2, "Project Description," both natural change and net migration (the difference between in-migrants and out-migrants) have been declining since 2010. By 2030, natural change is projected to drop below net migration, meaning that net migration will become the primary driver of population growth. These trends reflect broader national patterns of lower birth rates and aging populations. As regional employment rises, vacancy rates fall, and the state's population increases, net migration for the region is projected to climb through the mid-years of the forecast. Over time, as these trends slow, and with the state's population growth expected to turn negative, net migration is forecasted to decrease, ultimately turning negative by the forecast's horizon.

Population Growth

From 2022 to 2050, the region is forecasted to have a population increase of 112,944 people—from 3,287,306 to 3,400,250, an increase of 3.4%. Table 4.14-2 shows existing population in 2022 and forecasted population growth for 2035 and 2050 for the region and the subregional allocation by jurisdiction based on the sustainable communities strategy (SCS) land use pattern.

Table 4.14-2 Existing and Forecasted Population Growth by Jurisdiction

Jurisdiction	Actual 2022	Projection 2035	Projection 2050	Change 2022–2050 Amount	Change 2022–2050 Percent
Carlsbad	115,585	120,002	116,776	1,191	1.0%
Chula Vista	276,785	307,392	324,927	48,142	17.4%
Coronado	22,277	21,904	21,222	-1,055	-4.7%
Del Mar	3,929	3,835	3,710	-219	-5.6%
El Cajon	105,638	102,051	99,223	-6,415	-6.1%
Encinitas	61,515	61,324	59,822	-1,693	-2.8%
Escondido	150,679	153,717	151,077	398	0.3%
Imperial Beach	26,243	25,688	25,351	-892	-3.4%
La Mesa	60,472	59,628	59,175	-1,297	-2.1%
Lemon Grove	27,242	26,739	26,263	-979	-3.6%
National City	61,471	62,437	61,574	103	0.2%
Oceanside	173,048	185,788	183,389	10,341	6.0%
Poway	48,759	51,059	48,545	-214	-0.4%
San Diego	1,374,790	1,434,871	1,440,765	65,975	4.8%
San Marcos	93,585	112,109	109,891	16,306	17.4%
Santee	59,015	61,513	62,824	3,809	6.5%
Solana Beach	12,812	12,467	12,142	-670	-5.2%
Vista	100,291	101,378	99,000	-1,291	-1.3%
Unincorporated	513,170	500,460	494,574	-18,596	-3.6%
Region Total	3,287,306	3,404,362	3,400,250	112,944	3.4%

Source: Data provided by SANDAG from the SANDAG 2025 Regional Plan Appendix F: Regional Growth Forecast, Sustainable Communities Land Use Pattern.

The highest population growth rate increases from 2022 to 2050 are forecasted to occur in the cities of Chula Vista (17.4%), San Marcos (17.4%), and Santee (6.5%). Approximately 41% of the population growth increase is forecasted for these three jurisdictions. Forecasted population growth rates in the cities of San Diego (4.8%) and Oceanside (6.0%) also would be higher than the regional average of 3.4%. Population growth rates are forecasted to be lower than the regional average in the north county coastal cities of Carlsbad (1.0%), Del Mar (-5.6%), Solana Beach (-5.2%), and Encinitas (-2.8%); the south county cities of Coronado (-4.7%), Imperial Beach (-3.4%), and National City (0.2%); the north county inland cities of Poway (-0.4%), Escondido (0.3%) and Vista (-1.3%); the east county cities of Lemon Grove (-3.6%), La Mesa (-2.1%), El Cajon (-6.1%), as well as the unincorporated county of San Diego (-3.6%).

Housing Units

From 2022 to 2050, the number of housing units in the region is forecasted to increase by 202,819, from 1,235,642 to 1,438,461, an increase of 16.4%. Table 4.14-3 shows existing housing units in 2022 and forecasted housing units for 2035 and 2050 for the region and the subregional allocation by jurisdiction based on the SCS land use pattern. This table does not include civilian (e.g., dormitories) or military (e.g., barracks) group quarters.

The highest rates of housing unit increases would occur in the cities of San Marcos (32.2%), Chula Vista (29.9%), Oceanside (20.5%), San Diego (19.4%), and Santee (16.9%). These forecasted housing unit increases will be higher than the projected regional average of 16.4%. The rates of housing unit increases are forecasted to be lower than the regional average in the north county coastal cities of Carlsbad (12.7%), Encinitas (7.9%), Solana Beach (5.7%), and Del Mar (4.2%); the north county inland cities of Poway (11.5%), Vista (10.1%), and Escondido (12.5%); and the east county cities of El Cajon (4.6%), La Mesa (7.3%), and Lemon Grove (8.2%); the south county cities of Coronado (3.1%), Imperial Beach (8.4%), and National City (13.9%), as well as the unincorporated county (7.2%).

Table 4.14-3 Existing and Forecasted Housing Growth by Jurisdiction

Jurisdiction	Actual 2022	Projection 2035	Projection 2050	Change 2022–2050 Amount	Change 2022–2050 Percent
Carlsbad	48,104	53,283	54,228	6,124	12.7%
Chula Vista	88,143	103,242	114,473	26,330	29.9%
Coronado	9,665	9,821	9,969	304	3.1%
Del Mar	2,629	2,738	2,740	111	4.2%
El Cajon	36,590	37,475	38,280	1,690	4.6%
Encinitas	26,665	28,235	28,773	2,108	7.9%
Escondido	49,500	53,764	55,686	6,186	12.5%
Imperial Beach	10,034	10,489	10,877	843	8.4%
La Mesa	26,265	27,229	28,180	1,915	7.3%
Lemon Grove	9,186	9,602	9,939	753	8.2%
National City	17,776	19,414	20,238	2,462	13.9%
Oceanside	67,676	78,381	81,544	13,868	20.5%
Poway	16,782	18,711	18,711	1,929	11.5%
San Diego	553,921	627,668	661,533	107,612	19.4%
San Marcos	32,314	41,439	42,709	10,395	32.2%
Santee	21,427	23,476	25,055	3,628	16.9%
Solana Beach	6,528	6,801	6,897	369	5.7%
Vista	33,663	36,102	37,062	3,399	10.1%
Unincorporated	178,774	185,014	191,567	12,793	7.2%
Region Total	1,235,642	1,372,884	1,438,461	202,819	16.4%

Source: Data provided by SANDAG from the SANDAG 2025 Regional Plan Appendix F: Regional Growth Forecast, Sustainable Communities Land Use Pattern.

Jobs

From 2022 to 2050, the number of jobs in the region is forecasted to increase by 170,757, from 1,611,632 jobs to 1,782,389 jobs, an increase of 10.6%. Table 4.14-4 shows existing jobs in 2022 and forecasted jobs for 2035 and 2050 for the region and the subregional allocation by jurisdiction based on the SCS land use pattern.

The highest rates of job increases would occur in the cities of Chula Vista (38%), Oceanside (35.7%), San Marcos (30.4%), Imperial Beach (49.9%), and Lemon Grove (18%), as well as the unincorporated county (11.5%). These forecasted job increases will be higher than the projected regional average of 10.6%. The rates of jobs increases are forecasted to be lower than the regional average in the City of San Diego (7.7%); the coastal cities of Carlsbad (7.5%), Encinitas (3.2%), Solana Beach (1.5%), Del Mar (1.3%); the north county cities of Poway (0.8%), Vista (6.8%) and Escondido (3.9%); the south county cities of Coronado (0.9%) and National City (8.2%); and the east county cities of El Cajon (10.2%), La Mesa (8.8%), and Santee (8.3%).

Table 4.14-4 Existing and Forecasted Job Growth by Jurisdiction

Jurisdiction	Actual 2022	Projection 2035	Projection 2050	Change 2022–2050 Amount	Change 2022–2050 Percent
Carlsbad	79,382	83,490	85,368	5,986	7.5%
Chula Vista	74,728	81,959	103,093	28,365	38.0%
Coronado	31,257	31,316	31,538	281	0.9%
Del Mar	3,799	3,849	3,849	50	1.3%
El Cajon	43,824	44,798	48,274	4,450	10.2%
Encinitas	26,140	26,285	26,986	846	3.2%
Escondido	53,869	55,489	55,971	2,102	3.9%
Imperial Beach	5,074	6,063	7,607	2,533	49.9%
La Mesa	25,250	25,582	27,466	2,216	8.8%
Lemon Grove	7,972	8,294	9,403	1,431	18.0%
National City	38,802	39,474	41,986	3,184	8.2%
Oceanside	48,112	56,098	65,275	17,163	35.7%
Poway	33,786	33,966	34,067	281	0.8%
San Diego	876,977	907,847	944,440	67,463	7.7%
San Marcos	40,133	48,045	52,315	12,182	30.4%
Santee	17,838	18,210	19,312	1,474	8.3%
Solana Beach	9,255	9,300	9,397	142	1.5%
Vista	39,015	39,506	41,650	2,635	6.8%
Unincorporated	156,419	159,358	174,392	17,973	11.5%
Region Total	1,611,632	1,678,929	1,782,389	170,757	10.6%

Source: Data provided by SANDAG from the SANDAG 2025 Regional Plan Appendix F: Regional Growth Forecast, Sustainable Communities Land Use Pattern.

4.14.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Uniform Relocation Assistance and Real Property Acquisition Policies of 1970

The Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) (42 U.S. Code Section 4601 et seq.), passed in 1970 and amended in 1987, is intended to provide for uniform and equitable treatment for

persons displaced through federally funded or assisted transportation and redevelopment projects that require property acquisition. The act lays out rules for notification, relocation counseling, social services or assistance for disabled residents, and compensation for replacement housing and moving costs. The rules stipulate that replacement housing must be comparable to previous housing in terms of location, size, access to employment and public facilities, and must be "decent, safe, and sanitary." The rules apply if federal funds are used in any phase of the program or project, even if the property acquisition itself is not federally funded. Federal Highway Administration (FHWA) regulations implementing the Uniform Act are found at 49 Code of Federal Regulations Part 24.

Housing and Urban Development Regulations

The Housing and Community Development Act of 1974 (42 USC Section 5301 et seq.) and Section 8 of the Housing Act of 1937 establish federal guidelines for affordable housing and community development. These regulations provide funding mechanisms for housing assistance programs, support the development of low-income housing, and ensure equitable access to safe and sanitary living conditions. They also outline requirements for administering housing subsidies and grants to assist individuals and families in securing affordable housing options.

Federal Highway Administration and Federal Transit Administration Regulations

Federal Highway Administration and Federal Transit Administration regulations, outlined in 23 CFR 771 and 49 CFR Part 622, establish procedures for evaluating the environmental impacts of transportation projects, including effects on population and housing. These regulations require an assessment of housing displacement, population shifts, and impacts on social services resulting from transportation infrastructure development, particularly in areas undergoing urban expansion or redevelopment.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

State Housing Element Law

State law requires that each city and county prepare and adopt a general plan for its jurisdiction that contains certain mandatory elements, including a housing element. (General plan requirements are described in Section 4.11, "Land Use and Planning.") The housing element is a comprehensive assessment of current and forecasted housing needs for all economic segments of the community. Among other things, housing elements must assess the jurisdiction's existing and forecasted housing needed, including the jurisdiction's fair share of regional housing needs identified in the Regional Housing Needs Assessment (RHNA). They also must identify adequate sites to meet the needs of households at all income levels (Government Code Section 65580 et seq.).

California Relocation Assistance Act

The California Relocation Assistance Act (Government Code Section 7260 et seq.) establishes uniform policies to provide for the fair and equitable treatment of people displaced from their homes or businesses as a direct result of state or local government projects or programs. The California Relocation Assistance Act requires that comparable replacement housing be made available to displaced people within a reasonable period of time prior to the displacement. Displaced people or businesses are assured payment for their acquired property at fair market value. Relocation assistance in the form of advisory assistance and financial benefits would be provided at the local level. This includes aid in finding a new home location, payments to help cover moving costs, and additional payments for certain other costs.

Jobs and Economic Improvement through Environmental Leadership Act of 2021 (Senate Bill 7)

On May 20, 2021, Governor Gavin Newsom signed into law SB 7, which extends expedited California Environmental Quality Act (CEQA) judicial review for small-scale housing developments. In 2011, AB 900 created an expedited judicial review process under CEQA for large, multi-benefit housing, clean energy, and manufacturing projects, provided that they met certain requirements, including provisions related to labor. SB 7 extends the provisions of AB 900 through the year 2025, and lowers the threshold for eligible housing projects. SB 7 provides benefits to projects that were previously certified under AB 900 but that did not receive project approvals by the prior deadline of January 1, 2021, and marks the first bill of the Senate's 2021 "housing package"

that targets California's ongoing housing crisis, with an emphasis on minimization of greenhouse gases and boosting employment opportunities.

SB 7 reenacts AB 900 and adds (1) eligibility for infill housing development projects with investments between $15 and $100 million (the previous threshold was $100 million and above); (2) a requirement of quantification and mitigation of the impacts of a project from the emissions of greenhouse gases with geographic restrictions for nonhousing development projects; (3) a revision of labor-related requirements for projects undertaken by both public agencies and private entities, adding "skilled and trained" workforce to the existing prevailing wage requirements; and (4) authorization for the governor to certify a project before the lead agency certifies the final EIR for the project or an alternative described in an EIR. SB 7 requires an applicant for certification of a project to (1) demonstrate that they are preparing the administrative record concurrently with the administrative process and (2) agree to pay the costs of both the trial court and court of appeal in hearing and deciding a case challenging a lead agency's action on a certified project.

Duplex Zoning Law (Senate Bill 9)

On September 16, 2021, Governor Gavin Newsom signed into law SB 9, which requires, for qualifying parcels, ministerial approval of two-unit housing developments in single-family zoning districts and would allow single-family parcels to be subdivided into two lots. Taken together, these provisions could allow for development of up to four housing units on lots where only one unit is currently permitted. SB 9 requires applicants for lot splits under this law to confirm that they intend to occupy one of the housing units as their principal residence for a minimum of 3 years, unless the applicant is a community land trust or qualified nonprofit corporation. Under SB 9, a local agency retains discretion to deny a proposed housing project if it finds that the project would have an adverse health and safety or environmental impact that cannot be feasibly mitigated or avoided. Local agencies are also required to prohibit use of the units for short-term rentals of 30 days or less.

CEQA Streamlining for Upzoning (Senate Bill 10)

Signed into law by Governor Newsom on September 16, 2021, SB 10 allows, but does not require, local agencies to avoid CEQA review when upzoning parcels to allow up to 10 units per parcel, at a height specified by local ordinance, if the parcel is located in a qualifying transit-rich area or an urban infill site. SB 10 does not provide new CEQA exemptions or streamlining for the projects that would be constructed on these upzoned parcels, but under existing law, certain CEQA exemptions or streamlining may be available on a case-by-case basis depending on project size, site conditions, and other factors. However, for larger residential or mixed-use projects with more than 10 units developed on one or more parcels upzoned pursuant to SB 10, the bill prohibits those projects from being approved ministerially or by right or from being exempt from CEQA with limited exceptions.

Affordable Housing And High Road Jobs Act (Assembly Bill 2011)

AB 2011, the Affordable Housing and High Road Jobs Act, was signed in September 2022 and became effective on July 1, 2023. AB 2011 creates a CEQA-exempt, ministerial approval process for multi-family housing projects on sites within a zone in which office, retail or parking are the principally permitted use. AB 2011 contains different qualifying criteria depending on if the proposed housing project is 100% affordable or a mixed-income project. To qualify, construction workers must be paid prevailing wages. Other labor standards are applicable if the project is more than 50 units.

Middle Class Housing Act (Senate Bill 6)

SB 6, the Middle Class Housing Act, was signed in September 2022 and became effective on July 1, 2023. Similar to AB 2011, SB 6 allows residential development on sites currently designated and zoned for office, retail or parking uses. Qualifying projects under SB 6, must be either all housing or a mixed-use development with at least 50% of the new construction dedicated to housing. Affordable housing is not required to qualify. The project must be located within an urbanized area or urban cluster with less than one-third of the site (or its immediate neighbors) dedicated to industrial uses. In addition, certain construction labor requirements must be met such as paying prevailing wages and utilizing skilled and trained workforce. SB 6 differs from AB 2011 in that it does not create a new approval process for such projects.

Accessory Dwelling Units: Local Ordinances: Separate Sale or Conveyance (Assembly Bill 1033)

AB 1033 was signed in October 2023 and became effective on January 1, 2024. AB 1033 allows local agencies, either by local ordinance or ministerial approval, to provide for the creation of accessory dwelling units (ADU) in areas zoned for residential use. In addition, AB 1033 authorizes a local agency to adopt an ordinance to allow for the separate conveyance of the primary dwelling unit and accessory dwelling unit or condominiums.

Housing Accountability Act: Housing Disapprovals: Required Local Findings (Assembly Bill 1893)

AB1893 was signed in September 2024 and became effective January 1, 2025. AB 1893 makes significant revisions to the Housing Accountability Act. Most notably, the bill specified that a local agency may disapprove or conditionally approve a housing development project as long as the local agency makes written findings that on the date that the housing development project was deemed complete, the jurisdiction did not have an adopted revised housing element that was in compliance with the State law, and the housing development project is not a builder's remedy project as defined under SB 167.

In addition, AB 1893 revises the definitions included in SB 167 including the definition of "housing development project" to expand the scope of mixed-use developments that qualify under the definition, and to include farmworker housing. AB 1893 also revises the definition of "disapprove the housing development project" to include any instance in which a local agency takes a final administrative action of the application where the application is disapproved and that a local agency disapproves the project if it undertakes certain acts such as failing to cease a course of conduct that effectively disapproves the proposed housing development without taking final administrative action if certain conditions are met. The bill also revised the definition of the term "housing for very low, low-, or moderate-income households" to mean housing for lower income households, mixed-income households, or moderate -income households.

AB 1893 also prescribes requirements that apply to a housing development project that qualifies as a builder's remedy project. These requirements include that a builder's remedy project is deemed to be in compliance with applicable residential density standards and objective zoning standards, objective subdivision standards, and objective design review standards necessary for the streamlined, ministerial approval processes defined under AB 2011.

Housing Development Approvals (Senate Bill 450)

SB 450 was signed in September 2024 and became effective January 1, 2025. SB 450 aims to streamline elements of SB 9 by prohibiting a local agency from imposing objective zoning standards, objective design standards, and objective subdivision standards that do not apply uniformly to developments within the underlying zoning designation. In addition, SB 450 would remove the authorization of a local agency to deny a proposed housing development if the building official makes a written finding that the proposed development project would have a specific, adverse impact on the environment. In addition, SB 450 would require the local agency to consider and approve or deny the proposed housing development application within 60 days from the date the local agency receives the completed application and would deem the application approved after that time. Furthermore, it requires that a permitting agency, which denies a housing development application, provide a full set of comments identifying items that define and include guidance on how the application can be remedied.

Assembly Bill 130

AB 130 was signed in June 2025 and went into effect immediately. AB 130 makes numerous changes to Californias housing laws including removing the sunset date on the five year limit on housing development projects established under SB 330, requiring that a local agency makes a determination whether the site of a housing development project is a historic site at the time the application is deemed complete, repealing the expiration provisions that were included in the Housing Crisis Act of 2019. In addition, AB 130 amends the Housing Accountability Act and Permit Streamlining Act to make elements of those laws permanent such as the rule that made housing development projects subject only to ordinances, policies, and standards that are in effect at the time when the preliminary application for the housing development project was submitted. AB 130 also revised the Permit Streamlining Act to cover any housing development project, regardless of whether the entitlement is ministerial or discretionary and established a new 60-day time limit to approve or disapprove ministerial projects.

Most notably, AB 130 included Public Resource Code Section 21080.66, which establishes a new statutory exemption for qualifying housing development projects that are 20 acres or less, or five acres or less in the case of a builder's remedy project site, and that:

- Are located in an incorporated city or urban area, and either previously developed or surrounded by urban uses,
- Are consistent with applicable local plans,
- Are at least half of the density that is deemed appropriate to accommodate lower-income households in the State Housing Element Law, as set forth in Gov. Code section 65583.2(c)(3)(B);
- Do not require demolition of a historic structure;
- Avoids hazardous sites and sensitive lands (e.g., prime farmland, wetlands, etc.);
- Do not include any transient lodging (e.g., hotel, motel, or bed and breakfast inn);
- Meet specific tribal consultation requirements and include mitigation for tribal cultural resources;
- Include a condition of approval requiring an environmental assessment for hazardous substance releases, with mitigation requirements based upon results;
- Comply with specific environmental hazard and air filtration standards if within 500 feet of a freeway;
- Comply with prevailing wage and other labor standards if over 85 feet or if 100% of units will be dedicated to lower-income households and with additional labor provisions for projects in San Francisco.

AB 130 also establishes a 30-day limit to approve or deny projects that qualify under the new exemption under Public Resource Code Section 21080.66.

Senate Bill 131

SB 131 was signed in June 2025 and went into effect immediately. SB 131 expanded current CEQA exemptions including exemptions to projects that would provide sewer service to a disadvantaged community so long as the project would not affect wetland or sensitive habitats, and exemptions to linear broadband projects within the public right of way to include local streets or roads. This bill primarily amends CEQA to expand the types of exemptions under CEQA to include:

- Rezoning that implements actions included in an approved housing element, new agricultural employee housing projects and projects consisting exclusively of the repair or maintenance of an existing farmworker housing project,
- Community water projects that do not include construction and result in long term benefits to climate resiliency
- Wildfire risk reduction projects
- Any activity or approval necessary planning, design, site acquisition, construction, operation, or maintenance of public park or nonmotorized recreational trail facilities
- Development, construction, or operation of a heavy maintenance facility or other maintenance facility for electrically powered high-speed rail.
- Day care centers
- Federally qualified food banks
- A Nonprofit foodbank or food pantry
- Projects that consist exclusively of advanced manufacturing facilities.

The Sustainable Communities and Climate Protection Act of 2008

The Sustainable Communities and Climate Protection Act of 2008 (SB 375) (Chapter 728, Statutes of 2008) requires metropolitan planning organizations (MPOs) like SANDAG to prepare an SCS as part of the RTP. The SCS must identify areas in the region sufficient to accommodate the housing needs of the entire population, including all economic segments, over the RTP's planning period. This includes accounting for net migration into the region, population growth, household formation, and employment growth, as specified in Government Code Section 65080.

Under SB 375, the preparation of the RHNA is coordinated with the SCS. The RHNA must allocate housing units in a manner consistent with the development pattern outlined in the SCS (Government Code Section 65584.04[i]). The SCS is required to use the most recent planning assumptions, including local general plans and other relevant factors (Government Code Section 65080[b][2][B]).

For regions like San Diego, which are classified as "non-attainment" areas under the federal Clean Air Act due to air quality challenges, SB 375 mandates that the RTP be updated every 4 years. Regional housing needs assessments and housing element schedules are synchronized with every other RTP update, requiring housing elements to be updated every 8 years and submitted no later than 18 months after RTP adoption.

The preparation of SANDAG's 2021 Regional Plan, which integrates the RTP and SCS, coincided with cycle 6 of the RHNA (April 15, 2021, to April 15, 2029). This ensures alignment between regional transportation, housing, and climate strategies, promoting a sustainable development pattern that addresses housing needs while reducing greenhouse gas emissions. Cycle 7 of the RHNA will coincide with preparation of SANDAG's Regional Plan anticipated for adoption in 2029.

California Building Standards Code

The minimum standards for structural design and construction in California are identified in the California Building Code (California Code of Regulations [CCR] Title 24). The 2022 triennial edition of Title 24 was published July 1, 2022, with an effective date of January 1, 2023. Information Bulletins 22-01 and 22-05 provide detailed information concerning changes to the 2022 publication. The 2022 California Building Standards Code contains the following 12 codes: Building, Residential, Electrical, Plumbing, Administrative, Mechanical, Energy, Historical Building, Fire, Existing Building, Green Building Standards (CALGreen), and the Reference Standards Code. These codes promote public health and safety and ensure that safe and decent housing is constructed in the San Diego region. The 2022 triennial edition remains in effect until the effective date of the 2025 triennial edition, which will become effective January 1, 2026.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

Regional Housing Needs Assessment

State law requires the California Department of Housing and Community Development (HCD) to determine each region's housing need in an RHNA and requires regions, such as SANDAG, to adopt a regional housing needs allocation plan (Government Code Sections 65584[a],[b]). The intent of the RHNA process is to create a better balance of jobs and housing in communities, ensure the availability of decent affordable housing for all income groups, and achieve sustainability through long-term strategic land use planning. In July 2020, the SANDAG Board of Directors adopted the 6th Cycle RHNA Plan, which allocates housing units to jurisdictions based on each jurisdiction's share of transit and jobs in the region. It also includes an equity adjustment allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category compared to the regional share (SANDAG 2021). The RHNA for the sixth housing element cycle has two main components:

- **RHNA Determination**—HCD determination of the regionwide housing units needed during the housing element cycle
- **RHNA Plan**—The SANDAG plan to allocate the RHNA Determination housing units to each local jurisdiction by four income categories

In July 2018, SANDAG received the RHNA Determination from HCD, requiring that the region plan for 171,685 housing units during the sixth housing element cycle, which covers the years 2021 through 2029. The housing units are divided into four income categories shown in Table 4.14-5 below.

Table 4.14-5 Housing Unit Needs in the San Diego Region Sixth Housing Element Cycle (2021–2029)

Income Category	Housing Unit Need	Percentage
Very low	42,332	24.7
Low	26,627	15.5
Moderate	29,734	17.3
Above moderate	72,992	42.5
Total housing units	171,685	100

Source: SANDAG 2021.

Following adoption of the 6th Cycle RHNA Plan, jurisdictions in the region updated their housing elements to identify adequate sites to accommodate the RHNA allocations. Every jurisdiction in the San Diego region has since adopted a housing element approved by HCD. The adopted housing elements informed development of the proposed Plan's SCS land use pattern, setting forth a forecasted development pattern for the region. The SCS land use pattern identifies areas in the region sufficient to house the projection of regional housing need determined by HCD and includes general plan zoning assumptions for each jurisdiction that meet the housing unit allocations in the RHNA Plan.

Housing Elements of Local Jurisdictions

Each city and the county has developed and must periodically update a housing element as part of its general plan per requirements of the State Housing Element Law. The RHNA Plan allocates housing needs in the four income categories to each of the cities and county to use in their housing element updates. The housing element is a comprehensive assessment of current and forecasted housing needs for all economic segments of the community. It includes an inventory of land suitable for residential development and a zoning analysis to demonstrate the jurisdiction's ability to accommodate its housing unit allocation; it also sets forth local housing policies and programs to implement those policies. The cities and county are required to update their housing elements to include RHNA Plan allocations every 8 years; updates can be required every 4 years if updated housing elements are not adopted by certain deadlines (Government Code Section 65588[e]). Many jurisdictions in the region are in their sixth cycle of housing element updates.

Land Use Elements of Local Jurisdictions

Each local city and the county have developed a land use element as part of its general plan per requirements of State Planning and Zoning Law (Government Code Section 65000 et seq.). The land use element designates the general location and intensity of housing, business, industry, open space, education, public buildings and grounds, waste disposal facilities, and other land uses.

Local Coastal Programs of Local Jurisdictions

Local jurisdictions in the Coastal Zone may prepare a local coastal program (LCP) for approval by the Coastal Commission. LCPs implement the goals, policies, and requirements of the Coastal Act, including those pertaining to housing, in a local jurisdiction.

In the San Diego region, several jurisdictions have developed LCPs, including:

- **City of San Diego**: The city's LCP encompasses multiple segments corresponding to its coastal communities, such as La Jolla, Pacific Beach, and Ocean Beach (California Coastal Commission 2016). Each segment includes specific land use plans and implementation ordinances tailored to the unique characteristics of the community and are included within their respective Community Plans.

- **County of San Diego**: The county's LCP covers the unincorporated areas within the coastal zone, notably the San Dieguito community, including San Dieguito Park. The LCP consists of a land use plan and an implementation plan, guiding development and protecting coastal resources in these areas (County of San Diego 2018).

These LCPs are essential tools for managing coastal development, ensuring public access, and protecting coastal resources in alignment with the California Coastal Act.

4.14.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the CEQA Guidelines Appendix G checklist questions. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan.

Checklist questions for population and housing are provided in Section XIV of CEQA Guidelines Appendix G. To better focus the potential impacts associated with the proposed Plan, the CEQA Guidelines Appendix G questions have been combined and modified. Specifically, criteria (b) and (c) are combined since criteria (b) and (c) in CEQA Guidelines Appendix G relate to displacement of a substantial number of existing housing units and displacement of a substantial number of people. These two questions have been combined in this document (POP-2) because both focus on the need for construction of replacement housing as a result of substantial displacement. Therefore, Implementation of the proposed Plan would have a significant population and housing impact if it would:

POP-1 Induce substantial unplanned population growth to areas of the region either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., by extending roads and other infrastructure).

POP-2 Displace substantial numbers of people or housing units, which would necessitate the construction of replacement housing elsewhere.

The analysis discloses impacts to population and housing. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's population and housing impacts would be worsened by climate change. Therefore, a climate change analysis for population and housing is not included in this section.

4.14.4 Environmental Impacts and Mitigation Measures

POP-1 INDUCE SUBSTANTIAL UNPLANNED POPULATION GROWTH TO AREAS OF THE REGION EITHER DIRECTLY (E.G., BY PROPOSING NEW HOMES AND BUSINESSES) OR INDIRECTLY (E.G., BY EXTENDING ROADS AND OTHER INFRASTRUCTURE).

Analysis Methodology

This section analyzes whether substantial increases in unplanned population growth would be induced by the proposed Plan based on the Series 15 Regional Growth Forecast, SCS land use pattern, and proposed transportation network improvements and programs. Growth inducement is discussed further in Chapter 6, "Other Considerations Required by CEQA." The secondary impacts of the proposed Plan's population growth are the physical changes to the environment already analyzed in the other environmental issue area sections of this EIR (Sections 4.1 through 4.19); they are not addressed in this section.

Proposed projects related to the transportation network improvements and programs, including those that potentially could indirectly induce unplanned growth, can be found in Chapter 2, Project Description, are listed in Tables 2-7 to 2-11 and shown on Figures 2-15 to 2-18.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

As discussed above and in Chapter 2, "Project Description," as regional employment rises, vacancy rates fall, and the state's population increases, net migration for the region is projected to climb through the mid-years of the forecast. Over time, as these trends slow, and with the state's population growth expected to turn negative, net migration is forecasted to decrease, ultimately turning negative by the forecast's horizon.

New development caused by regional growth and land use change would be in the form of new homes, services, commercial areas, industrial centers, schools, and civic uses. Additionally, the proposed Plan forecasts a general intensification of existing land uses in urban communities and along key transportation corridors consistent with jurisdiction general plans. By 2035, the land use components of the proposed Plan would induce population increases in the specific locations described above through policies and strategies that provide for the development of new housing units, job-supporting nonresidential land uses, and related improvements to public facilities and infrastructure.

As discussed above, Government Code Section 65080(b)(2)(B)(ii) requires that the RTP/SCS accommodate all the population of the region, including all economic segments of the population, over the course of the planning period of the regional transportation plan. In accordance with these requirements, the projected housing mix would help the region accommodate the projected housing needs over the life of the proposed Plan, especially housing needs for the lower income segments.

As mandated by State Housing Law as part of the periodic (every 8 years) process of updating local housing elements of general plans, SANDAG is responsible for the allocation of regional housing need to jurisdictions in the region. As discussed in Section 4.14.2, "Regulatory Setting," SANDAG adopted its sixth cycle RHNA Plan in July 2020. Every jurisdiction in the San Diego region has since adopted a housing element approved by HCD. The adopted housing elements informed development of the SCS land use pattern, setting forth a forecasted development pattern for the region. The SCS land use pattern identifies areas in the region sufficient to house the projection of regional housing need determined by HCD and includes general plan zoning assumptions for each jurisdiction that meet the housing unit allocations in the RHNA Plan.

Implementation of the proposed Plan's forecasted development pattern would accommodate the projected 11% future housing growth and 4% future employment growth in 2035 while remaining consistent with local plans. The proposed Plan would move the region toward more compact, mixed-use development with a variety of housing types leading to more opportunities for walking and biking, more transit use, and shorter auto trips. Overall, the proposed Plan accommodates anticipated growth consistent with local plans rather than inducing unplanned growth. Therefore, implementation of the proposed Plan would not induce unplanned growth in the region, resulting in a less than significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as

interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Transportation improvements are informed by recent and historical data trends, as well as input from regional stakeholders, to address evolving travel demands and needs. The proposed Plan relies on data-driven insights to evaluate the best investments for meeting current and future regional needs. These needs include more transit options, more Flexible Fleet options, and more opportunities for biking, walking, and other forms of active transportation.

Although the Series 15 Forecast projects an aging population and a decrease in total population in the later years of the proposed Plan, housing shortages will continue to drive demand for housing and job opportunities. Although job growth is anticipated, many positions may be filled by commuters from outside the region. These demographic and economic shifts influence travel demands and inform the vision for the region's future transportation system.

Data also reveals that approximately one-quarter of regional transit trips are linked to shopping, dining, or visiting attractions, whereas one-third of all travel in the region is dedicated to these activities. This underscores the importance of a well-connected transportation network to support the needs of all travelers, whether residents or visitors.

The planned transportation improvements and programs would help facilitate movement of people and goods and accessibility to improve the quality of life and sustain the economy as the region grows. The transportation improvements and programs emphasize more efficient use of the existing highway and arterial networks and an enhanced transit network that would facilitate greater mobility between communities and employment or commercial centers within the region. Enhanced mobility would support forecasted regional growth by increasing the accessibility to and from areas of the region that are forecasted to increase housing or employment development. Transportation strategies included in the proposed Plan would support increased density in existing urban areas by facilitating travel and would not be expected to induce unplanned population growth because these projects are growth accommodating and generally are aimed at improving the existing transportation networks. Transportation projects and transit improvements, although not adding new homes or businesses directly, have the potential to create demand for new development around transit stations. However, many communities foresee these types of development and plan for them accordingly.

Additionally, the integrated transportation investments and land use strategies in the proposed Plan would influence economic (jobs) and household growth in some areas and could remove some obstacles to growth in other parts of the region. Specifically, improved accessibility and connectivity potentially gained from transportation investments in the proposed Plan could facilitate population and economic growth in areas of the region that are currently not developed or underdeveloped, such as Complete Corridors and Flexible Fleets projects located in the East County and Rural Areas region of the Plan. Increased accessibility and connectivity to these areas could attract growth opportunities as residents look to relocate to more affordable areas outside of the urban core. Therefore, implementation of the proposed Plan in 2035 would indirectly induce unplanned growth in some areas of the San Diego region, resulting in a significant impact.

2035 Conclusion

Implementation of transportation network improvements, but not regional growth and land use change, would induce unplanned growth in some areas of the San Diego region. Therefore, this impact (POP-1) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, regional population is forecasted to decrease by 4,112 people (-0.1%). Housing is forecasted to increase by 65,577 units (4.8%), and employment is forecasted to increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5 in Chapter 2, "Project Description." The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated county, and the cities of Carlsbad and El Cajon. Approximately 78.8% of new housing units are in the cities of San Diego (51.6%) and Chula Vista (17.1%) and the unincorporated county. Similarly, these same two jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050.

Implementation of the proposed Plan's forecasted development pattern would accommodate the projected 4.8% future total housing growth and 6.2% future employment growth in 2050 while remaining consistent with local plans. Similar to the 2035 analysis, regional growth and development in the region would be more compact, mixed-use development with a variety of housing types leading to more opportunities for walking and biking, more transit use, and shorter auto trips. Overall the proposed Plan accommodates anticipated growth consistent with local plans rather than inducing unplanned growth. Therefore, implementation of the proposed Plan would not induce unplanned growth in the region, resulting in a less than significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period.

Between 2036 and 2050, most transportation network improvements would affect existing transportation facilities. The location and timing of transportation network improvements and programs identified in the proposed Plan would accommodate forecasted regional growth in population in the specific locations described in this section where the development of new housing units and jobs-supporting nonresidential land uses would occur.

The planned network improvements and programs would help facilitate movement of people and goods and accessibility to improve the quality of life and sustain the economy as the region grows. The transportation network improvements and programs emphasize more efficient use of the existing highway and arterial networks, and an enhanced transit network that would facilitate greater mobility between communities and employment or commercial centers in the region. Enhanced mobility would support forecasted regional growth by increasing the accessibility to and from areas of the region that are forecasted to increase housing or employment development. In areas where transit improvements are implemented in addition to roadway improvements, greater intensity of growth can be accommodated. Specifically, improved accessibility and connectivity potentially gained from transportation investments in the proposed Plan could facilitate population and economic growth in areas of the region that are currently not developed or are underdeveloped, such as Complete Corridors and Flexible Fleets projects located in the East County and Rural Areas region of the Plan. Increased accessibility and connectivity to these areas could attract growth opportunities as residents look to relocate to more affordable areas outside of the urban core. Therefore, implementation of the proposed Plan through 2050 would indirectly induce unplanned growth in some areas of the San Diego region, resulting in a significant impact.

2050 Conclusion

Implementation of the transportation network improvements, but not regional growth and land use change, would induce unplanned growth in some areas of the San Diego region. Therefore, this impact (POP-1) in the year 2050 is significant.

MITIGATION MEASURES

POP-1 INDUCE SUBSTANTIAL UNPLANNED POPULATION GROWTH TO AREAS OF THE REGION EITHER DIRECTLY (E.G., BY PROPOSING NEW HOMES AND BUSINESSES) OR INDIRECTLY (E.G., BY EXTENDING ROADS AND OTHER INFRASTRUCTURE).

2035, 2050

POP-1a Coordinate with Local Jurisdictions to Reduce Substantial Unplanned Population Growth.
Implementation of the proposed Plan through 2050 would indirectly induce unplanned population growth in areas of the region that are currently not developed or are underdeveloped. SANDAG shall, and other transportation project sponsors can and should:

- implement early coordination with local jurisdictions to anticipate and plan for substantial unplanned growth impacts resulting from transportation network improvements
- work with local jurisdictions to identify opportunities to develop housing as part of transportation projects.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Consistent with the discussion above, impacts related to induced substantial unplanned population growth under the proposed Plan would be significant and unavoidable. The coordination measures required under POP-1a would require SANDAG, and encourage other transportation project sponsors, to support local jurisdictions in efforts to prepare for anticipated substantial unplanned growth resulting from transportation network improvements through early coordination and identification of opportunities to develop housing as part of transportation projects.

While these measures would reduce the proposed Plan's indirect impacts associated with substantial unplanned growth on local housing infrastructure, there may still be transportation projects where such early coordination is not feasible. Finally, SANDAG cannot require implementing agencies other than SANDAG to adopt mitigation measures where SANDAG is not the lead agency, and it is ultimately the responsibility and jurisdiction of the implementing agency to determine and adopt project-specific mitigation. Thus, the project's impacts on substantial unplanned population growth under the proposed Plan would remain significant and unavoidable after mitigation.

POP-2 DISPLACE SUBSTANTIAL NUMBERS OF PEOPLE OR HOUSING UNITS, WHICH WOULD NECESSITATE THE CONSTRUCTION OF REPLACEMENT HOUSING ELSEWHERE.

Analysis Methodology

This analysis examines whether forecasted regional growth and land use change and planned transportation network improvements would physically displace a substantial number of people or housing units, necessitating the construction of replacement housing elsewhere. The significance of the impact is determined by the degree to which new housing units are needed elsewhere, the construction of which would have the potential to result in a significant physical impact on the environment. Because the degree to which displacement occurs is based on a variety of factors, such as details of actual development project proposals; economic factors, including land costs; and other inputs, the analysis does not quantify numbers of people or housing units that would be displaced but instead focuses on the potential for substantial displacement to occur with implementation of the proposed Plan.

For regional growth, the "Impact Analysis" section below analyzes forecasted development patterns throughout the region as represented in the proposed Plan, including new growth in existing urbanized areas. The regional growth and land use changes forecasted for each horizon year are used to describe how the proposed Plan may shape future development patterns that, as a consequence of the proposed Plan's implementation, would result in the construction of replacement housing elsewhere to offset the displacement of people and housing that could

occur under the proposed Plan. The analysis also includes a qualitative discussion that describes how the forecasted growth and land use changes under the proposed Plan may affect the affordable housing stock.

For transportation network improvements, the analysis describes how transportation projects may require new right-of-way (ROW) acquisitions that contribute to the physical displacement of people and housing units. Displacement of housing was assessed qualitatively by considering the possibility of major transportation projects to impact surrounding land uses and community development. Highway and transit/rail extensions and major interchange projects were assumed to have a higher potential to result in the physical displacement of people and housing units because they would involve the creation of new roadways. Highway widening and other projects along established transportation ROWs were assumed to have a lower potential to physically displace people and housing units.

A 500-foot potential impact zone was drawn around the freeway, rail, and transit projects in the proposed Plan Area to compute the number of acres that could be affected by the construction and operation of major transportation projects under the proposed Plan. Table 4.14-6 shows the results of the analysis with the potential acreage of these affected areas within the region.

Table 4.14-6 Potential Displacement of Existing Residential and Commercial Land Uses by Transportation Projects (in acres)

Land Use	2035	2050
Developed	0	0
Agriculture	0	0
Commercial and office	4	24
Education and institutions	0	0
Heavy and light industry	1	2
Military	0	0
Mixed use	30	81
Mobile homes	347	479
Multifamily residential	1,176	1,898
Open space parks	0	0
Recreation	0	0
Single-family residential	2,855	4,600
Transportation, communications, utilities	2	0
Under construction	0	0
Spaced rural residential	880	1,777
Vacant	0	0
Water	0	0
Total	5,295	8,861

Source: SANDAG 2025b.

Transportation improvements that would potentially occur under the proposed Plan for each horizon year are compared with the existing transportation facilities and existing development (i.e., population and housing locations) to determine if implementation of the proposed Plan would necessitate the construction of replacement housing elsewhere. Similar to the analysis for regional growth, a qualitative discussion is provided to describe how the transportation network improvements under the proposed Plan may affect the affordable housing stock.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. The SCS land use growth pattern indicates there would be an adequate number of residential units planned to meet the forecasted demand, taking into account localized displacement of some households within the region.

Existing laws are in place to provide assistance to relocated households and businesses. As described in Section 4.14.2, "Regulatory Setting," under the Federal Uniform Act and California Relocation Assistance Act, public agencies must provide relocation assistance when an action by an agency displaces residences.[1] Construction of replacement housing outside the region would, however, be unlikely, because adopted land use plans have sufficient capacity to accommodate forecasted population and housing growth.

The intensification of development forecasted between 2022 and 2035 could lead to the redevelopment of existing properties containing lower-density residential uses. These projects may be exempted from further CEQA review if they qualify under SB 10 or AB 2011. Existing structures would be replaced with higher-density housing or mixed-use commercial structures, leading to substantial displacement of people or housing units, including affordable housing units, necessitating the construction of replacement housing elsewhere. Thus, regional growth and land use change could cause the displacement of a substantial number of people and housing units, necessitating the construction of replacement housing elsewhere, resulting in a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

Most transportation network improvements from 2035 to 2050 are investments in active transportation, complete corridors, and public transit located in established communities, such as the addition of managed lanes along Interstate I-5, I-15 and State Route 52, as well as operational improvements along State Routes and Interstates in the project area. Active transportation projects and improvements to regional arterials, would primarily be the installation of new bikeways and upgrades to existing bikeways along or within existing transportation alignments. Public transit projects would focus on existing bus route service improvements and light rail improvements such as the planned grade separation for the Orange light rail line between El Cajon and Downtown San Diego.

The proposed Plan's improvements to existing transportation facilities would likely involve temporary and permanent ROW acquisition. Highway and transit/rail extensions and major interchange projects would have a

[1] California Relocation Assistance Act applies to projects undertaken by the lead agency and/or in which a developer is working on behalf of the public agency beyond the need for regulatory approval or permitting (Government Code Section 7260[A]).

higher potential to result in the physical displacement of people and housing units because they would involve the creation of new roadways. These improvements are unlikely to involve acquisitions of property that would displace substantial numbers of people or housing units. However, it cannot be guaranteed that all future transportation improvements would avoid acquisition of properties that would result in substantial displacement of people or housing units, including affordable housing units. Individual transportation network improvements would undergo separate environmental review under CEQA and NEPA where applicable. The corresponding project-specific environmental documentation would identify significant impacts with regard to displacement of people or housing units, and identify mitigation measures to avoid or lessen the substantial displacement of people or housing units.

Additionally, existing laws are in place to provide assistance to relocated households and businesses. As described in Section 4.14.2, "Regulatory Setting," the Federal Uniform Act and California Relocation Assistance Act require public agencies to provide relocation assistance when an action by the agency displaces residences or businesses. Construction of replacement housing outside the region would be unlikely because adopted land use plans have sufficient capacity to accommodate forecasted population and housing growth. Nevertheless, it cannot be concluded that all project-level displacement of people or housing units associated with planned rail extensions would be avoided or substantially lessened.

As shown in Table 4.14-6 above, 5,258 acres of residential land uses could be affected by planned transportation improvements by 2035. Therefore, transportation network improvements could displace substantial numbers of existing residences, which would necessitate the construction of replacement housing elsewhere, resulting in a significant impact.

2035 Conclusion

Between 2022 and 2035, development associated with regional growth and land use change and planned transportation network improvements could displace a substantial number of people and existing housing units, necessitating the construction of replacement housing elsewhere. Therefore, this impact (POP-2) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. The projected land use strategy in 2050 would accommodate 65,577 housing units and 103,460 jobs between 2036 and 2050, which would be consistent with population and employment growth projections in the San Diego region. As stated in the 2035 analysis, the SCS land use growth pattern indicates that there is an adequate number of residential units to meet the forecasted demand, taking into account localized displacement of some households within the region. Thus, implementation of the proposed Plan would not result in displacement at the regional scale, and impacts at the regional level would be less than significant.

Existing laws are in place to provide assistance to relocated households and businesses. As described in Section 4.14.2, "Regulatory Setting," under the Federal Uniform Act and California Relocation Assistance Act, public agencies must provide relocation assistance when an action by the agency displaces residences.[2] Construction of

[2] California Relocation Assistance Act applies to projects undertaken by the lead agency and/or in which a developer is working on behalf of the public agency beyond the need for regulatory approval or permitting (Government Code Section 7260[A]).

replacement housing outside the region would, however, be unlikely, as adopted land use plans have sufficient capacity to accommodate forecasted population and housing growth.

Similar to the discussion for the year 2035, the intensification of development forecasted for 2050 would lead to the redevelopment of existing properties containing lower-density residential uses. These projects may be exempted from further CEQA review if they qualify under SB 10 or AB 2011. Existing structures would be replaced with higher-density housing or commercial structures and would lead to substantial displacement of people or housing units, including affordable housing units, necessitating the construction of replacement housing elsewhere. Thus, regional growth and land use change could cause the displacement of a substantial number of people and housing units, necessitating the construction of replacement housing elsewhere, a significant impact.

Transportation Network Improvements and Programs

Most transportation network improvements from 2035 to 2050 are investments in active transportation, complete corridors, and public transit located in established communities, such as the addition of managed lanes along Interstate I-5 through the coastal cities of Encinitas, Carlsbad, and Oceanside; and operational improvements along State Routes in the project area, including the signalization of highway ramps. Active transportation projects and improvements to regional arterials, would primarily be upgrades to existing bikeways along or within existing transportation alignments. Public transit projects would focus on rail improvements including grade separations throughout the Plan area.

Between 2036 and 2050, most or all of the proposed Plan's transportation network improvements would be implemented. As discussed in the 2035 analysis, highway and transit/rail extensions and major interchange projects were assumed to have a higher potential to result in the physical displacement of people and housing units because they would involve the creation of new roadways. It cannot be guaranteed that all proposed improvements would avoid acquisition of residential properties that would result in substantial displacement of people or housing units, including affordable housing units. Individual transportation network improvements would undergo separate environmental review under CEQA and NEPA where applicable. The corresponding project-specific environmental documentation would identify significant impacts with regard to displacement of people or housing units, including affordable housing, and mitigation measures to avoid or lessen the substantial displacement of people or housing units.

As described in Section 4.14.2, "Regulatory Setting," the Federal Uniform Act and California Relocation Assistance Act require public agencies to provide relocation assistance when an action by the agency displaces residences or businesses. Although existing laws are in place to provide assistance to relocated households and businesses, it cannot be concluded that all project-level displacement of people or housing units associated with planned rail extensions and proposed new streetcars would be avoided or substantially lessened.

As shown in Table 4.14-6 above, 8,754 acres of residential land uses could be affected by planned transportation improvements by 2050. Therefore, transportation network improvements could displace substantial numbers of existing residences, which would necessitate the construction of replacement housing elsewhere, resulting in a significant impact.

2050 Conclusion

Between 2036 and 2050, development associated with regional growth and land use change and planned transportation network improvements could displace a substantial number of people and existing housing units, necessitating the construction of replacement housing elsewhere. Therefore, this impact (POP-2) in the year 2050 is significant.

MITIGATION MEASURES

POP-2 DISPLACE SUBSTANTIAL NUMBERS OF PEOPLE OR HOUSING UNITS, WHICH WOULD NECESSITATE THE CONSTRUCTION OF REPLACEMENT HOUSING ELSEWHERE.

2035, 2050

POP-2a Design Development Projects to Reduce Displacement.
During planning, design, and project-level CEQA review of land development projects, the County of San Diego, cities, and other local jurisdictions can and should develop design strategies to avoid or reduce substantial displacement of people or housing units, including affordable housing units, where consistent with overall goals to promote housing growth, including the provision of affordable housing. For development projects that would displace people or housing units, alternative designs to retain existing housing on-site, alternative project site locations and provision of replacement housing as a mitigation measure can and should be evaluated. While displacement should be considered during project evaluations, avoidance or reduction of displacement should not be employed where it would undermine achievement of housing goals, including the development of transit-oriented development and the provision of affordable housing.

POP-2b Design Transportation Network Improvement Projects to Reduce Displacement.
SANDAG shall, and other transportation project sponsors can and should, identify feasible project alignments during planning, design, and project-level CEQA review that avoid or reduce permanent property acquisitions that would result in the substantial displacement of people or housing units. Where avoidance is not feasible, measures to reduce substantial displacement should be considered including, but not limited to, the following:

- selecting alignments within existing public ROWs
- designing sections above- or below-grade to avoid property acquisition that would cause displacement of people or housing units, including affordable housing
- selecting alignments in properties that result in the least amount of displacement; for example, acquiring vacant or undeveloped portions of property rather than portions occupied by housing units
- working with local jurisdictions to identify opportunities to develop housing as part of transportation projects.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of Mitigation Measures POP-2a and POP-2b would reduce the displacement of people and housing units. However, there is no guarantee that significant displacement impacts would be reduced to less-than-significant levels for all projects. Therefore, displacement resulting from regional growth and land use change and transportation network improvements is a significant and unavoidable impact of implementing the proposed Plan.

4.14.5 Cumulative Impacts Analysis

C-POP-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO POPULATION AND HOUSING

The area of geographic consideration for cumulative impacts is the Southern California and Northern Baja region. Large-scale land use change and the effectiveness of the transportation system influence the regional development pattern that dictates the location, timing, and amount of resulting population and housing increases or decreases across the region as a whole. If growth is not accommodated in one specific area, it would likely be accommodated at another locale within the general area. Thus, the entire region needs to be considered when addressing population and housing.

A projection approach is used for the cumulative analysis of population and housing impacts because growth, land use change, and transportation network improvements across the region can substantially impact and modify population and housing by supporting and facilitating the addition or displacement of homes and population on a large scale. A significant cumulative impact on population and housing would occur if the proposed Plan would result in incremental effects that are considered cumulatively significant when considered in combination with the effects of population and housing impact projections identified in adopted plans. Significant cumulative impacts related to population and housing would occur if the proposed Plan and other planning documents would induce substantial increases in unplanned population growth or contribute to displacement of a substantial number of existing people or housing units, which would necessitate the construction of replacement housing elsewhere.

This cumulative impact assessment considers and relies on the impact analysis in this EIR for the proposed Plan; SCAG Connect SoCal 2024 EIR (SCAG 2024); and the California-Baja California Border Master Plan (Caltrans and SIDURT 2021). Information on population forecasts and transportation network improvements was compiled from the documents listed in Section 4.0, *Environmental Impact Analysis.* Table 4-1 shows these population forecasts for 2035 and 2050. Information on planned residential development and land use changes in Southern California is also available in adopted land use plans for individual cities and counties.

Impacts of the Proposed Plan

Implementation of planned transportation network improvements would induce unplanned growth in some areas of the San Diego region in 2035 and 2050. This is considered a significant impact (Impact POP-1). By 2035 and 2050, the proposed Plan's regional growth and land use change would have the potential to displace a substantial number of residences, necessitating the construction of replacement housing elsewhere. Transportation network improvements, such as new rail extensions, would also have the potential to displace a substantial number of people and existing housing units. Therefore, impacts related to the displacement of a substantial number of people and existing housing units, necessitating the construction of replacement elsewhere is significant in 2035 and 2050 (Impact POP-2).

Impacts of Projections in Adopted Plans

According to the EIR prepared for the SCAG Connect SoCal 2024, Connect SoCal 2024 would facilitate population growth in some areas of the SCAG region. The SCAG Connect SoCal 2024 also found that transportation network improvements would displace a substantial number of existing homes due to ROW acquisitions. The Connect SoCal 2024 would influence the pattern of growth in the region through transportation investments and land use strategies that would contribute to a cumulatively considerable increase in population outside the region. These impacts were found significant and unavoidable (SCAG 2024).

The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land ports of entry (POEs) and transportation infrastructure serving those POEs in the California-Baja California region. The projects included in the Master Plan would support and facilitate current and projected cross-border travel demand and economic activity as populations on both sides of the border are forecasted to increase. Thus, the Master Plan would induce population growth and economic development.

Adopted land use plans for local jurisdictions in Southern California and Northern Baja would induce population growth through policy changes and zoning amendments that encourage and facilitate increased residential and employment growth. Some of this growth, particularly in currently built-out locations, would be driven by redevelopment in existing urban areas as communities increase their housing and commercial densities. For redevelopment to occur, existing housing and population would likely be displaced.

Cumulative Impacts and Impact Conclusions

2035

Implementation of the transportation network improvements associated with the proposed Plan by 2035 would induce substantial unplanned population growth. Implementation of the regional growth and land use change and transportation network improvements would also displace a substantial number of existing homes and

population. In addition, population and housing impacts were also identified in other land use plans would contribute to substantial unplanned population growth and displacement of homes or population. The combination of the direct population and housing impacts from the proposed Plan and these adopted plans would result in significant cumulative population and housing impacts in the Southern California and Northern Baja region by 2035. Because cumulative population and housing impacts throughout the Southern California and Northern Baja region by 2035 would be significant and because the proposed Plan's incremental impacts are significant, the proposed Plan's incremental population and housing impacts are also cumulatively considerable and thus significant (Impact C-POP-1).

2050

As discussed in the 2035 analysis, implementation of the transportation network improvements associated with the proposed Plan would induce substantial unplanned population growth. Implementation of the regional growth and land use change and transportation network improvements would also displace a substantial number of existing homes and population. While the analysis of the SCAG 2020-2045 RTP/SCS does not extend to 2050, regional population growth and associated impacts would continue through this timeframe, as would impacts of growth in Northern Baja.

Although currently adopted land use plans rarely extend to 2050, local infrastructure improvement projects, policy changes, and zoning amendments that support residential and employment growth would induce population growth beyond their timeframes. Policy changes and zoning amendments that allow and encourage higher-density residential and employment uses would likely continue to displace existing homes and population. When considered along with the direct population and housing impacts from the proposed Plan and these projects and adopted plans, the incremental impacts would result in significant cumulative population and housing impacts in the Southern California and Northern Baja region by 2050.

Because cumulative population and housing impacts throughout the Southern California and Northern Baja region by 2050 would be significant and because the proposed Plan's incremental impacts are significant, the proposed Plan's incremental population and housing impacts are also cumulatively considerable (Impact C-POP-1).

MITIGATION MEASURES

C-POP-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO POPULATION AND HOUSING

Therefore, Mitigation Measure POP-1a calls for collaboration between transportation project sponsors and affected local jurisdictions on transportation network improvements to reduce substantial unplanned growth. Even with implementation of mitigation, substantial unplanned growth impacts would be significant and unavoidable.

Mitigation Measures POP-2a and POP-2b call for project designs that reduce displacement. Even with implementation of mitigation, displacement impacts would be significant and unavoidable.

Therefore, the proposed Plan's incremental contributions to cumulative population and housing impacts in years 2035 and 2050 would remain cumulatively considerable post-mitigation.

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4.15 PUBLIC SERVICES, RECREATION, AND UTILITIES

This section evaluates the potential public services, recreation, and utilities impacts of the proposed Plan. Impacts of the proposed Plan on the San Diego region's water supply and water infrastructure are discussed in Section 4.18 "Water Supply." Impacts of the proposed Plan related to wildfire are discussed in Section 4.19 "Wildfire"; this section only addresses environmental impacts related to fire protection services facilities.

4.15.1 Existing Conditions

This section describes the existing conditions associated with public services, which include fire protection, police protection, schools, libraries, and recreational facilities. It also describes the existing conditions associated with utilities, which include wastewater collection and treatment facilities, stormwater drainage facilities, telecommunications services, electricity and natural gas facilities, and solid waste disposal and recycling facilities.

PUBLIC SERVICES

Fire Protection

Structural and wildfire protection in the San Diego region is the responsibility of fire protection agencies at the federal, state, county, and city levels. Eighteen cities in the San Diego region have a fire department that is responsible for fire protection and prevention within their respective city limits. Fourteen Fire Protection Districts (FPDs), five county Service Areas, and the California Department of Forestry and Fire Protection (CAL FIRE) provide fire and emergency services to unincorporated San Diego County. Volunteer fire protection companies supported by the San Diego County Fire Authority provide emergency services for six areas in the unincorporated county where no fire protection agency is established (see Table 4.15-1 and Table 4.15-2).

CAL FIRE is the principal contractor for fire protection services in San Diego County, and is responsible for wildfire protection of State Responsibility Areas within the county, which comprise over 50% of the unincorporated county's total land area (see Figure 4.19-1 in Section 4.19, "Wildfire"). CAL FIRE operates 18 stations within the county, including one air attack base in Ramona. CAL FIRE also operates an emergency response air program with both aircraft and helicopters, as needed (CAL FIRE 2019). CAL FIRE has established a resource management program to help protect California's natural resources and wildlands. Prevention programs are also run by CAL FIRE, such as vegetation management, risk analysis, and public education (CAL FIRE 2024).

The US Forest Service (USFS) is responsible for fire protection and prevention on federal lands (Federal Responsibility Areas) and private lands within the Cleveland National Forest. There are 12 USFS fire stations in San Diego County. The Department of Defense provides fire protection on military installations but may request assistance from other agencies at the federal, state, or local levels if needed. Tribal governments provide their own fire protection but also may provide mutual air fire services to surrounding areas. Officers with the Harbor Police Department of the San Diego Unified Port District are cross-trained as marine firefighters. Their jurisdiction includes the San Diego Bay, San Diego International Airport, and the tidelands within the cities of San Diego, Chula Vista, National City, Imperial Beach, and Coronado (Hoffman 2018).

Automatic and mutual aid agreements exist between many of the aforementioned agencies to provide necessary support for emergencies. Table 4.15-1 identifies agencies responsible for fire protection in the San Diego region's cities. Table 4.15-2 identifies agencies responsible for providing fire protection in the unincorporated areas of San Diego County. A small portion of the unincorporated county is not served by any FPD. Rather, these areas rely upon neighboring FPDs or CAL FIRE to respond to fires and emergencies. The agency that responds to fires and emergencies in areas not served by any FPD is decided on a case-by-case basis (County of San Diego 2011).

Table 4.15-1 Fire Service Providers in the San Diego Region

City	Fire Service Provider	Number of Stations	Dispatch
City of Carlsbad	Carlsbad Fire Department	6	North County JPA
City of Chula Vista	Chula Vista Fire Department	10	City of San Diego
City of Coronado	Coronado Department	2	Heartland Dispatch
City of Del Mar	Del Mar Fire Department	1	North County JPA
City of El Cajon	El Cajon Fire Department	4	Heartland Dispatch
City of Encinitas	Encinitas Fire Department	6	North County JPA
City of Escondido	Escondido Fire Department	7	City of Escondido
City of Imperial Beach	Imperial Beach Fire Department	1	Heartland Dispatch
City of La Mesa	La Mesa Fire Department	3	Heartland Dispatch
City of Lemon Grove	Lemon Grove Fire Department	1	Heartland Dispatch
City of National City	National City Fire Department	3	Heartland Dispatch
City of Oceanside	Oceanside Fire Department	8	North County JPA
City of Poway	Poway Fire Department	3	City of San Diego
City of San Diego	San Diego Fire-Rescue Department	51	City of San Diego
City of San Marcos	San Marcos Fire Department	4	North County JPA
City of Santee	Santee Fire Department	2	Heartland Dispatch
City of Solana Beach	Solana Beach Fire Department	1	North County IPA
City of Vista	Vista Fire Department	6	North County JPA

Sources: City of Carlsbad 2024, City of Chula Vista 2024, City of Del Mar 2024, City of Encinitas 2024, City of Escondido 2024, City of Imperial Beach 2024, City of National City 2024, City of Oceanside 2024, City of Poway 2024, City of San Diego 2024a, Google Maps 2025, Heartland Fire and Rescue 2024.

Table 4.15-2 Fire Service Providers in Unincorporated and Federal Lands in the San Diego Region

Agency	Governance	Fire Service Provider	Number of Stations	Dispatch
Alpine Fire Protection District	Independent	District	1	Heartland JPA
Bonita-Sunnyside Fire Protection District	Independent	District	1	Heartland JPA
Deer Springs Fire Protection District	Independent	District	3	CAL FIRE
Julian-Cuyamaca Fire Protection District	Independent	District	2	CAL FIRE
Lakeside Fire Protection District	Independent	District	4	Heartland JPA
Lower Sweetwater Fire Protection District	Independent	National City	2	Heartland JPA
North County Fire Protection District	Independent	District	5	North County JPA
Pine Valley Fire Protection District	Independent	District/ CAL FIRE	1	CAL FIRE
Rancho Santa Fe Fire Protection District	Independent	District	6	North County JPA
San Marcos Fire Protection District	Independent	City of San Marcos	3	North County JPA
San Miguel Consolidated Fire Protection District	Independent	District	8	Heartland JPA
Valley Center Fire Protection District	Independent	District/ CAL FIRE	2	CAL FIRE
Visat Fire Protection District	Independent	City of Vista	NA	North County JPA
Mootami MWD	Independent	CAL FIRE	NA	CAL FIRE
Pauma MWD	Independent	CAL FIRE	NA	CAL FIRE
Ramona MWD	Independent	CAL FIRE	NA	CAL FIRE
Rincon del Diablo MWD	Independent	City of Escondido	NA	City of Escondido

Agency	Governance	Fire Service Provider	Number of Stations	Dispatch
Yuima MWD	Independent	CAL FIRE	NA	CAL FIRE
Boulevard	Volunteer	SDCFA	1	CAL FIRE
Sunshine Summit	Volunteer	SDCFA	1	CAL FIRE
Ranchita	Volunteer	SDCFA	1	CAL FIRE
Ocotillo Wells	Volunteer	SDCFA	1	CAL FIRE
Intermountain	Volunteer	SDCFA	1	CAL FIRE
De Luz	Volunteer	SDCFA	1	CAL FIRE
Shelter Valley	Volunteer	SDCFA	1	CAL FIRE
CAL FIRE	State	CAL FIRE	18	CAL FIRE
USFS	Federal	USFS	12	USFS

Notes: SDCFA = San Diego County Fire Authority; CAL FIRE = California Department of Forestry and Fire Protection; JPA = Joint Powers Authority; USFS = U.S. Forest Service.

Sources: County of San Diego 2011; LAFCO 2023; San Miguel Fire District 2025.

The performance of fire protection and emergency services is generally measured with travel or response time standards and service ratios. Travel or response time standards measure the estimated time it will take for responding agency personnel to reach a certain point in their service area from the time of initial call or the time an emergency vehicle begins moving to the emergency location. These standards differ among agencies.

Service ratios are also used to measure the adequacy of service. Service ratio standards typically ensure there are a minimum number of personnel and pieces of equipment to serve a certain population. Water supply and pressure must also be considered when evaluating fire protection services.

Police Protection

The San Diego County Sheriff's Department (SDCSD) is the primary law enforcement body in the San Diego region. SDCSD provides police protection services for the unincorporated areas of the county and the following nine cities: Vista, San Marcos, Santee, Lemon Grove, Imperial Beach, Poway, Encinitas, Del Mar, and Solana Beach. These cities generally provide their own traffic enforcement, while the unincorporated county relies on the California Highway Patrol and SDCSD.

Traffic enforcement, police patrol, and investigative services are provided in the cities of Carlsbad, Chula Vista, Coronado, El Cajon, Escondido, La Mesa, National City, Oceanside, and San Diego by their own city police departments. SDCSD operates several other law enforcement support facilities, including seven detention facilities. These detention facilities provide the services necessary to support a daily average population of more than 5,000 inmates (SDCSD 2024). SDCSD also provides specialized services, such as aerial support, a bomb and arson unit, and a special enforcement detail responsible for highly specialized tactical operations. Forensic services are provided to law enforcement and criminal justice agencies through SDCSD's crime laboratory for all the cities within San Diego County, except for the City of San Diego. Table 4.15-3 shows sworn police protection personnel by jurisdiction in the San Diego region.

Table 4.15-3 Sworn Police Protection Personnel by Jurisdiction in the San Diego Region

Police Protection Providers by Jurisdiction	Number of Sworn Personnel
City of Carlsbad	132
City of Chula Vista	297
City of Coronado	58
City of El Cajon	120
City of Encinitas	61

Police Protection Providers by Jurisdiction	Number of Sworn Personnel
City of Escondido	170
City of Imperial Beach	25.68
City of La Mesa	69
City of Lemon Grove	24
City of National City	89
City of Oceanside	219
City of Poway	51
City of San Diego	1,870
City of San Marcos	82
City of Santee	60
City of Solana Beach	17
City of Vista	96
San Diego County Sheriff's Department (total)	1,060
Harbor Police	140

Source: City of Carlsbad 2025, City of Chula Vista 2025, City of Coronado 2025, City of El Cajon 2025, City of Escondido 2025, City of Imperial Beach 2025, City of La Mesa 2025, City of Oceanside 2025, City of San Diego 2025, SANDAG 2024.

Local police department staffing goals are set based on different metrics depending on the jurisdiction. For example, some police departments, similar to fire-protection services, evaluate police services based on response times (City of San Diego 2024a). Others follow established staffing guidelines set by organizations like the International Association of Chiefs of Police (IACP 2024) or base staffing on a ratio of police officers to citizens. Response times can vary between service providers and between urban and rural areas. Urbanized areas generally see a much faster response time than rural areas. Response times are also measured against the type of emergency. Calls are generally ranked into different priority levels, where the higher priority call receives a faster response time goal. The lowest priority calls are generally for issues such as animal noise disturbance, while the highest priority calls generally involve more serious crimes. Unlike fire protection emergency responses that are dispatched from a central location, police units respond while on patrol.

Schools

The public school system in the San Diego region has approximately 476,844 students enrolled in kindergarten through 12th (K–12) grade (CDE 2024). There are roughly 44 public school districts with about 740 schools throughout the region, staffed with more than 23,206 teachers. In addition to public primary and secondary schools, the number of charter schools at all grade levels is growing in the San Diego region. Higher education is represented by eight community colleges, three public higher education institutions, and several private higher education schools throughout the region (CDE 2025). Table 4.15-4 identifies K–12 public school districts that provide education at the elementary, middle/intermediate, and high school levels, and their enrollment statistics.

Table 4.15-4 2023-2024 Student Enrollment and Staffing by District in the San Diego Region

District	Type	Elementary Schools	Middle/ Intermediate Schools	High Schools	Other Schools	Total Students	Number of Teachers	Number of Students per Teacher
Alpine Union Elementary	Elementary	3	1	—	1	1,539	69	22.3
Bonsall Union Elementary	Elementary	3	1	1	—	2,231	119	18.7
Borrego Springs Unified	Unified	1	1	2	1	2,837	131	21.7
Cajon Valley Union	Elementary	19	7	—	13	17,947	873	20.6

District	Type	Elementary Schools	Middle/ Intermediate Schools	High Schools	Other Schools	Total Students	Number of Teachers	Number of Students per Teacher
Cardiff Elementary	Elementary	2	—	—	—	649	46	14.1
Carlsbad Unified	Elementary	9	3	2	2	10,832	521	20.8
Chula Vista Elementary	Elementary	48	—	—	17	28,964	1,561	18.6
Coronado Unified	Unified	2	1	1	1	2,739	157	17.4
Dehasa Elementary	Elementary	2	—	—	8	11,667	876	13.3
Del Mar Union Elementary	Elementary	9	—	—	—	3,662	246	14.9
Encinitas Union Elementary	Elementary	9	—	—	—	4,444	256	17.4
Escondido Union	Elementary	20	5	7	8	17,061	1,059	16.1
Escondido Union High	High school	—	—	—	1	8,916	472	18.9
Fallbrook Union Elementary	Elementary	6	1	1	3	5,124	249	20.6
Fallbrook Union High	High school	—	—	—	2	2,064	102	20.2
Grossmont Union High	High school	—	—	11	7	21,697	1,040	20.9
Jamul-Dulzura Union Elementary	Elementary	—	1	—	1	801	35	22.9
Julian Union Elementary	Elementary	—	—	—	—	1,949	33	59.1
Julian Union High	High School	22	—	1	1	118	92	1.3
La Mesa – Spring Valley	Elementary	6	1	—	9	11,032	501	22.0
Lakeside Union Elementary	Unified	5	2	-1	1	4,842	263	18.4
Lemon Grove	Elementary	8	—	—	4	3,122	174	17.9
Mountain Empire Union	Unified	4	—	—	12	4,284	249	17.2
National Elementary	Elementary	11	—	—	7	4,569	288	15.9
Oceanside Unified	Unified	14	4	2	7	17,839	934	19.1
Poway Unified	Unified	26	6	6	7	34,935	1,570	22.3
Romana City Unified	Unified	5	1	1	4	5,077	243	20.9
Rancho Santa Fe Elementary	Elementary	1	1	—	—	543	66	8.2
San Diego County Office of Education	County Office of Education (COE)	4	—	—	10	7,464	439	17.0
San Diego Unified	Unified	137	30	27	41	114,330	6,435	17.8
San Diego Union High	High school	—	5	4	1	12,364	563	22.0
San Marcos Unified	Unified	12	3	2	3	19,456	46	423.0
San Pasqual Union Elementary	Elementary	1	—	—	—	527	34	15.5
San Ysidro Elementary	Elementary	4	—	—	3	4,205	185	22.7
Santee Elementary	Elementary	9	—	—	5	6,159	311	19.8
SBC – High Tech High	Statewide benefit charter	2	2	3	—	3,819	133	28.7
Solana Beach Elementary	Elementary	7	—	—	—	2,730	185	14.8
South Bay Union Elementary	Elementary	11	—	—	1	5,595	334	16.8
Spencer Valley Elementary	Elementary	1	—	—	2	3,885	275	14.1
Sweetwater Union High	High school	—	11	13	6	36,686	1,893	19.4

District	Type	Elementary Schools	Middle/ Intermediate Schools	High Schools	Other Schools	Total Students	Number of Teachers	Number of Students per Teacher
Vallecitos Elementary	Elementary	1	—	—	—	190	12	15.8
Valley Center – Pauma Unified	Unified	4	1	1	1	3,711	185	20.1
Vista Unified	Unified	15	4	4	8	21,524	1,191	18.1
Warner Unified	Unified	2	—	1	3	2,528	108	23.4

Source: CDE 2025.

Facility planning for public schools is generally based on student generation rates, which vary by jurisdiction and development type. Historical data and future plans for an area are used to project the number of students that will eventually be a part of the community. The generation rates are compared against the current capacity of individual school facilities that would be affected by the growth.

Libraries

The San Diego County Library operates branches in the cities of Del Mar, El Cajon, Encinitas, Imperial Beach, La Mesa, Lemon Grove, Poway, San Marcos, Santee, Solana Beach, and Vista, as well as in the unincorporated areas of the county and operates two bookmobiles. The cities of Carlsbad, Chula Vista, Coronado, Escondido, National City, Oceanside, and San Diego maintain and operate their own library systems. Table 4.15-5 shows the city and county public library systems in the San Diego region. The libraries of California State University, San Marcos; San Diego State University; and UC San Diego are also open to the public, but community members must pay an annual fee in order to check out library resources. The San Diego County Public Law Library (Law Library) is open to the general public, as well as California legal professionals, and provides legal materials and information. The Law Library is funded through the County of San Diego general fund, in addition to a portion of collected court fees. Some libraries have adopted master plans for their system facilities to assess their needs, while others developed service standards, such as square footage of the facility per resident in a defined service area.

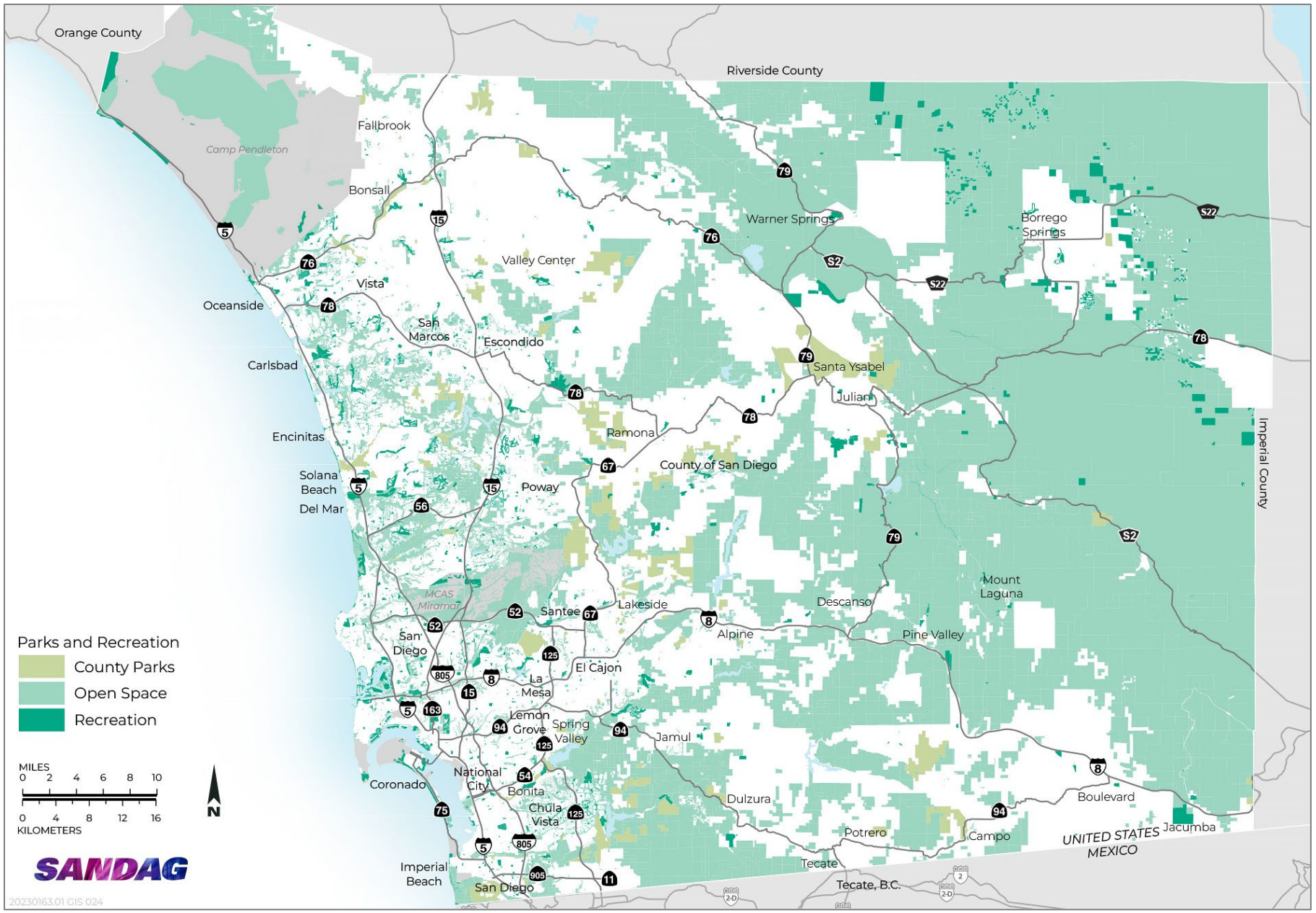
Table 4.15-5 Municipal and County Public Library Systems in the San Diego Region

Library	Total Outlets	Total Visits	Total Circulation	Total Collection Use	Total Programs
Carlsbad City Library	3	426,470	1,259,039	269,328	1,092
Chula Vista Public Library	3	152,313	478,849	207,553	594
Coronado Public Library	1	396,645	446,257	162,739	919
Escondido Public Library	3	234,492	733,968	113,062	728
National City Public Library	1	95,120	220,443	206,852	179
Oceanside Public Library	5	353,308	455,419	168,511	1,611
San Diego County Library	35	2,639,665	10,157,739	1,170,560	10,099
San Diego Public Library	36	4,579,637	7,123,750	2,338,870	13,695

Source: California State Library 2024.

Recreational Facilities

San Diego County has hundreds of designated parks, with uses that include camping parks, preserves, sports parks, beaches, community and teen centers, golf courses/clubhouses, convention centers, marinas, casinos, botanical gardens, landscaped open space, undeveloped natural areas, historic sites, day use parks, racetracks, tourist attractions, and other recreational uses (Figure 4.15-1). As of 2025, these parks and open spaces span more than 1,300,000 acres throughout the San Diego region. Trails and pathways allow for walking, hiking, biking, and horseback riding throughout the region and connect scenic and recreational areas. Trails include the California Coast Trail, which, once completed, will be a 1,200-mile contiguous public right-of-way from the northern to southern border of California to allow for coastal access (California Coastal Conservancy 2019).



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.15-1 Open Space Parks and Recreation

Parkland and open space in the San Diego region are owned by federal, state, and local government agencies, as well as tribes, public utilities, private owners, and joint use agreements. Funding for parks comes from their respective owners, as well as tax increment financing, bonds, donations, joint powers authorities, and others. It is also common practice to charge development fees for new development projects to be used to develop parks within that community.

Public parks and recreational facilities can be provided by school districts, community service districts, park and recreation districts, and nonprofit agencies. These facilities include community, senior, and youth centers, sports fields, stadiums, public and private golf courses, visitor centers, amusement parks, fairgrounds, equestrian centers, facilities used for water-oriented recreational purposes, ranches, and private/commercial recreation facilities. Funding for these sites is generally provided by the local jurisdiction.

UTILITIES

Wastewater Collection and Treatment Facilities

The San Diego region is served by over 7,930 miles of pressure and gravity sewer lines, as well as pipes, sewer laterals, and pump stations to move wastewater from its source to a wastewater treatment plant (County of San Diego 2011). The wastewater is generated by a variety of residential, commercial, and industrial actions throughout the region. Table 4.15-6 identifies existing wastewater collection systems in the San Diego region. Wastewater treatment facilities remove solids and contaminants by a variety of methods. The treated wastewater is then released through ocean outfalls, percolation beds, or groundwater recharge. Water reclamation facilities are also used throughout the region and can further treat the water so that it may be used again for agriculture, construction, or other commercial and industrial processes (see Section 4.18). Depending on the process used to treat the biosolids produced during water treatment, the products can be disposed of in designated landfills or municipal solid waste landfills or used to fertilize crops. Table 4.15-7 identifies the capacity of permitted wastewater treatment facilities in the San Diego region.

Most rural areas in San Diego County do not have a sanitary sewer system and must use on site wastewater treatment systems, such as septic tanks. Most commonly, these systems consist of a septic tank connected to a leach line. Septic tanks are discussed further in Section 4.9, "Hazards and Hazardous Materials."

Table 4.15-6 Wastewater Collection Systems in the San Diego Region by Responsible Agency

Responsible Agency	Collection System (CS)	Pressure Sewer (miles)	Gravity Sewer (miles)	Lateral Sewer (miles)
22nd District Agricultural Association	22nd District Agricultural Association CS	0.7	1.6	1.5
Borrego Water District	Borrego Wd-Rams Hill CS	2.8	12.5	1.6
Buena Sanitation District	Buena CS	3.3	93.4	0
CSU San Diego	San Diego State University CS	0	6	4
California Department of Parks and Recreation Winterhaven	San Clemente State Beach CS	0	2.1	0.9
California Department of Parks and Recreation Winterhaven	San Mateo Campground/San Onofre CS	1.2	0.6	0.1
Carlsbad MWD	Carlsbad MWD CS	3.9	282	0
Chula Vista City	City of Chula Vista CS	3.4	511	10
Coronado City	City of Coronado CS	8.4	42.8	0
Del Mar City	City Of Del Mar CS	3.8	29	0
El Cajon City	City of El Cajon CS	0	195	0
Encinitas City	City of Encinitas CS	4.5	124	0

Responsible Agency	Collection System (CS)	Pressure Sewer (miles)	Gravity Sewer (miles)	Lateral Sewer (miles)
Escondido City	HARRF Discharge To San Elijo OO CS	8.3	376.2	0
Fallbrook Public Utility District	Fallbrook PUD CS	4.6	78.6	0
Imperial Beach City	City of Imperial Beach CS	4.6	39.5	0
La Mesa City	City of La Mesa CS	0	155	0
Lemon Grove City	City of Lemon Grove CS	0	68	0
Leucadia Wastewater District	Leucadia Wastewater District CS	16.6	205	0
National City	City of National City CS	1	105	0
Oceanside City	City of Oceanside Collection System, La Salina WWTP	37.7	456.1	0
Olivenhain MWD	4-S Ranch CS	20	65	0
Otay MWD	Otay Water District CS	2.4	81.4	0
Padre Dam MWD	Padre Dam CS	4.6	164.4	0
Poway City	City of Poway CS	3.5	185	74
Rainbow Municipal Water District	Rainbow Municipal Water Dist CS	3	87	0
Ramona MWD	San Vicente Treatment Plant CS	0.45	43	29.5
Ramona MWD	Santa Maria CS	5.3	32.3	9.1
Rancho Santa Fe Community Services District	Rancho Santa Fe San Dist Plant CS	6	35	0
Rancho Santa Fe Community Services District	Santa Fe Valley CS	2	19.7	0
San Diego City	San Diego City CS (Wastewater Collection System)	112.2	2,944.9	0
San Diego County Dept of Public Works	County of San Diego CS	5.3	422	0
San Diego County Dept of Public Works	Julian Water Pollution Facil. CS	0.6	3	0
Solana Beach City	City of Solana Beach CS	2	49	0
UC San Diego	University of California, San Diego CS	0.5	26.5	3
U.S. Marine Corps Base Camp Pendleton	USMC Base, Camp Pendleton CS	39.2	125	79.5
U.S. Marine Corps Recruit Depot	MCRD CS	0	4	2.7
Vallecitos Water District	Meadowlark CS	7.6	260	0
Valley Center MWD	Lower Moosa Canyon Recl Facil CS	5	50	0
Valley Center MWD	Woods Valley CS	2	8	0
Vista City	City of Vista CS	0.3	214.5	0

Note: MWD = Municipal Water District.

Source: SWRCB 2024.

Table 4.15-7 Wastewater Treatment and Water Recycling Facilities in the San Diego Region

Responsible Agency	Facility Name	Planned Capacity 2025 (mgd) PT	Planned Capacity 2025 (mgd) ST	Planned Capacity 2025 (mgd) TT	Planned Capacity 2045 (mgd) PT	Planned Capacity 2045 (mgd) ST	Planned Capacity 2045 (mgd) TT	Effluent Quality for TDS (mg/L)	Disposal Method
Carlsbad, City of	Carlsbad WRF	—	—	7.0	—	—	7.0	1,000	Irrigation/Industrial
Encina Wastewater Authority	Encina WPCF	43.3	43.3	—	43.3	43.3	—	1,031	Outfall-Reuse
Escondido, City of	Hale Avenue RRF/WRF	18.0	18.0	9.0	27.0	27.0	20.0	1,000	Reuse-Outfall
Fairbanks Ranch CSD	Fairbanks Ranch WPCF	0.3	0.3	—	0.3	0.3	0.3	1,100	Percolation
Fallbrook PUD	Fallbrook Plant #1 WRF	2.7	2.7	2.7	2.7	2.7	2.7	850	Reuse-Outfall
Leucadia CWD	Forest R. Gafner WRP	1.0	1.0	1.0	1.0	1.0	1.0	1,000	Reuse-Outfall
Oceanside, City of	La Salina WWTP	5.5	5.5	-	-	-	-	897	Outfall
Oceanside, City of	San Luis Rey WWTP	13.5	13.5	3.0	17.4	17.4	9.0	874	Reuse-Outfall
Olivenhain MWD	4-S Ranch WWTP	2.0	2.0	2.0	2.0	2.0	2.0	1,000	Reuse
Otay WD	East County Advanced Water Purification JPA (will replace the existing Ray Stoyer WRF)	1.3	1.3	1.3	1.3	1.3	1.3	850	Reuse- Outfall
East County Advanced Water Purification Joint Powers Authority (reported by Padre Dam MWD)	East County Advanced Water Purification JPA potential expansion (conceptual)	16.0	16.0	16.0	16.0	16.0	16.0	800 mg/L recycled water, 100 mg/L purified water	Irrigation, Santee Lakes, Indirect Potable Reuse
East County Advanced Water Purification Joint Powers Authority (reported by Padre Dam MWD)	East County Advanced Water Purification JPA (will replace the existing Ray Stoyer WRF)	—	—	—	2.0	2.0	2.0	100	Indirect Potable Reuse
Rainbow MWD	San Luis Rey WWTP	—	1.0	—	—	1.0	—		Reuse-Outfall
Ramona WMD	Santa Maria WRP	—	0.4	0.2	—	0.5	0.4	850	Reuse-Irrigation
Ramona MWD	San Vicente WRP	—	—	0.5	—	—	0.6	550	Reuse-Irrigation
Rancho Santa Fe CSD	Santa Fe Valley WRF	—	—	0.5	—	—	0.5	1,000	Irrigation
Rancho Santa Fe CSD	Rancho Santa Fe WRF	0.5	0.5	-	0.6	0.6	0.6	1,100	Percolation
Rincon del Diablo MWD	Harmony Grove Village	—	—	0.2	—	—	0.3	1,000	Reuse - Irrigation
Rincon del Diablo MWD	Harmony Grove Village - South	—	—	0.2	—	—	0.3	1,000	Reuse - Irrigation
San Diego, City of	North City WRP	52.0	52.0	52.0	52.0	52.0	52.0	1,000	Reuse

Responsible Agency	Facility Name	Planned Capacity 2025 (mgd) PT	Planned Capacity 2025 (mgd) ST	Planned Capacity 2025 (mgd) TT	Planned Capacity 2045 (mgd) PT	Planned Capacity 2045 (mgd) ST	Planned Capacity 2045 (mgd) TT	Effluent Quality for TDS (mg/L)	Disposal Method
San Diego, City of	Point Loma WWTP	240.0	—	—	240.0	—	—	1700-3000	Outfall
San Diego, City of	Harbor Drive WRP	—	—	—	72	72	72	1,000	Reuse
San Diego, City of	South Bay WRP	15	15	15	15	15	15	1,000	Reuse-Outfall
San Elijo JPA	San Elijo WRF	5.3	5.3	3.0	5.3	5.3	5.3	950	Reuse-Outfall
Camp Pendleton Marine Corps Base	Southern Region TTP	—	—	7.5	—	—	7.5	750	Irrigation/ Injections/Outfall
Camp Pendleton Marine Corps Base	Northern Region TTP	—	—	4.0	—	—	4.0	750	Irrigation/ Percolation
Vallecitos WD	Meadowlark WRF	5.0	5.0	5.0	5.0	5.0	5.0	1,000	Reuse
Valley Center MWD	Lower Moosa Canyon WRF	0.40	0.40	0.40	0.875	0.875	0.875	1,000	Irrigation
Valley Center MWD	North Village WRF	—	—	—	0.125	0.125	0.125	1,000	Irrigation
Valley Center MWD	Welk WRF	—	—	—	0.125	0.125	0.125	1,000	Irrigation (Golf Course)
Valley Center MWD	Lilac Ranch WRF	—	—	—	0.350	0.350	0.350	1,000	Irrigation
Valley Center MWD	Woods Valley Ranch WRF	0.275	0.275	0.275	0.475	0.475	0.475	1,000	Irrigation (Golf Course)
Valley Center MWD	Meadowood WRF	0.170	0.170	0.170	0.170	0.170	0.170	1,000	Irrigation
Whispering Palms CSD	Whispering Palms WPCF	0.5	0.5	—	0.5	0.5	0.5	963	Pasture-Percolation
Total Capacity		**422.73**	**184.13**	**130.93**	**505.50**	**267.00**	**227.38**		

Notes: mg/L = milligrams per liter; PC = Planned Capacity; PT = Primary Treatment, ST = Secondary Treatment, TT = Tertiary Treatment; CSD = Community Services District; CWD = County Water District; mg/L = milligrams per liter; MWD = Municipal Water District; RRF = Resource Recovery Facility; TDS = total dissolved solids; TTP = Tertiary Treatment Plant; WPCF = Water Pollution Control Facility; WRF = Water Reclamation/ Recycling Facility; WRP = Water Reclamation Plant; WWTP = Wastewater Treatment Plant.

Source: SDCWA 2021.

City of San Diego Metropolitan Sewerage System

The Metropolitan Sewerage System, which is owned and operated by the City of San Diego Public Utilities Department's Wastewater Branch, provides regional wastewater treatment services for the city of San Diego and 15 other cities and sanitation districts: Chula Vista, Coronado, Del Mar, El Cajon, Imperial Beach, La Mesa, National City, and Poway; the Lemon Grove Sanitation District; the Padre Dam Municipal and Otay water districts; and the County of San Diego (on behalf of the Winter Gardens Sewer Maintenance District, and the Alpine, Lakeside, and Spring Valley sanitation districts).

The metropolitan sewerage system consists of the Point Loma Wastewater Treatment Plant and Ocean Outfall, the North City Water Reclamation Plant and South Bay Water Reclamation Plant, the Metro Biosolids Center, Environmental Monitoring and Technical Services Laboratory, nine major pump stations, and 75 smaller pump stations (City of San Diego 2024b). The pump stations move wastewater through sewers to the various treatment plants.

The Point Loma Wastewater Treatment Plant treats roughly 175 million gallons of wastewater per day (although it has a maximum capacity of 240 million gallons per day) and discharges it through the Point Loma Ocean Outfall into the Pacific Ocean (City of San Diego 2024b). Any sludge or biosolids accumulated from the processing of the wastewater at this plant are sent to the Metro Biosolids Center for further processing. Up to 30 million gallons of wastewater can be treated per day at the North City Water Reclamation Plant (City of San Diego 2024b). Wastewater from northern San Diego is processed and purified and then redistributed through a reclaimed water pipeline for irrigating, landscaping, and industrial uses. Water processed through the South Bay Water Reclamation Plant can either be discharged into the ocean through the South Bay Ocean Outfall or sent on to tertiary treatment to be used for reclaimed water purposes. The South Bay Water Reclamation Plant has the capacity to process 15 million gallons per day (City of San Diego 2024b).

South Bay International Wastewater Treatment Plant

The International Boundary and Water Commission's Minute No. 283 of July 8, 1990 was approved by both the United States and Mexico, which allowed for the establishment of the Clean Water Partnership binational interagency and authorized the construction of the South Bay International Wastewater Treatment Plant (SBIWTP). The SBIWTP was constructed as a response to untreated wastewater flowing north from Tijuana and polluting the Tijuana River in the United States. The plant provides secondary treatment for 25 million gallons of sewage per day that is then discharged into the Pacific Ocean (IBWC 2024). The treatment plant is located in San Ysidro, about 2 miles west of the point of entry and directly north of Tijuana's main wastewater pumping station.

Storm Water Drainage Facilities

Storm water runoff occurs when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not infiltrate into the ground. This effect is increased by the amount of impervious surfaces (paved streets, parking lots, and building rooftops). In more rural, less developed areas, such as in the unincorporated county, storm water is able to flow into natural drainage sites, such as creeks, streams, or rivers. In urban areas, storm water runoff is collected in a municipal separate storm sewer system (MS4), through a system of conveyances consisting of roads with drainage systems, streets, catch basins, curbs, gutters, ditches, artificial channels, or storm drains. Storm water systems such as these are designed to prevent flooding in urban areas, control erosion, and protect water quality. Section 4.10, "Hydrology and Water Quality," provides analysis of the hydrology and water quality impacts of storm water associated with implementation of the proposed Plan. Each MS4 operator identified in Table 4.15-8 is responsible for operation, maintenance, and management of its own system. MS4s are interconnected, and their operators often share facilities, cooperatively manage systems, and coordinate pollution control efforts.

Table 4.15-8 Operators of Municipal Separate Storm Sewer Systems in the San Diego Region

Facility Name	Agency/Discharger	City
Carlsbad MS4	Carlsbad City	Carlsbad
Chula Vista MS4	Chula Vista City	Chula Vista
Coronado MS4	Coronado City	Coronado
Del Mar MS4	Del Mar City	Del Mar
El Cajon MS4	El Cajon City	El Cajon
Encinitas MS4	Encinitas City	Encinitas
Escondido MS4	Escondido City	Escondido
Imperial Beach MS4	Imperial Beach City	Imperial Beach
La Mesa MS4	La Mesa City	La Mesa
Lemon Grove MS4	Lemon Grove City	Lemon Grove
National City MS4	National City	National City
Oceanside MS4	Oceanside City	Oceanside
Poway MS4	Poway City	Poway
San Diego City, MS4	San Diego City Storm Water	San Diego
San Diego County, MS4	San Diego County Department of Environmental Health	San Diego
San Diego International Airport MS4	San Diego County Regional Airport Authority	San Diego
San Diego Port District MS4	San Diego Unified Port District	San Diego
San Marcos MS4	San Marcos City	San Marcos
Santee MS4	Santee City	Santee
Solana Beach MS4	Solana Beach City	Solana Beach
Vista MS4	Vista City	Vista
Caltrans MS4	Caltrans	Statewide
Phase II Small MS4	Del Mar Fairground	Del Mar
Phase II Small MS4	UC San Diego	San Diego

Note: MS4 = municipal separate storm sewer system.

Source: SWRCB 2015.

Each jurisdiction within the Plan area requires the implementation of storm water pollution prevention techniques, so that conveyance systems are designed to protect surface and ground water quality, as mandated by state and federal regulations. These regulations require a multifaceted approach that involves infrastructure improvements and maintenance; water quality monitoring; source identification of pollutants; land use planning policies and regulations; and pollution prevention activities such as education, code enforcement, outreach, public advocacy, and training, and are explained in more detail in Section 4.15.2, "Regulatory Setting," below.

Electricity and Natural Gas Services

San Diego County is served by San Diego Gas and Electric (SDG&E), which provides electricity and natural gas to more than 3.7 million customers (i.e., 1.4 million accounts) in the county and portions of southern Orange County (SDG&E 2025). The utility has a diverse power production portfolio, composed of a variety of renewable and nonrenewable sources. Energy production typically varies by season and by year. Regional electricity loads also tend to be higher in the summer because the higher summer temperatures drive increased demand for air-conditioning. In contrast, natural gas loads are higher in the winter because the colder temperatures drive increased demand for natural gas heating. See Table 4.15-9 for a summary of electricity and natural gas use within SDG&E service area.

Table 4.15-9 Electricity and Natural Gas Consumption in the SDG&E Service Area in 2022

Sector	Electricity (GWh)	Natural Gas (million therms)
Agriculture and water pump	380	5
Commercial	7,811	175
Industry	1,868	26
Mining and construction	1,513	31
Residential	398	4
Streetlight	5,817	281
Total	79	522

Note: GWh =gigawatt hours.

Sources: CEC 2022a, 2022b.

Telecommunications Services

Telecommunications services—telephone and cellular phone services, cable television, and internet and broadband services in the San Diego region—are provided by a number of privately owned companies.

Telephone and Cellular Phone

Local phone service in the San Diego region is provided primarily by AT&T, which offers traditional landline (copper wire) service as well as digital telephone service. Digital telephone service is offered by a number of other providers, including Cox, Time Warner, Vonage, and a variety of smaller companies. AT&T, Sprint Nextel Corporation, T-Mobile, Verizon Wireless, and Spectrum are some of the cellular telephone providers offering service in the San Diego region. Providers use a combination of underground lines and above ground cellular towers to provide telephone service to the Plan area. Cellular towers are distributed throughout the San Diego region to provide coverage.

Cable Television and Internet

Cable television and internet services are offered by many of the same companies that provide cellular phone service in the area and can be delivered via a number of different technologies, including mobile (cellular), wireless, wireless local area network, and broadband. Table 4.15-10 provides a list of all of the providers in the San Diego region. Fiber optic cables and copper wires are generally collocated with other utility infrastructure, which is usually installed underground within new development in order to reduce visual and safety hazards. With the advent of streaming services, only broadband internet infrastructure is needed to access television service.

Broadband refers to a high-speed internet connection that can transport multiple signals and traffic types. According to the Federal Communications Commission (FCC) (2020), 100% of residents in the San Diego region currently have access to broadband via at least one provider.

Table 4.15-10 Fixed Broadband Providers in the San Diego Region

Provider	Technology
A+ Wireless	Cable
Accel Wireless	Terrestrial fixed wireless
Allstream	Optical carrier/fiber, other copper wireline
AT&T	DSL, optical carrier/fiber, fixed wireless
Birch Communications	DSL, other copper wireline
Block Line Systems	Other copper wireline
California Internet	Terrestrial fixed wireless
Call One	Optical carrier/fiber, other copper wireline
CBTS Technology Solutions	Other copper wireline

Provider	Technology
Cellco	Terrestrial fixed wireless
Charter Communications, Inc.	Cable, optical carrier/fiber
Cogent Communications	Optical carrier/fiber, other copper wireline
Comcast	Cable
Compudyne	Optical carrier/fiber, terrestrial fixed wireless
Consolidated Communications	Optical carrier/fiber
Cox Communications, Inc.	Cable, optical carrier/fiber
Earthlink	DSL, optical carrier/fiber, other copper wireline
Frontier Communications	DSL
GCI Communication	Satellite
Google Fiber	Optical carrier/fiber
HUGHES	Satellite
Level 3 Communications	Optical carrier/fiber, other copper wireline
Logix Communications	Optical carrier/fiber
MCI Communications	Optical carrier/fiber, other copper wireline
Mediacom	Cable
Netfortris	Optical carrier/fiber, other copper wireline
Network Billing Systems	Optical carrier/fiber, other copper wireline
One Ring Networks	Other copper wireline, terrestrial fixed wireless
PAETEC Communications	DSL, optical carrier/fiber
Sail Internet	Terrestrial fixed wireless
San Diego Broadband	Terrestrial fixed wireless
SDWISP	Terrestrial fixed wireless
Sky Valley Network	Terrestrial fixed wireless
Southern California Telephone Company	Terrestrial fixed wireless
Tailwind Voice & Data	DSL, cable modem, optical carrier/fiber, other copper wireline
Tierzero	Optical carrier/fiber, other copper wireline, terrestrial fixed wireless
U.S. TelePacific	Optical carrier/fiber, other copper wireline, terrestrial fixed wireless, DSL
Utility Telecom	Optical carrier/fiber, other copper wireline
ViaSat	Satellite
VSAT Systems	Satellite
Wave Broadband	Cable, optical carrier/fiber
Webpass	Optical carrier/fiber
XO Communication Services	Optical carrier/fiber
Zayo	Optical carrier/fiber
Zito Media	Cable

Source: FCC 2020.

Solid Waste Disposal and Recycling Facilities

The County of San Diego is the designated local enforcement agency (LEA) for all solid waste facilities in the region except for facilities within the city of San Diego, which is its own LEA. The LEAs are certified by the California Department of Resources Recycling and Recovery (CalRecycle) and have the responsibility of ensuring that solid waste facilities are operated and closed correctly, and that solid waste is stored and transported properly. LEAs can issue operating permits to facilities, including landfills, transfer stations, material recovery, and composting facilities.

Solid Waste Generation

Solid waste refers to garbage, refuse, and other discarded solid materials that are generated by residential, commercial, and industrial activities. Solid waste is measured in volume and weight, and is classified into one of eight categories: paper, plastics, glass, metals, yard waste, other organics, other wastes, and special wastes. CalRecycle provides specific definitions of these classifications on their website (CalRecycle 2025a). Solid waste generation is measured by disposal and diversion. Disposal is defined in Public Resources Code (PRC) Section 40192 as "the final deposition of solid wastes onto land, into the atmosphere, or into the waters of the state." Diversion includes programs and practices, such as waste prevention and source reduction, recycling, reuse, and composting, that reduce the total amount of waste that requires disposal. Table 4.15-11 shows the 2023 waste generation and disposal rates by jurisdiction.

Table 4.15-11 Total Waste Generation Rates and Annual Disposal Rates by Jurisdiction in the San Diego Region

City	Total Waste Generation (tons)	Annual Disposal Rate (PPD)
City of Carlsbad	137,914	15.9
City of Chula Vista	212,105	19.8
City of Coronado	50,061	27.9
City of El Cajon	97,009	16.6
City of Encinitas	57,770	16.3
City of Escondido	183,515	24.4
City of Imperial Beach	16,444	28.4
City of La Mesa	47,228	14.2
City of Lemon Grove	20,584	19.3
City of National City	56,665	18.6
City of Oceanside	147,691	21.4
City of Poway	47,262	13.0
City of San Diego	1,607,277	16.8
City of San Marcos	93,085	17.6
City of Santee	56,232	22.3
City of Solana Beach	16,006	17.1
City of Vista	101,446	20.2
Unincorporated San Diego	515,114	29.4
Total	3,463,408	359.2

Note: PPD = pounds per person per day.

Source: CalRecycle 2023.

Landfills

There are four landfills in the San Diego region, three of which are privately operated and one of which is operated by the City of San Diego. The landfills receive a total daily throughput of approximately 19,750 tons per

day. Together, they have a total remaining capacity of 121,955,024 cubic yards, which is roughly 40% of their total permitted capacity (CalRecycle 2024a). Table 4.15-12 shows the remaining capacity of landfills located in the San Diego region and their estimated closure dates. Marine Corps Base Camp Pendleton operates two additional landfills for its exclusive use that are not included in the table.

Table 4.15-12 Landfills Located in the San Diego Region and Estimated Capacity

Facility	Operator	Solid Waste Information System No.	Throughput (tons/day)	Maximum Permitted Capacity (cubic yards)	Remaining Capacity (cubic yards)	Percent Capacity Remaining	Estimated Closure Date
Borrego Landfill	Borrego Landfill, Inc.	37-AA-0006	50	476,098	88,750	19%	12/31/2046
Otay Landfill	Otay Landfill, Inc.	37-AA-0010	6,700	61,154,000	11,307,565	18%	2/28/2030
West Miramar Sanitary Landfill	City of San Diego	37-AA-0020	8,000	97,354,735	11,080,871	11%	1/1/2031
Sycamore Landfill	Sycamore	37-AA-0023	5,000	147,908,000	99,477,838	67%	12/31/2042
Total	—	—	19,750	306,892,833	121,955,024	40%	—

Source: CalRecycle 2025b.

Collection, Transfer, and Material Recovery Facilities

Solid waste generated from residences and businesses in the San Diego region is collected by private operators, under contract with each of the cities and the county and permitted by the state. The City of San Diego is an exception in the region and operates its own solid waste management system, including solid waste collection. Twenty transfer stations in the region receive solid waste and transfer it into vehicles or containers to be moved to a landfill or transformation facility. There are 14 additional transfer stations that are combined with material recovery facilities (MRFs) that remove recyclables and other valuable materials from the solid waste as it is being processed. A final transfer station also chips and grinds wood waste. MRFs process unseparated trash or separated trash with commingled recyclables. Table 4.15-13 provides a list of transfer facilities and MRFs for the region and their individual daily throughputs.

Table 4.15-13 Transfer/Processing Facilities in the San Diego Region

Facility	Operator	Solid Waste Information System (SWIS) Number	Maximum Permitted Throughput (tons/day)
EDCO Recycling	EDCO Disposal, Inc.	37-AA-0964	516
SANCO Recycling	SANCO Services	37-AA-0956	1,000
Ramona MRF and Transfer Station	JEMCO Equipment Corporation	37-AA-0925	700
Universal Refuse Removal Recycling & Transfer Station	Universal Refuse Removal	37-AA-0929	2,000
Palomar Transfer Station, Inc.	Palomar Transfer Station, Inc	37-AH-0001	2,250
EDCO Recovery and Transfer Station	EDCO Disposal Corporation	37-AA-0105	1,500
Escondido Resource Recovery	JEMCO Equipment Corporation	37-AA-0906	3,223
EDCO Station	EDCO Disposal Corporation	37-AA-0922	2,000
Fallbrook Recycling Facility	Fallbrook Refuse Service	37-AA-0923	500
Amswede Recycling	Amswede Inc.	37-AA-0952	175
EDCO CDI Recycling	EDCO Waste and Recycling	37-AA-0953	175
SANCO Resource Recovery	SANCO Services	37-AA-0956	1,000
EDCO Waste and Recycling – LVTO	EDCO Waste and Recycling	37-AA-0969	15
Waste Management of San Diego – LVTO	Universal Refuse Removal Recycling & TS	37-AA-0967	15
Escondido Disposal, Inc.	Escondido Disposal, Inc.	37-AA-0970	15

Facility	Operator	Solid Waste Information System (SWIS) Number	Maximum Permitted Throughput (tons/day)
EDCO Bin Yard	EDCP Bin Yard	37-AA-0972	15
Otay CDI MVPF	Otay Landfill Inc.	37-AA-0973	174
Escondido LVTO	Caltrans Region 2	37-AA-0976	15
Descanso LVTO	Caltrans Region 1	37-AA-0977	15
Boulevard LVTO	Caltrans Region 1	37-AA-0978	15
Carlsbad LVTO	Caltrans Region 2	37-AA-0979	15
Chula Vista LVTO	Caltrans Region 2	37-AA-0980	15
Santee LVTO	Caltrans Region 1	37-AA-0981	15
Caltrans Henshaw LVTO	Caltrans Region 1	37-AA-0983	15
City of San Diego Environmental Service Department LVTO	City of San Diego Refuse Collection	37-AA-0967	15
Waste Management North Co. Limited Col. Trans Op.	Waste Management Inc. North County	37-AA-0958	15
Allan Company MRF & Transfer Station	Cedarwood-Young Company, dba Allan Co.	37-AA-0016	1,000
Coronado Bridge Paint LVTO	California Department of Transportation	37-AA-0018	15
Kearny Mesa LVTO	California Department of Transportation	37-AA-0023	15
Terra Bella Nursery, Inc.	Terra Bella Nursery, Inc.	37-AA-0024	199
Miramar Greenery	City of San Diego	37-AA-0003	1,400
West Miramar Sanitary Landfill	City of San Diego	37-AA-0020	8,000
Total			**26,037**

Notes: CDI = construction, demolition and inert processing; LVTO = limited volume transfer operation; MRF = material recovery facilities.

Source: CalRecycle 2025b.

Recycling, Composting, Chipping, and Grinding

The implementation of recycling, composting, chipping, and grinding practices reduces the amount of material that must be sent to the landfill. There are more than 80 recycling centers in the San Diego region that collect recyclable materials (CalRecycle 2024a). In addition, three composting facilities in the region collect, grind, mix, pile, and add moisture and air to organic materials to speed natural decay and produce a soil amendment, and another four chipping and grinding facilities in the region are designed to reduce the size of compostable material (CalRecycle 2023). One organics processing facility is also permitted in the county (CalRecycle 2023).

Construction and Demolition and Inert Debris Facilities

Construction and demolition (C&D) material and inert debris are solid waste that pose a potential threat to public health and safety and the environment and must be handled differently from municipal solid waste. C&D materials include lumber, drywall, glass, metal, roofing material, tile, carpeting and floor coverings, piping, concrete, cardboard and other packaging materials, dirt, and rock. Of these materials, metals are recycled the most, while lumber is most commonly sent to the landfill. According to the 2021 Disposal Facility-Based Characterization of Solid Waste in California, inert and other materials are estimated to account for 12% of the disposed waste stream in the state, while metal accounts for 5% and glass accounts for 2% (CalRecycle 2024b). There are 17 C&D recyclers in San Diego, 1 large processing facility, 3 medium processing facilities, and 5 inert fill-disposal operations (County of San Diego 2021a). According to CalRecycle, the San Diego region diverted 65,546 tons of C&D debris in 2018 from local landfills (CalRecycle 2018).

4.15.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Resource Conservation and Recovery Act of 1976

Subtitle C of the Resource Conservation and Recovery Act (RCRA) (42 US Code [USC] 6901 et seq.) gives the US Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave," and was designed to protect human health and the environment, reduce/eliminate the generation of hazardous waste, and conserve energy and natural resources; to reduce the amount of waste generated; and to ensure that wastes are managed in an environmentally sound manner. RCRA regulates the management of solid waste (e.g., garbage), hazardous waste, and underground storage tanks holding petroleum products or certain chemicals. Solid waste, as defined by RCRA, includes both hazardous and nonhazardous materials. RCRA establishes a framework for the management of nonhazardous waste in Subtitle D. Nonhazardous solid waste includes household garbage, sludge from waste treatment plants, construction debris, and various types of nonhazardous industrial waste. Subtitle D states the requirements for solid waste planning and encourages recycling and recovery programs that most directly affect state and regional solid waste management authorities. EPA also developed federal criteria for the proper design and operation of municipal solid waste landfills and other solid waste disposal facilities. EPA approved the State of California's program, a joint effort of the California Integrated Waste Management Board, the State Water Resources Control Board (SWRCB), the regional water quality control boards (RWQCBs), and LEAs, on October 7, 1993.

US Department of Transportation Act Of 1966, Section 4(f)

Section 4(f) of the US Department of Transportation Act (49 USC Section 303) was enacted to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) requires a comprehensive evaluation of all environmental impacts resulting from federal transportation projects administered by the Federal Highway Administration, Federal Transit Administration, and Federal Aviation Administration that involve the use or interference with use of the following types of land:

- public park lands;
- recreation areas;
- wildlife and waterfowl refuges; and
- publicly or privately owned historic properties of federal, state, or local significance.

This evaluation, called the Section 4(f) statement, must be sufficiently detailed to permit the U.S. Secretary of Transportation to determine that:

- there is no feasible and prudent alternative to the use of such land;
- the program includes all possible planning to minimize harm to any park, recreation area, wildlife and waterfowl refuge, or historic site that would result from the use of such lands; or
- if there is a feasible and prudent alternative, a proposed project using Section 4(f) lands cannot be approved by the Secretary of Transportation; or if there is no feasible and prudent alternative, the proposed project must include all possible planning to minimize harm to the affected lands.

Detailed inventories of the locations and likely impacts on resources that fall into the Section 4(f) category are required in project-level environmental assessments.

In August 2005, Section 4(f) was amended to simplify the process for approval of projects that have only minimal impacts on lands affected by Section 4(f). As amended, the US Secretary of Transportation may find such a minimal impact if consultation with the state historic preservation officer results in a determination that a transportation project will have no adverse effect on a historic site or that there will be no historic properties affected by the proposed action. In this instance, analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is complete.

Clean Water Act

The Clean Water Act (CWA) was established in 1972 and is the basis for regulation of the discharge of pollution into the waters of the United States and regulation of surface water quality standards (33 USC 1251 et seq.). States are required to adopt water quality standards for all surface waters of the United States, as detailed in Section 303. Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES), which regulates the discharge of pollutants from point sources. Municipal point sources consist primarily of domestic treated sewage and processed water, including municipal sewage treatment plant outfalls and storm water conveyance system outfalls. These outfalls contain pollutants that are emitted into waters of the United States. Without a permit, the discharge of pollutants from point sources into navigable waters of the United States is prohibited. NPDES permits require regular water quality monitoring. For a detailed discussion of the CWA, see the "Regulatory Setting" in Section 4.10, "Hydrology and Water Quality." Storm water and wastewater discharges must meet water quality standards that are established pursuant to the CWA.

National Energy Act of 1978

The National Energy Act of 1978 included the Public Utility Regulatory Policies Act (Public Law 95-617), Energy Tax Act (Public Law 95-318), National Energy Conservation Policy Act (Public Law 95-619), Power Plant and Industrial Fuel Use Act (Public Law 95-620), and the Natural Gas Policy Act (Public Law 95-621).

The intent of the National Energy Act was to promote greater use of renewable energy, provide residential consumers with energy conservation audits to encourage slower growth of electricity demand, and promote fuel efficiency. The Public Utility Regulatory Policies Act created a market for nonutility electric power producers to permit independent power producers to connect to their lines and to pay for the electricity that was delivered.

The Energy Tax Act promoted fuel efficiency and renewable energy through taxes and tax credits. The National Energy Conservation Policy Act requires utilities to provide residential consumers with energy conservation audits and other services to encourage slower growth of electricity demand.

Energy Policy Act of 2005

This comprehensive energy legislation contains several electricity-related provisions that aim to, among other things, help ensure that consumers receive electricity over dependable, modern infrastructure, remove outdated obstacles to investment in electricity transmission lines, make electricity reliability standards mandatory instead of optional, and give federal officials the authority to site new power lines in US Department of Energy–designated national corridors in certain limited circumstances.

Telecommunications Act of 1996

The Telecommunications Act (47 USC Chapter 5) was the first major overhaul of telecommunications law in almost 62 years. The Act deregulates local phone service and allows long-distance carriers and cable television companies to provide local phone services and local telephone companies to provide long distance service. Section 706 of the Act requires that the FCC determine annually whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion, and assesses the impact of the FCC's policies on broadband deployment.

U.S. Green Building Council's Leadership in Energy and Environmental Design

Leadership in Energy and Environmental Design (LEED) is a nationally recognized certification program administered by the U.S. Green Building Council that promotes sustainable building design, construction, and operation. Projects are rated based on performance in categories such as energy efficiency, water use, materials selection, and indoor environmental quality. LEED encourages voluntary reductions in energy use and greenhouse gas emissions beyond minimum code requirements.

Energy Star Homes

Energy Star is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy that certifies new homes meeting strict energy efficiency guidelines. Energy Star homes typically include

high-performance insulation, efficient heating and cooling systems, and energy-efficient appliances, resulting in lower utility costs and reduced environmental impact.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California Mutual Aid Plan

The Emergency Managers Mutual Aid (EMMA) system is a collaborated effort between city and county emergency managers in the Office of Emergency Services in the coastal, southern, and inland regions of the state. EMMA provides service in the emergency response and recovery efforts at the Inland Regional Emergency Operations Center, local Emergency Operations Centers, the Disaster Field Office, and community service centers. The purpose of EMMA is to support disaster operations in affected jurisdictions by providing professional emergency management personnel. EMMA operates under the broader framework of California's accordance with the Master Mutual Aid Agreement, which facilitates the sharing of resources among local and state jurisdictions during emergencies. While the Master Mutual Aid Agreement covers all types of emergency assistance, EMMA specifically mobilizes trained emergency management staff to assist with coordination, planning, and operations. Local and state emergency managers have responded in support of each other under a variety of plans and procedures.

Assembly Bill 16, Chapter 33, Statutes of 2002

AB 16 created the Critically Overcrowded School Facilities program to supplement the construction provisions within the School Facilities Program (SFP). The SFP provides state funding assistance for new construction and modernization of facilities. The Critically Overcrowded School Facilities program allows school districts that have been determined by the California Department of Education (CDE) to have critically overcrowded facilities to apply for new construction projects without meeting all SFP program requirements. Districts with SFP new construction eligibility and school sites included on a CDE list of source schools may apply.

Senate Bill 50 — Leroy F Greene Schools Facilities Act of 1998, Chapter 407, Statutes of 1998

SB 50 restricts the ability of local agencies to deny project approvals on the basis that public school facilities (classrooms, auditoriums, etc.) are inadequate. School impact fees are collected at the time building permits are issued. Payment of school fees is required by SB 50 for all new residential development projects and is considered "full and complete mitigation" of any school impacts. School impact fees are payments to offset capital cost impacts associated with new developments, which result primarily from costs of additional facilities, related furnishings and equipment, and projected capital maintenance requirements. As such, agencies cannot require additional mitigation for any school impacts.

Senate Bill 1389, Chapter 568, Statutes of 2002

The California Energy Commission (CEC) is responsible for, among other things, forecasting future energy needs for the state and developing renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation. SB 1389 requires CEC to prepare an integrated energy policy report every 2 years assessing major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The report also provides policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies.

The 2023 Integrated Energy Policy Report was adopted in 2024. Energy topics covered in the report include decarbonizing buildings, integrating renewables, energy efficiency, energy equity, integrating renewable energy, updates on Southern California electricity reliability, climate adaptation activities for the energy sector, natural gas assessment, transportation energy demand forecast, and the California Energy Demand Forecast (CEC 2024). The 2025 draft Integrated Energy Policy Report Update will be released in early 2026.

California Building Standards Code (Title 24, California Code of Regulations)

Building Standards Code Title 24 applies to all buildings throughout the State of California and includes requirements for structural, mechanical, electrical, and plumbing systems, and requires measures for energy conservation, green design, construction and maintenance, and fire and life safety and accessibility (24 California

Code of Regulations [CCR]). Cities and counties are required by state law to enforce Title 24; however, they can adopt more restrictive ordinances.
As discussed in Section 4.6, "Energy," as part of the California Building Standards Code, the California Green Standards Code was adopted, which identifies aggressive energy efficiency standards for new residential and non-residential buildings that are continuously updated every few years. Additionally, the California Building Energy Efficiency Standards was adopted, which regulates the energy consumption of new residential and nonresidential buildings in California.

GreenPoint Rated Homes

Administered by Build It Green, the GreenPoint Rated system is California-specific and scores residential buildings based on five environmental categories: energy efficiency, resource conservation, indoor air quality, water conservation, and community impact. The program aligns with California energy codes (Title 24) and provides a flexible yet rigorous rating for new and existing homes.

California Green Builder Program

This voluntary program, developed by the California Building Industry Association, targets builders who exceed Title 24 energy efficiency requirements and incorporate environmentally responsible practices. The program includes standards for energy and water conservation, construction waste recycling, and indoor air quality.

California Rules for Overhead Electrical Line Construction

The Rules for Overhead Electrical Line Construction prescribed by the Public Utilities Commission of the State of California under General Order No. 95 set requirements for overhead line design, construction, and maintenance. The rules were last updated in December 2024.

California Government Code Sections 4216–4216.9, Protection of Underground Infrastructure

California Government Code Sections 4216 through 4216.9 require an excavator to notify appropriate known operators of subsurface installations within the delineated boundaries of a proposed area of excavation.

Community Facilities Act of 1982 and Amendments

The Community Facilities Act of 1982 (Government Code Section 53324), also commonly known as the Mello-Roos Act, enables certain public agencies to designate a Mello-Roos Community Facilities District, which allows for the financing of public improvements and services. These include basic infrastructure, police protection, fire protection, ambulance services, schools, parks, libraries, museums, and other cultural facilities. Mello-Roos Community Facilities Districts are usually created to finance improvements and services when no other funding sources are available and require a two-thirds majority vote of residents living within the proposed boundaries. They are used especially often (but not exclusively) in new development areas. Upon approval, a special tax lien is placed against each property in the district, and residents pay a special tax each year. This tax is not based on property value, but on formulas that consider physical characteristics, such as square footage and structure size.

Quimby Act and AB 1359

Cities and counties have been authorized since the passage of the 1975 Quimby Act (Government Code Section 66477) to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. Revenues generated through the Quimby Act cannot be used for the operation and maintenance of park facilities. The dedicated land or fees may only be used for the development or rehabilitation of neighborhood or community parks or recreational facilities in the subdivision they were provided for, according to AB 1359 (Chapter 412, Statutes of 2013), unless certain requirements are met and an exception is made. The goal of the Quimby Act is to require developers to help mitigate the impacts of property improvements. The act gives authority for passage of land dedication ordinances only to cities and counties. Special districts must work with cities or counties to receive parkland dedication or in-lieu fees. The fees must be paid and land conveyed directly to the local public agencies that provide park and recreation services communitywide.

California Coastal Act, Coastal Recreation Policies

California Coastal Act policies related to coastal recreation include PRC Section 30210, which requires that maximum access and recreational opportunities shall be provided for all people, and Section 30213, which protects lower-cost visitor and recreational facilities, and encourages the provision of public recreational opportunities.

Subdivision Map Act of 1974

One of the powers granted to local jurisdictions by the Subdivision Map Act (Government Code Section 66410 et seq.) is the authority to impose drainage improvements or drainage fees and assessments. Specifically, local jurisdictions may require the provision of drainage facilities, proper grading and erosion control, dedication of land for drainage easements, or payment of fees needed for construction of drainage improvements. The types and applicable standards of the improvements may be specified in the local ordinance.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Water Code, Division 7) regulates activities and factors that may affect the quality of the waters of the State of California, to protect the health, safety, and welfare of the people. It charges the state with the act of protecting the waters from degradation and established nine RWQCBs throughout the state. The act declares that SWRCB and each RWQCB will have the primary responsibility for water quality control. Each RWQCB is in charge of updating their water quality control plans, known as basin plans. They also regulate pollutant or nuisance discharges that may affect surface or groundwater. Storm water and wastewater discharges must meet water quality standards that are established in basin plans. The Water Quality Control Plan for the San Diego Basin, also known as the Basin Plan, establishes water quality objectives and implementation strategies to protect the beneficial uses of water bodies in the San Diego region and describes monitoring plans to assess its effectiveness (RWQCB 2016). Beneficial uses are defined as "the uses of water necessary for the survival and well-being of man, plants, and wildlife," and promote the economic, social, and environmental goals of humankind. Policies in the Basin Plan define treatment levels of water that must be met by regional wastewater facilities.

State Water Resources Control Board and RWQCBs

The SWRCB issues individual and general NPDES permits for wastewater and storm water through authorization of the EPA. Discharges that may impact surface or groundwater, and which are not regulated by an NPDES permit, are issued a waste discharge requirement (WDR) that serves as a permit under the authority of the California Water Code. The RWQCBs issue Land Disposal WDRs that permit certain solid and liquid waste discharges to land to ensure that wastes do not reach surface water or groundwater. Land Disposal WDRs contain requirements for liners, covers, monitoring, cleanup, and closure. The RWQCBs also permit certain point source discharges of waste to land that have the potential to affect surface or groundwater quality. This category of discharges, known as "Non-15" WDR, is the most diverse and includes sewage sludge and biosolids, industrial wastewater from power plants, wastes from water supply treatment plants, treated wastewater for aquifer storage and recovery, treated groundwater from cleanup sites, and many others.

Related to wastewater collection and treatment facilities, storm water drainage facilities, and landfills, the SWRCB has issued the following orders:

- Caltrans NPDES Permit (Order 99-06-DWQ): Requires Caltrans to regulate nonpoint source discharge from its properties, facilities, and activities. Among other requirements, Caltrans must annually update an enforceable Storm Water Management Plan. See Section 4.10, Hydrology, for more detail.
- Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order No. 2006-0003-DWQ): Requires all federal and State agencies, municipalities, counties, districts, and other public entities that own, operate, or are otherwise responsible for sanitary sewer systems greater than 1 mile in length that collect and/or convey untreated wastewater to a publicly owned treatment facility in California to prepare sewer system management plans and report all sanitary sewer overflows (SSOs) to the SWRCB. Order No. WQ 2008-0002-EXEC amended the statewide Monitoring and Reporting Program for SSOs that reach surface waters or

storm drains. The RWQCB issued Order No. R9-2007-0005 to reaffirm the prohibition of SSOs upstream of a wastewater treatment facility.

Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment System (CCR Title 23)

AB 885 (Chapter 781, Statutes of 2000) required that the SWRCB, along with other interested parties, adopt specified regulations or standards for the permitting and operation of prescribed onsite wastewater treatment systems (OWTS). Each RWQCB must incorporate the new standards and regulations into their regional water quality control plans. Resolution R9-2015-0008, adopted in April 2015, incorporated the OWTS policy into the San Diego Water Quality Control Plan, and Resolution No. 2018-0019 amended the Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (the "OWTS Policy") in CCR Title 23 (SWRCB 2018). On site wastewater treatment systems allow habitation in locations that are far from central wastewater treatment plants, such as areas of the unincorporated County. OWTS can help to reduce the strain on municipal wastewater facilities and reduce the need for construction of new facilities in these remote areas. The OWTS policy helps to reduce an OWTS' impact on the environment where they are used.

San Diego Regional Municipal Storm Water Permit

An MS4 is defined as a conveyance or system of conveyances (e.g., municipal streets, catch basins, gutters, storm drains, etc.) used for collecting or conveying storm water that is not a combined sewer or connected to a publicly owned treatment network. The San Diego Municipal Storm Water Permit (Order R9-2013-0001) (as amended by Order Nos. R9-2015-0001 and R9-2015-0100) (Municipal Permit) regulates the conditions under which storm water and non-storm water discharges into and from MS4s are prohibited or limited (RWQCB 2018). The 18 cities, County government, San Diego County Regional Airport Authority, San Diego Unified Port District, Del Mar Fairgrounds, and the University of California, San Diego each owns or operates an MS4, through which it discharges storm water and non–storm water into waters of the United States within the San Diego region. These entities are the San Diego County Copermittees (Copermittees) who, along with the Orange County Copermittees, are subject to the requirements of the permit. The Caltrans storm water system is regulated separately under the Caltrans NPDES permit.

This permit requires each of the Copermittees to prepare a Jurisdictional Urban Runoff Management Program (JURMP) to control the contribution of pollutants to and the discharges from the MS4. Each of these JURMPs includes a component addressing construction activities, development planning, and existing development. The goal of the jurisdictional runoff management programs is to implement water quality improvement strategies and runoff management programs that effectively prohibit non-stormwater discharges into the Copermittees' MS4s and reduce pollutants in stormwater discharges from the Copermittees' MS4s to the maximum extent practicable. The MS4 permit, required by NPDES, requires the development of a hydromodification management plan (HMP). Pursuant to RWQCB Order 2007-0001, provision D.1.g, HMPs shall be prepared with the purpose of managing increases in runoff discharge rates and durations from specific projects. Regulations require site design to account for hydrology and drainage studies are required for projects with significant increases in impervious surfaces. Projects are discouraged from diverting or increasing flows that cross a site. Larger projects (those with 50 acres of disturbance or greater) are subject to hydromodification requirements and must develop a project-level HMP.

In accordance with the provisions of the Municipal Permit, the County of San Diego developed the *County of San Diego BMP Design Manual* (County of San Diego 2020a). The *County of San Diego BMP Design Manual* establishes a series of source control, site design, and treatment control best management practices (BMPs) that are to be implemented by all priority development projects (PDPs). PDPs include new development; redevelopment projects that create, add, or replace 5,000 square feet; and pollutant-generating projects. A PDP should refer to the local agency that has jurisdiction for the project for guidance on the source control, site design, and treatment control BMPs for stormwater pollutants. All future projects implementing the proposed Plan must adhere to these regulations.

AB 341

Legislation enacted in 2011 (AB 341, Chesbro, Chapter 476, Public Resources Code Section 42926[a]) made a legislative declaration that it is the policy goal of the State of California that not less than 75% of solid waste generated be source reduced, recycled, or composted by the year 2020. AB 341 also requires the provision of recycling service to commercial facilities that generate 4 cubic yards or more of solid waste per week and to multifamily facilities with five or more units.

Integrated Waste Management Act of 1989 (AB 939) and SB 1016

AB 939 (Chapter 1095, Statutes of 1989) requires each city and county in California to develop integrated waste management plans (IWMPs) to divert 25% of its waste stream by 1995 and 50% by 2000, with the base year set as 1990. The goal of AB 939 is to reduce dependence on landfills for waste disposal. The act established a hierarchy of priority for waste management: (1) source reduction (waste prevention), to reduce the amount of waste generated at its source; (2) recycling (or reuse) and composting; (3) transformation; and (4) disposal by landfilling. See below for a discussion of the IWMP for the San Diego region.

The passage of SB 1016 amended AB 939 to modernize how waste diversion is measured and enforced. Rather than relying solely on estimated diversion percentages, SB 1016 introduced a per capita disposal measurement system and evaluates how much waste is disposed of per person per day in each jurisdiction. This approach provides a more consistent and performance-based metric for assessing local waste reduction progress.

AB 1826

AB 1826 Chesbro (Chapter 727, Statutes of 2014) requires businesses, including state agencies, to recycle their organic waste on and after April 1, 2016, depending on the amount of organic waste they generate per week. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste. For businesses that generate 8 or more cubic yards of organic waste per week, this requirement began on April 1, 2016, while those that generate 4 cubic yards of organic waste per week must have had an organic waste recycling program in place beginning January 1, 2017. The requirement becomes more stringent in the following years. Multifamily properties are regulated but are only required to divert green waste and nonhazardous wood waste. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including certain multifamily residential dwellings, as described above, starting on January 1, 2016. In September 2020, CalRecycle extended the organic waste recycling requirements to businesses that generate 2 cubic yards or more of commercial solid waste (total trash, recyclables, and organics) per week.

AB 2396

As of January 1, 2017, pursuant to AB 2396 (McCarty, Chapter 466, Statutes of 2016), each state agency is required to include in its existing annual report to CalRecycle specified information on the state agency's compliance with mandatory commercial recycling requirements, pursuant to AB 341, and mandatory commercial organics recycling requirements, pursuant to AB 1826.

AB 2812

Effective July 1, 2018, pursuant to AB 2812 (Gordon, Chapter 530, Statutes of 2016), state agencies must provide adequate recycling and organics recycling containers to collect waste generated. Containers should be placed adjacent to trash containers and be visible, easily accessible, and clearly marked.

CalRecycle Regulations

CalRecycle regulations pertaining to nonhazardous waste management in California include minimum standards for solid waste handling and disposal; regulatory requirements for composting operations; standards for handling and disposal of asbestos-containing waste; resource conservation programs; enforcement of solid waste standards and administration of solid waste facility permits; permitting of waste tire facilities and waste tire hauler registration; special waste standards; used oil recycling program; electronic waste recovery and recycling; planning

guidelines and procedures for preparing, revising, and amending countywide IWMPs; and solid waste cleanup program (14 CCR Division 7).

CALGreen Construction Waste Diversion

The California Green Building Standards Code (CALGreen) (24 CCR Part 11) mandates locally permitted new residential and nonresidential building construction, demolition and certain additions and alteration projects to recycle or salvage for reuse a minimum 65% of the nonhazardous construction and demolition waste or meet a local C&D waste management ordinance, whichever is more stringent.

Caltrans Highway Design Manual

The Caltrans *Highway Design Manual* was developed to be a set of policies and procedures to carry out the highway design functions of Caltrans. While this manual does not instate a legal standard, it does provide guidance and uniform standards related to design and construction of Caltrans facilities. These standards include consideration of runoff and controlling it through hydraulic design of drainage features (Caltrans 2020).

California Code of Regulations

Title 5, Division 10

Division 10 of Title 5 of the CCR governs all aspects of education within the state.

Title 8, Sections 1270 and 6773

In accordance with the CCR, Title 8, Sections 1270, "Fire Prevention," and 6773, "Fire Protection and Fire Equipment," the California Occupational Safety and Health Administration has established minimum standards for fire suppression and emergency medical services. The standards consist of, but are not limited to, guidelines on the handling of highly combustible materials, fire hosing sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

Title 13, Division 2

Division 2 of Title 13 of the CCR governs the operations of California Highway Patrol.

Title 22, Division 4

Wastewater reclamation in California is regulated under CCR Title 22, Division 4. The intent of these regulations is to ensure protection of public health associated with the use of reclaimed water. The regulations establish acceptable levels of constituents in reclaimed water for a range of uses and prescribe means for assurance of reliability in the production of reclaimed water. The State Water Resources Control Board, Division of Drinking Water (formerly under the Department of Health Services) has jurisdiction over the distribution of reclaimed wastewater and the enforcement of Title 22 regulations. The applicable RWQCB is responsible for issuing waste discharge requirements (including discharge prohibitions, monitoring, and reporting programs).

REGIONAL LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

County of San Diego Fire Protection Ordinance No. 10172

The Fire Protection Ordinance No. 10172 ratified the 2011 Consolidated Fire Code for the 16 FPDs in the unincorporated county. Each FPD can modify the code based on specific needs for their jurisdiction. The County Fire Code applies to both ministerial and discretionary projects and both new and repair projects. The County Fire Code is amended every 3 years in conjunction with the revised California Building Standards Code.

County of San Diego Sewer System Management Plan

The County of San Diego developed a sewer system management plan (SSMP) to document management of their wastewater collection system (County of San Diego 2015). The SSMP provides a summary of the action plan

implemented to comply with the sanitary sewer system requirements imposed by the WDRs and other governing agencies. It includes a description of the activities and procedures that personnel follow to implement the various programs encompassed in the overall efforts to efficiently manage, operate, and maintain the sanitary sewer system and facilitate the reduction and potential elimination of SSOs. The goals of the SSMP include the following:

- minimizing the frequency and impact of SSOs
- effectively and efficiently mitigating the impacts of SSOs should they occur
- providing adequate sewer capacity to convey peak flows
- maintaining and improving the condition of the collection system infrastructure to provide continual reliable service
- engaging and educating the public regarding programs and issues related to the wastewater collection system.

San Diego Integrated Waste Management Plan

The County of San Diego prepares the IWMP for the San Diego region. The IWMP includes the following elements: Source Reduction and Recycling, Household Hazardous Waste, Non-Disposal Facility, and Countywide Siting. The Countywide Siting Element must demonstrate at least 15 years of remaining disposal capacity. It includes various strategies to demonstrate the remaining capacity, such as existing, proposed, and tentative landfills or landfill expansions; increased diversion efforts; and the export of solid waste disposal. In the San Diego region, the Countywide Siting Element must be updated every 5 years and must be adopted by the County Board of Supervisors and a majority of the cities within San Diego County. A 5-year review of the Countywide IWMP was completed in 2022, which determined that updates to the Countywide Summary Plan or the Countywide Siting Element planning documents were not warranted (County of San Diego 2022). Under the law, SANDAG is designated as the region's Integrated Waste Management Local Task Force responsible for advising and assisting the cities and County with certain aspects of compliance with AB 939, discussed above.

California PRC, Sections 41730 et seq. require every California city and county to prepare and adopt a Non-Disposal Facility Element for all new non-disposal facilities, and any expansions of existing non-disposal facilities, that will be needed to implement local Source Reduction and Recycling Elements (SRREs). A non-disposal facility is defined as any solid waste facility required to obtain a state solid waste facility permit, except a disposal facility or a transformation facility (PRC Section 40151). The April 2025 update describes the current non-disposal facility system of the unincorporated San Diego County consisting of MRF's, transfer stations, rural transfer stations, organic processors and construction, demolition and inert processing recycling facilities.

Solid Waste Reduction Plans

A number of jurisdictions within the San Diego region have developed solid waste reduction plans that designate waste reduction targets. For example, the City of San Diego Environmental Services Department has developed a zero-waste plan for the City of San Diego that is designed to divert waste from landfill disposal. The plan calls for 75% diversion by 2020 and 90% diversion by 2035, and for zero waste to be disposed of in landfills by 2040 (City of San Diego 2015). One of the goals of the plan is to promote local policies and ordinances as well as legislation at the state level that encourages manufacturers, consumers, and waste producers to be responsible for waste. The County of San Diego developed a strategic plan to reduce waste (County of San Diego 2017), with approved updates to the Non-Exclusive Franchise Agreement for Discarded Materials Management and Solid Waste Ordinance, which will help the County achieve its sustainability goals of progressively diverting solid waste from landfills and achieving an 80% waste diversion by 2030, and align with state laws, AB 1826 and SB 1383 (County of San Diego 2020b, County of San Diego 2021b). The County updated its Solid Waste Ordinance in 2021 as a response to the state's updated waste diversion goals, such as the AB 1826 regulations. Other jurisdictions, such as the City of Encinitas, have incorporated goals to develop waste reduction strategies into climate action plans (City of Encinitas 2024). In response to CALGreen C&D diversion mandates, local jurisdictions have also adopted C&D ordinances.

County and City General Plans

The County and cities' general plans establish policies for a number of topics relevant to public services and utilities, including fire prevention, law enforcement, schools, libraries, parks and recreational facilities, solid waste, storm water, and sewer infrastructure. General plan policies related to public services and utilities include implementation of funding and management strategies for public infrastructure projects, and planning policies to identify demand for new facilities and their design and construction. Policies related to police and fire-rescue can include identification of response times or other staffing goals, and characterization of standards for facilities and equipment. Beyond its General Plan, the County has developed a Community Trails Master Plan and implements its Parkland Dedication Ordinance (Chapter 1, Sections 810.101 et seq.) to plan for and fund park and recreation expansions in conjunction with population growth (County of San Diego 2021c). Other jurisdictions in the county have also conducted master planning to identify future park and recreation needs and expansion opportunities. In 2017, the California Governor's Office of Planning and Research completed the first comprehensive update to the General Plan Guidelines since 2003 (LCI 2017). The Governor's Office of Planning and Research was renamed the Governor's Office of Land Use and Climate Innovation effective July 1, 2024, under SB 164. One of the major changes includes an expanded section addressing the need for additional recycling, anaerobic digestion, composting, and remanufacturing facilities in the land use element of general plans.

Standard Urban Storm Water Mitigation Plan

Standard Urban Stormwater Mitigation Plan (SUSMP) requirements, which focused on project design requirements and related post-construction requirements, not on the construction process itself, in the San Diego region have been phased out and replaced by updated stormwater design standards. As of February 26, 2016, the County of San Diego requires new development projects to comply with its BMP Design Manual, which aligns with the Regional MS4 Permit (Order No. R9-2013-0001, as amended).

Hydromodification Management Plan

To address the effects of increased runoff from new development on stream channel stability and water quality, the County of San Diego developed a Hydromodification Management Plan (HMP) in compliance with San Diego RWQCB Order R9-2007-0001. The HMP applies to Priority Development Projects and establishes performance standards to manage changes in runoff flow rates and durations that could lead to erosion, sediment pollution, or degradation of stream habitat. The County of San Diego, along with other Copermittees, was required to implement the HMP by January 14, 2011, and to integrate its provisions into its Standard Urban Stormwater Mitigation Plan (SUSMP) for local compliance.

Low Impact Development Handbook

In 2014, the County of San Diego Department of Public Works published its Low Impact Development (LID) Handbook to provide technical guidance for implementing post-construction stormwater management consistent with the Regional MS4 Permit and the County's BMP Design Manual. The LID Handbook establishes a design hierarchy emphasizing runoff prevention and on-site management through distributed stormwater controls. The handbook assists project applicants, planners, and engineers in meeting hydromodification and water quality standards by integrating LID principles into site planning, thereby protecting downstream waters and reducing infrastructure strain.

4.15.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique characteristics of the proposed Plan.

Checklist questions for public services and utilities are included in three sections of the CEQA Guidelines Appendix G checklist: Public Services (XIV), Recreation (VXI), and Utilities and Service Systems (XIX). For purposes of this EIR, the Appendix G questions have been combined and modified. Specifically, Appendix G Section XV, Public Services, question (a), and Section XVI, Recreation, question (b) have been combined into PS-1. Section XVI, Recreation, question (a) is included as REC-1. Section XIX, Utilities and Service Systems, questions (a) and (c) are combined in U-1. Section XIX, Utilities and Service Systems, questions (d) and (e) are combined in U-2. Section XIX, Utilities and Service Systems, question (b) is included in Section 4.18, "Water Supply."

Implementation of the proposed Plan would have a significant public services and utilities impact if it would:

- **PS-1.** Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered (i.e., expanded) public facilities, in order to maintain adequate fire and police protection, emergency services, schools, libraries, and recreation facilities.
- **REC-1.** Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- **U-1.** Result in the expansion, relocation, or construction of wastewater collection and treatment, storm water drainage, electric power, natural gas, or telecommunications facilities to adequately meet projected capacity needs, the construction of which could cause significant environmental impacts.
- **U-2.** Generate solid waste in excess of state or local standards or in excess of the capacity of local infrastructure; impair the attainment of solid waste reduction goals; or fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

The analysis discloses impacts to public services, recreation, and utilities. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's public services, recreation, and utilities impacts would be worsened by climate change. Therefore, a climate change analysis for public services, recreation, and utilities impacts is not included in this section.

4.15.4 Environmental Impacts and Mitigation Measures

PS-1 RESULT IN SUBSTANTIAL ADVERSE PHYSICAL IMPACTS ASSOCIATED WITH THE PROVISION OF OR NEED FOR NEW OR PHYSICALLY ALTERED (I.E., EXPANDED) PUBLIC FACILITIES, IN ORDER TO MAINTAIN ADEQUATE FIRE AND POLICE PROTECTION, EMERGENCY SERVICES, SCHOOLS, LIBRARIES, AND RECREATION FACILITIES.

Analysis Methodology

This section analyzes impacts associated with the provision of or need for new or physically altered public facilities in order to maintain adequate public services under the proposed Plan. To maintain adequate service levels, facilities may need to expand and implement improvements to accommodate increased demand and comply with the County of San Diego's General Plan facilities standards (County of San Diego 2011). A significant impact would occur if forecasted regional growth and land use change or planned transportation network improvements required construction or expansion of facilities to maintain adequate levels of service for fire and police protection, emergency services, schools, libraries, and recreation facilities that would result in adverse physical impacts. Impacts of construction activities for new or expanded facilities are analyzed as well. Additional information about impacts on fire protection related to wildfire is included in Section 4.19, "Wildfire."

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035

regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. In these cities, higher levels of public services would be needed, while demand for public services would increase throughout the region in response to forecasted growth and increased risk from wildfires, as discussed in Section 4.19. In areas of job or housing growth, new or expanded facilities, such as police and fire stations, would be needed to protect the new infrastructure and population, while the increased population in developed areas would require both new facilities and physical expansion of existing facilities. Where growth occurs outside of existing service areas, response times to those areas would be longer and would be out of compliance with service standards unless new or expanded facilities are constructed.

According to forecasted population and housing unit growth, by 2035, schools, libraries, and recreational facilities would also experience facility deficiencies and would require new or expanded facilities to maintain current levels of service as the population increases. As the population grows, use of these facilities would increase. Schools and libraries may become overcrowded, and recreation areas may become overused and degraded if no new or expanded facilities are constructed. As a result, these facilities would not meet the County of San Diego's standard to maintain adequate service levels (County of San Diego 2011). The need for these facilities would be concentrated in residential areas because demand for these public services is driven by population growth, while demand for fire and police protection facilities and emergency services is created by both residential and nonresidential land use types.

Throughout the San Diego region, the construction of new public facilities or expansion of existing public facilities would likely be needed to maintain existing (2025) service levels for fire protection, police protection, emergency services, schools, libraries, and recreational facilities in the year 2035. Individual service providers are responsible for identifying service deficiencies based upon their adopted performance measures or services standards for determining the adequacy of existing public services and deciding when and where to expand existing facilities or provide new facilities to maintain adequate public services. Payment of school fees, as required by SB 50 for all new residential projects, would fully mitigate school impacts for a portion of the population and housing growth projected in 2035, but new or expanded schools still may be needed. Other public facilities or expansions are funded through Facilities Benefit Assessment fees, Development Impact Fees, Mello Roos fees, and other public funding mechanisms assessed at the time development projects are approved.

The provision of new facilities or expansion of existing governmental facilities would result in short-term construction-related impacts and long-term operational impacts, for resource areas such as air quality, noise, and traffic, among others. Construction-related and long-term operational impacts are typically controllable and avoided or substantially lessened by mitigation measures adopted by the implementing agency, including adherence to existing regulations and BMPs. Because details are not known about timing, location, and other project-specific information for new or expanded facilities, it cannot be guaranteed that impacts from the construction and operation of new or physically altered governmental facilities would be less than significant for all projects. Therefore, regional growth and land use change would result in a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

New transportation network improvements and programs, such as additions to existing highways, rail corridors, or local roads located in established communities, would generally require little to no increase in police and fire protection and emergency services, and would not cause deterioration of the facilities that provide police, fire, and emergency services compared to existing (2025) conditions. Construction of transportation network improvements would maintain emergency access to construction work sites and businesses, schools, hospitals, and medical facilities near construction sites. All construction activities, including roadway closures, would be coordinated with police, fire protection, and emergency services to prevent service delays or disruptions. The operation of the transportation network improvements and programs would not increase use of fire, emergency, or police services due to increased accidents, injuries, or collisions, because improvements would be required to conform to the design standards of the public agency responsible for implementation in order to minimize hazardous conflicts and conditions that could contribute to collisions and other safety hazards, as discussed in additional detail in Section 4.16, "Transportation." Transit service expansions would introduce new facilities, such as stations and Park & Ride facilities, which would require police, fire, and emergency service protection; however, the proposed Plan would not significantly affect response times or exceed the capacity of the local service providers. The project, by itself, would not preclude the need to improve public facilities from meeting their service goals and would not require the construction of new or expanded public facilities. Therefore, the need for fire, emergency, and police services and facilities would not substantially increase as a result of planned transportation network improvements and programs.

As a result, the construction and operation of transportation network improvements would require minor or no use of public services or facilities. Demand for public services and facilities is typically driven by new population, housing, and job growth as described above, and not by transportation network improvements or programs. Therefore, the construction and operation of transportation improvements and programs would not increase demand for schools, libraries, or recreational facilities such that new or physically altered facilities would be required in order to maintain adequate levels of service.

Between 2022 and 2035, additional transportation network improvements and programs are proposed in areas throughout the region that are currently served by different public service providers. However, as described above, none of the proposed transportation network improvements and programs would create new demand for public services beyond the level of demand created by new regional growth. Similarly, the transportation network improvements or programs would not create new demand for police or fire protection because that demand is driven by regional growth rather than transportation network improvements. Therefore, transportation network improvements and programs would have a less than significant impact.

2035 Conclusion

Implementation of regional growth and land use changes, but not transportation network improvements and programs, would result in substantial adverse physical impacts associated with the construction of new or expanded public facilities. Therefore, this impact (PS-1) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. In these cities, higher levels of public services would be needed, while demand for public services would increase throughout the region in response to forecasted growth and increased risk from wildfires, as discussed in Section 4.19, "Wildfire."

While some areas would experience a higher percent increase than others, there would be additional demand for public services throughout the region. In areas of new growth, where development is expanding into previously

undeveloped or rural land, existing infrastructure may not have been designed to meet the increased demand associated with population growth. In these areas, new facilities, such as police and fire stations, would be needed to protect the new infrastructure and population, while the increased population in developed areas would require both new facilities and physical expansion of existing facilities. Where growth occurs outside of existing service areas, response times to those areas would be longer and would be out of compliance with service standards unless new or expanded facilities are constructed.

The provision of new facilities or expansion of existing governmental facilities would result in short-term construction-related impacts and long-term operational impacts on resource areas such as air quality, noise, and traffic, among others. Construction-related and long-term operational impacts are typically controllable and avoided or substantially lessened by mitigation measures adopted by the implementing agency, including adherence to existing regulations and BMPs. Because details are not known about timing, location, and other project-specific information for new or expanded facilities, it cannot be guaranteed that impacts from the construction and operation of new or physically altered governmental facilities would be less than significant for all projects. Therefore, regional growth and land use change would result in a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period.

Between 2036 and 2050, additional transportation network improvements and programs are proposed in areas throughout the region that are currently served by different public service providers. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion. However, as is true in the 2035 analyses, none of the proposed transportation network improvements and programs would create new demand for public services beyond the level of demand created by new regional growth that would require new or physically altered (i.e., expanded) governmental facilities. Therefore, transportation network improvements and programs would have a less than significant impact.

2050 Conclusion

Implementation of regional growth and land use change, but not transportation network improvements and programs, would result in substantial adverse physical impacts associated with the construction of new or expanded public facilities. Therefore, this impact (PS-1) in the year 2050 is significant.

MITIGATION MEASURES

PS-1 RESULT IN SUBSTANTIAL ADVERSE PHYSICAL IMPACTS ASSOCIATED WITH THE PROVISION OF OR NEED FOR NEW OR PHYSICALLY ALTERED (I.E., EXPANDED) PUBLIC FACILITIES, IN ORDER TO MAINTAIN ADEQUATE FIRE AND POLICE PROTECTION, EMERGENCY SERVICES, SCHOOLS, LIBRARIES, AND RECREATION FACILITIES.

2035, 2050

PS-1 Implement Mitigation Measures for New/Expanded Public Service Facilities.

During planning, design, and project-level CEQA review of development of public facilities projects, the County of San Diego, cities, and other public service providers can and should implement mitigation measures to avoid or reduce significant environmental impacts associated with the construction of new or expanded public facilities. Mitigation measures should be implemented by public service providers directly responsible for the construction or expansion activities. Significant environmental impacts requiring mitigation may be identified in the following issue areas: agricultural and forestry resources; air quality; biological resources; cultural resources, greenhouse gas emissions; hydrology and water quality; noise and vibration; geology, soils, and paleontological resources;

transportation; tribal cultural resources; and water supply. Mitigation measures may be similar to those described in this EIR for construction of development projects and transportation network improvements.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant impacts associated with the construction or expansion of public facilities by 2035 and 2050 in order to maintain necessary service ratios and performance standards. Mitigation measure PS-1 would reduce the impacts of project-specific construction or expansion through project-level planning, design, and CEQA mitigation measures. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, this impact (PS-1) would remain significant and unavoidable.

REC-1 INCREASE THE USE OF EXISTING NEIGHBORHOOD AND REGIONAL PARKS OR OTHER RECREATIONAL FACILITIES SUCH THAT SUBSTANTIAL PHYSICAL DETERIORATION OF THE FACILITY WOULD OCCUR OR BE ACCELERATED.

Analysis Methodology

This section analyzes impacts associated with an increase in the use of parks and recreational facilities that would cause accelerated substantial deterioration under the proposed Plan. A significant impact would occur if forecasted regional growth and land use change or planned transportation network improvements and programs resulted in increased use of parks or other recreational facilities, in a manner that would result in or accelerate substantial physical deterioration of those facilities. To evaluate potential impacts, areas where regional growth and land use change are expected to occur and locations of planned transportation projects in 2035 and 2050 are compared to the 2022 baseline existing open space park lands (i.e., conserved lands) and recreational lands (i.e., parks) identified in Section 4.15.1, "Existing Conditions," to determine if implementation of the proposed Plan would accelerate or result in substantial physical deterioration of parks or other facilities.

Physical deterioration is likely to occur when parks and recreation facilities are overused. Overuse would likely result when a greater number of people are using the same number of parks and recreational facilities leading to the accelerated deterioration of existing facilities. Physical deterioration would also occur without the acquisition of new parks and recreational facilities or increased maintenance of existing parks and facilities or a decrease in land dedicated to open space or parkland use. However, local jurisdictions have the means to acquire, develop, and maintain parkland and recreation facilities in the future through the funding mechanisms described in Section 4.15.2, and through the laws, regulations, and local plans described in this section. Local jurisdictions have authority to acquire land or collect in-lieu fees to avoid a reduction in park acreage per capita pursuant to the Quimby Act (Government Code Section 66477).

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

In each of the communities where growth would occur, park and recreation facilities would experience an increase in their use, which would accelerate the deterioration of the existing facilities. In addition, approximately 1,777 acres of open space parks and 160 acres of recreation lands would be displaced by development in various locations throughout the region as a result of 2035 regional growth and land use change (Figure 4.15-2). Park and recreation facility expansions would offset these impacts; however, communities throughout the region may not be able to keep up with the demand for park and recreational facilities proportionate to the projected increase in population demand. Compliance with the Quimby Act would require developers to set aside land, donate conservation easements, or pay fees for park improvements, which would partially offset the projected impacts because compliance with the Quimby Act does not fully mitigate all park and recreation impacts from new development. However, there is no assurance that future park and recreation facilities would be capable of adequately serving forecasted populations, and a physical deterioration of park and recreation facilities may occur or be accelerated by 2035. Therefore, this is a significant impact.

Transportation Network Improvements and Programs

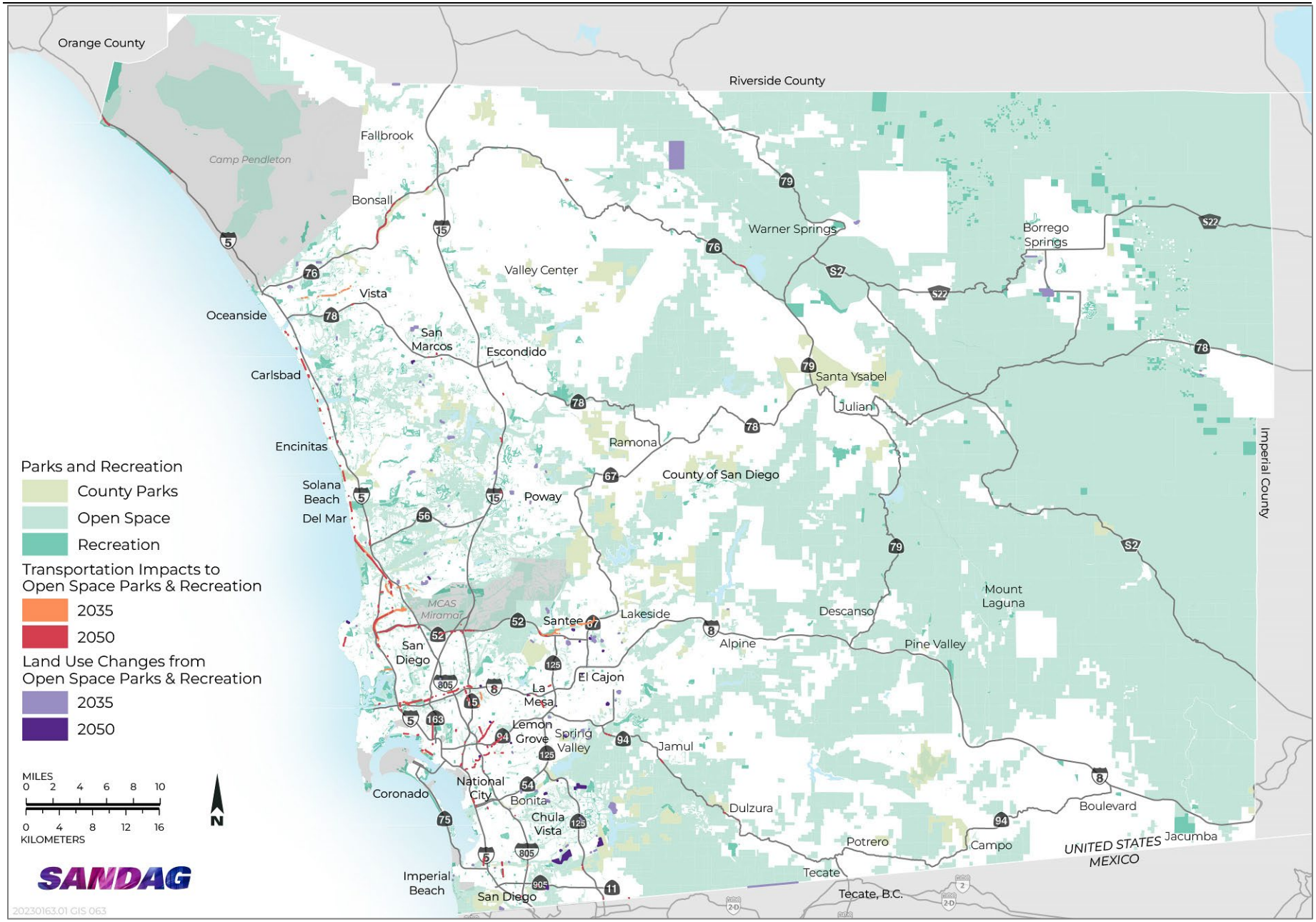
Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

None of the transportation network improvements and programs proposed to be implemented by 2035 would create new demand for park and recreation facilities beyond the level of demand created by new regional growth, except where expanded transit would result in a minor redistribution of trips and increases in recreational facility usage near transit stations or stops. However, construction of transportation network improvements such as facility widenings may require the temporary closure or rerouting of bicycle facilities. All bike lane or path closures would be properly noticed and safely detoured.

Ultimately, active transportation improvements implemented by 2035 would expand recreation opportunities such as bicycle facilities in the region, resulting in adverse physical impacts. The future transportation network improvements implemented between 2025 and 2035 would directly remove 68 acres of open space parks and 26 acres of recreation lands (Figure 4.15-2). Therefore, transportation network improvements would not lead to a substantial increased demand on existing recreational facilities but would expand active transportation facilities and remove an additional 94 acres of land designated for such uses, putting more pressure on existing facilities and contributing to their physical deterioration given there would be no assurance that future park and recreation facilities would expand to offset the acreage removals. Therefore, this is a significant impact.

2035 Conclusion

Implementation of regional growth and land use changes by 2035 would result in increased demand for recreation facilities leading to accelerated deterioration, while regional growth and transportation network improvements combined would contribute to the expansion of active recreation facilities and the physical removal of 2,031 acres of open space park and recreation lands by 2035. Collectively, these impacts would result in the substantial physical deterioration of existing park and recreation facilities. Therefore, this impact (REC-1) in the year 2035 is significant.



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.15-2 Impacts to Recreational Facilities

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. In each of the communities where growth would occur, park and recreation facilities would experience an increase in use, which would accelerate the deterioration of the existing facilities. In addition, approximately 346 additional acres of open space parks and 65 additional acres of recreation lands would be directly removed by development in various locations throughout the region as a result of regional growth and land use change between 2036 and 2050 (Figure 4.15-2). When combined with the conversion of open space parks and recreation lands by 2035, a total removal of 2,123 acres of open space parks and 225 acres of recreation lands would be expected by 2050 under the proposed Plan. Recreation facility expansions would offset these impacts; however, communities throughout the region may not be able to keep up with the demand for park and recreational facilities proportionate to the projected increase in population demand. Compliance with the Quimby Act would require developers set aside land, donate conservation easements, or pay fees for park improvements, which would partially offset the projected impacts because compliance with the Quimby Act does not fully mitigate all park and recreation impacts from new development. However, there is no assurance that future park and recreation facilities would be capable of adequately serving forecasted populations, and a physical deterioration of park and recreation facilities may occur or be accelerated by 2050. Therefore, this is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Between 2036 and 2050, additional transportation network improvements and programs are proposed in areas throughout the region. Most of the transportation network improvements would affect existing transportation facilities, such as Blue, Orange, and Green Trolley line rail grade separations; additional Managed Lanes along existing freeways and highways; improvements to regional arterials; and active transportation projects. Other planned transportation network improvements including COASTER commuter train lines 582, and 398 extensions, Streetcar Light Rail lines, and the SPRINTER extension would require acquisition of new rights-of-way.

However, as is true in the analyses above, none of the proposed 2050 transportation network improvements and programs would create new demand for park and recreation facilities beyond the level of demand created by new regional growth, with the exception of the minor redistribution of trips that may lead to increased usage of recreation facilities near transit stations and stops. Construction of the transportation network improvements, such as facility widening, may also require the temporary closure or rerouting of bicycle facilities. All bike lane or path closures would be properly noticed and safely detoured. In addition, active transportation improvements would expand recreation opportunities, such as bicycle facilities, in the region resulting in adverse physical impacts. However, the future transportation network improvements would displace 67 additional acres of open space parks and 40 additional acres of recreation lands, which, when added to the removal impacts occurring by 2035, result in a total removal of 135 acres of open space parks and 66 acres of recreation lands by 2050 (Figure 4.15-2).

Therefore, transportation network improvements would not lead to the increased use of recreational facilities but would result in the construction of new active transportation facilities and would remove land designated for such uses, putting more pressure on existing facilities and contributing to their physical deterioration given there would be no assurance that future park and recreation facilities would expand to offset the acreage removals. Therefore, this would be a significant impact by 2050.

2050 Conclusion

Implementation of regional growth and land use changes by 2050 would result in increased demand for recreation facilities leading to accelerated deterioration, while regional growth and transportation network improvements combined would contribute to the expansion of active recreation facilities and the physical removal of an additional 518 acres of open space park and recreation lands by 2050. Collectively, these impacts would result in the substantial physical deterioration of existing park and recreation facilities. Therefore, this impact (REC-1) in the year 2050 would be significant.

MITIGATION MEASURES

REC-1 INCREASE THE USE OF EXISTING NEIGHBORHOOD AND REGIONAL PARKS OR OTHER RECREATIONAL FACILITIES SUCH THAT SUBSTANTIAL PHYSICAL DETERIORATION OF THE FACILITY WOULD OCCUR OR BE ACCELERATED.

2035, 2050

REC-1 Implement Mitigation Measures for Parks and other Recreational Facilities.

During planning, design, and project-level CEQA review of development projects and transportation network improvements and programs, the County of San Diego, cities, other public service providers, and other transportation project sponsors can and should, and SANDAG shall, implement mitigation measures to avoid or reduce substantial physical deterioration of parks or other recreational facilities. Mitigation measures could include expanding or improving existing recreation facilities to accommodate additional use or building new recreation facilities.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of mitigation measure REC-1 would reduce impacts related to the adverse physical impacts of facility expansions and deterioration of existing parkland and recreational facilities in 2035 and 2050, but not to a less-than-significant level. Local jurisdictions with inadequate parkland per capita would use state regulations and local plans and ordinances to acquire land and funding for the provision of new parkland as population growth occurs. However, it cannot be assured that adequate financial resources would be available to acquire the amount of parkland needed to meet forecasted population growth and offset losses that would occur a result of regional growth, land use changes, and transportation improvements. Therefore, this impact (REC-1) would remain significant and unavoidable.

U-1 RESULT IN THE EXPANSION, RELOCATION, OR CONSTRUCTION OF WASTEWATER COLLECTION AND TREATMENT, STORM WATER DRAINAGE, ELECTRIC POWER, NATURAL GAS, OR TELECOMMUNICATIONS FACILITIES TO ADEQUATELY MEET PROJECTED CAPACITY NEEDS, THE CONSTRUCTION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL IMPACTS.

Analysis Methodology

This section analyzes impacts associated with the provision of or need for new or physically altered utilities facilities to maintain adequate services under the proposed Plan (aside from water supply facilities, which are evaluated separately in Section 4.18, "Water Supply"). A significant impact would occur if forecasted regional

growth and land use change or planned transportation network improvements and programs required construction, expansion, or relocation of utilities facilities that would result in adverse physical impacts.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. In these cities, higher demand for new utility infrastructure, upgraded systems or expansions would occur, while demand for utilities would also increase throughout the region in response to forecasted growth. In general, however, regional growth and land use change in urban areas would have less demand on utilities than in more rural areas that are not currently served by utility infrastructure because urban areas tend to have established utility infrastructure that can be more readily adapted to changes such as regional growth.

While population growth would result in an increase in the amount of wastewater generated, especially in the cities of San Diego, San Marcos, and Oceanside, the service providers responsible for operating the existing wastewater treatment plants outlined in Table 4.15-7 would have to maintain sufficient conveyance and treatment capacity to serve forecasted growth through 2035 in accordance with approved wastewater discharge requirements filed with SWRCB and local health ordinances. Development in existing communities would require expansion or upsizing of existing collection and treatment systems, while development in new areas would require installation of new collection and treatment systems. Development in rural residential areas would also require on-site wastewater treatment facilities, such as septic tanks.

Similarly, storm water drainage improvements would need to be constructed to serve new development and redeveloped areas to accommodate forecasted growth through 2035. Increases in impervious surfaces would increase storm water runoff, which would increase the volume or velocity of storm water flows, leading to flooding, scouring, erosion, and other drainage pattern alterations. Therefore, regional growth and land use change that results from implementation of the proposed Plan in 2035 would require the construction of new or expanded storm water drainage facilities to ensure adequate capacity for the conveyance of storm water. Development associated with the proposed Plan would have to comply with all existing regulations pertaining to drainage patterns (i.e., the local SUSMP and HMP). The storm water regulations include the requirement that post project storm water flows match the preproject flows for PDPs. When there is an increase in impervious area, this requirement would generally be achieved through the implementation of the appropriate BMPs described in the local SUSMP and HMP, and the *County Low Impact Development (LID) Handbook*. LID is an integrated site design methodology that uses small-scale detention and retention to minimize pollutants conveyed by runoff and to mimic pre project site hydrological conditions (County of San Diego Department of Public Works 2014). Furthermore, drainage systems would be upgraded and increased in size in areas determined by each MS4 operator to have inadequate conveyance capacity relative to new impervious surface to reduce impacts related to storm water runoff through their SUSMP or JURMP. Hydrologic impacts resulting from construction would be primarily addressed through compliance with the Construction General Permit as discussed in Section 4.10, "Hydrology and Water Quality."

Regional growth and land use change would increase demand for energy resources and require electricity or natural gas infrastructure relocations or improvements to serve development through 2035. As described in Section 4.6, "Energy," projected growth would trigger the need for new or expanded energy facilities, including power plants, distributed generation, electrical transmission and distribution infrastructure, and natural gas

facilities (e.g., storage, pipelines). Construction and operation of the facilities would have a range of impacts depending on the facility type, size, and location. Forecasted regional growth and land use change would primarily occur in or adjacent to areas that are already developed and that have electricity and natural gas infrastructure in place. Although this would reduce the need for construction of new facilities in other areas, the increases in demand for electricity and natural gas would result in upgrades of transmission lines, substations, and distribution and related facilities that already serve these areas to ensure that energy infrastructure adequately meets future needs. Telecommunications systems would also need to be constructed to serve new development and redeveloped areas associated with forecasted population growth and land use change through 2035. Demand for telecommunication infrastructure would require the construction of broadband cable lines, telephone lines, cellular towers, and other transmission devices. Similar to other utility infrastructure, development in existing communities would require expansion or upsizing of existing systems, while development in new areas would require installation of new systems.

Forecasted growth in 2035 in accordance with the proposed Plan would trigger the need for new or expanded wastewater treatment facilities and collection systems, storm water conveyance and treatment BMPs, electrical and natural gas facilities, and telecommunications infrastructure, which would result in short-term construction-related impacts and long-term operational impacts on resources such as air quality, noise, traffic, and water quality, among others. WDRs and existing regulations, as further described in Section 4.10, "Hydrology and Water Quality" would reduce water quality impacts of future utility construction projects. Construction-related and long-term operational impacts are typically controllable and avoided or substantially lessened by mitigation measures adopted by the implementing agency, including adherence to existing regulations and BMPs, such as those issued and enforced through SWRCB and the RWQCB. Because details are not known about timing, location, and other project-specific information for provision of new, relocated, or expanded utility systems, it cannot be guaranteed that impacts from the construction and operation of new or expanded facilities and collection systems would be less than significant for all projects. Therefore, regional growth and land use change would cause a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

While most of the transportation improvements (e.g., highway, arterial, transit, and active transportation) would occur in already urbanized areas, some improvements would require new connections and expansions of utility infrastructure and convert vacant land to impervious surfaces, resulting in increased storm water flow volume and/or velocity. As described in the "Regulatory Setting" section in Section 4.10, "Hydrology and Water Quality," engineering standards, including the Caltrans *Highway Design Manual* and county requirements, would be followed for properly controlling and conveying surface runoff and surface waters when drainage modifications are necessary for project implementation. In addition, requirements in the Municipal Storm Water Permit (Order R9-2013-0001) require that PDPs maintain pre project hydrology under postconstruction operation. This means that additional runoff volumes and peak flow discharges from new impervious areas must be attenuated to pre project levels in order to maintain hydrological conditions and not exceed storm water conveyance capacities. One of the methods for achieving this is through the implementation of the LID, as discussed above.

However, new or expanded storm water drainage facilities would be required to support the transportation network improvements by the year 2035, and any increase in the volume of storm water generated would require storm water drainage facilities with sufficient capacity downstream in channels and other drainage outlets.

Additionally, changes to drainage patterns due to transportation improvements, as further discussed under Impact HWQ-2 in Section 4.10, would necessitate the construction of storm water drainage facilities in new places where the infrastructure has not been established to meet these needs.

A number of the transportation network improvements would require relocated or new electrical or natural gas infrastructure, such as the supporting infrastructure to the Complete Corridors (i.e., enhance connectivity, including managed lanes, connectors and direct access ramps for managed lanes, transportation technology and Smart Intersection Systems (SIS), and goods movement to be implemented on freeways, highways, and rural corridors), Flexible Fleets (i.e., regional rail; light rail; streetcar; a variety of bus options, including Rapid, express, local, local circulator, rural; and an Airport Transit Connection), and various transit station improvements, such as communications equipment, signalizing systems, and security lighting. The proposed Plan would also increase the number of electric vehicles throughout the region. Construction impacts associated with the installation of electricity and natural gas connections or the relocation of existing lines are expected to be confined to trenching within rights-of-way in order to place the lines below surface. Electrical and natural gas facilities required for the planned transportation network improvements would be constructed as part of the various network improvements. Because the demand for electrical energy and natural gas associated with the transportation network improvements in the proposed Plan would be a small fraction of the regional use, new energy facilities would not be necessary beyond the infrastructure needs associated with regional growth and land use change.

The provision of new, relocated, or expanded utility infrastructure in conjunction with the transportation network improvements in the proposed Plan in 2035 would result in short-term construction related impacts and long-term operational impacts on such resource areas as biological resources, cultural resources, and water quality, among others. These impacts would be anticipated as a result of storm water and drainage infrastructure put in place as part of the transportation network improvements. It is not anticipated that wastewater conveyance and treatment or telecommunication systems would need to be installed or expanded to serve the 2035 transportation network. A number of the transportation network improvements would require relocated or new electrical or natural gas infrastructure, such as transit station improvements. Construction-related and long-term operational impacts are typically controllable and avoided or substantially lessened by mitigation measures adopted by the implementing agency, including adherence to existing regulations and installation of BMPs. In addition, road improvement projects included in the project, such as La Media Road Improvements or Discovery Street Improvements, have included design components of utilities and drainages to meet capacity needs as result of the project. Because most details are not known about timing, location, and other project specific information for provision of new, relocated or expanded utility systems, it cannot be guaranteed that impacts from the construction and operation of such facilities would be less than significant for individual improvements. Therefore, transportation network improvements and programs would cause a less-than-significant impact on the demand for wastewater, electrical, natural gas, and telecommunications infrastructure and a significant impact related to storm water drainage facilities.

2035 Conclusion

Implementation of regional growth and land use change would result in substantial adverse physical impacts associated with the construction and operation of new, relocated or expanded utility infrastructure for wastewater, storm drain, electrical, natural gas, and telecommunications systems. Transportation network improvements and programs would cause a less-than-significant impact on wastewater, electrical, natural gas, and telecommunications infrastructure and a significant impact related to storm water drainage facilities. Therefore, the impact (U-1) by the year 2035 would be significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego

(51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. In these cities, higher demand for new utility infrastructure, upgraded systems, or expansions would occur, while demand for utilities would also increase throughout the region in response to forecasted growth. In general, however, regional growth and land use change in urban areas would have less demand on utilities than in more rural areas that are not currently served by utility infrastructure.

Similar to impacts in the 2035 scenario, 2050 forecasted growth in accordance with the proposed Plan would trigger the need for new or expanded wastewater treatment facilities and collection systems, storm water conveyance and treatment BMPs, energy (i.e., electrical and natural gas) facilities, and telecommunications infrastructure, which would result in short-term construction-related impacts and long-term operational impacts on such resource areas as air quality, noise, traffic, and water quality, among others. WDRs and existing regulations, as further described in Section 4.10, "Hydrology and Water Quality," would reduce water quality impacts of future utility construction projects. Construction-related and long-term operational impacts are typically controllable and avoided or substantially reduced by mitigation measures adopted by the implementing agency, including adherence to existing regulations and BMPs, such as those issued and enforced through SWRCB and the RWQCB. Because details are not known about timing, location, and other project-specific information for provision of new or expanded utility systems, it cannot be guaranteed that impacts from the construction and operation of new or expanded facilities and collection systems would be less than significant for all projects. Therefore, regional growth and land use change would cause a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

The provision of new or expanded utility infrastructure from 2036 to 2050, in particular storm water drainage associated with the transportation network improvements in the proposed Plan, would result in short-term construction-related impacts and long-term operational impacts on such resource areas as biological resources, cultural resources, and water quality, among others. These impacts would be anticipated as a result of storm water and drainage infrastructure put in place as part of the transportation network improvements. It is not anticipated that wastewater conveyance and treatment or telecommunication systems would need to be installed or expanded to serve the 2050 transportation network. As in the 2035 analysis, construction-related and long-term operational impacts are typically controllable and avoided or substantially reduced by mitigation measures adopted by the implementing agency, including adherence to existing regulations and installation of BMPs. Because details are not known about timing, location, and other project-specific information for provision of new or expanded utility systems, it cannot be guaranteed that impacts from the construction and operation of such facilities would be less than significant for all projects. Therefore, transportation network improvements and programs would cause a less-than-significant impact on wastewater, electricity, natural gas, and telecommunications infrastructure and a significant impact related to storm water drainage facilities.

2050 Conclusion

Implementation of regional growth and land use change by 2050 would result in substantial adverse physical impacts associated with the construction and operation of new or expanded utility infrastructure for wastewater, storm drain, and telecommunications systems. Transportation network improvements and programs would cause a less-than-significant impact on wastewater, electricity, natural gas, and telecommunications infrastructure and a significant impact related to storm water drainage facilities. Therefore, the impact (U-1) by the year 2050 would be significant.

MITIGATION MEASURES

U-1 RESULT IN THE EXPANSION, RELOCATION, OR CONSTRUCTION OF WASTEWATER COLLECTION AND TREATMENT, STORM WATER DRAINAGE, ELECTRIC POWER, NATURAL GAS, OR TELECOMMUNICATIONS FACILITIES TO ADEQUATELY MEET PROJECTED CAPACITY NEEDS, THE CONSTRUCTION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL IMPACTS.

2035, 2050

U-1a Implement Mitigation Measures for New/Expanded Wastewater, Storm Water, Electrical, Natural Gas, and Telecommunications Facilities Associated with Development Projects.

During planning, design, and project-level CEQA review of development projects, the County of San Diego, cities, and other wastewater, storm water, and telecommunications management agencies can and should apply necessary mitigation measures to avoid or reduce significant environmental impacts associated with the construction or expansion of new or expanded facilities. Mitigation measures should be implemented by utilities management agencies directly responsible for the approval and construction of new or expanded facilities. Significant environmental impacts requiring mitigation may be identified in the following resource areas: air quality; biological resources; cultural resources; energy; greenhouse gas emissions; hydrology and water quality; noise and vibration; geology, soils, and paleontological resources; transportation; tribal cultural resources; and water supply. Mitigation measures may be similar to those described in this EIR for construction of development projects.

U-1b Implement Mitigation Measures for New/Expanded Storm Water Facilities Associated with Transportation Network Improvements.

During planning, design, and project-level CEQA review of transportation network improvements, SANDAG shall, and other transportation project sponsors can and should, be required to implement storm water BMPs during planning, design, project-level CEQA review, and project construction. Measures include, but are not limited to, implementation and construction of sand filters, bio strips, bioswales, detention basins, storage vaults, and infiltration basins, which would reduce pollutant runoff into the storm drain system.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant impacts associated with the construction or expansion of utility systems and facilities in 2035 and 2050 in order to serve areas where population growth and transportation network improvements are located. Mitigation measures U-1a and U-1b would reduce the impacts of project-specific construction or expansion through project-level planning, design, and CEQA mitigation measures. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, the impact (U-1) would remain significant and unavoidable.

U-2 GENERATE SOLID WASTE IN EXCESS OF STATE OR LOCAL STANDARDS OR IN EXCESS OF THE CAPACITY OF LOCAL INFRASTRUCTURE; IMPAIR THE ATTAINMENT OF SOLID WASTE REDUCTION GOALS; OR FAIL TO COMPLY WITH FEDERAL, STATE, AND LOCAL MANAGEMENT AND REDUCTION STATUTES AND REGULATIONS RELATED TO SOLID WASTE.

Analysis Methodology

This section analyzes whether the generation of solid waste associated with implementation of the proposed Plan would exceed the capacity of local infrastructure and services or fail to comply with statutes and regulations related to solid waste. A significant impact would occur if forecasted regional growth and land use change or planned transportation network improvements and programs either result in generation of solid waste that exceeded the capacity of landfills or caused a failure to comply with federal, State, or local goals or standards,

which include demonstrating at least 15 years of remaining disposal capacity in landfills and diverting an increasing percentage of waste streams over time (County of San Diego 2011). To evaluate potential impacts, expected increases in solid waste generation are compared to available permitted landfill capacity and applicable standards, waste reduction goals, and management statutes.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Regional growth forecasted to occur between 2022 and 2035 would produce both C&D debris and municipal solid waste during operations. It is anticipated that the majority of construction-phase C&D debris would likely be diverted, while lower diversion rates are expected during operation of new developments. Existing programs, policies, and practices in place throughout the region would continue to reduce the rate of solid waste generation (amount per person or per employee) and divert a percentage of solid waste from landfills to recycling facilities. By 2035, Borrego Landfill and Sycamore Landfill would be the only permitted landfills with remaining disposal capacity as they are estimated to reach capacity and close by the years 2046 and 2042, respectively (CalRecycle 2024a). With the projected closure of the Miramar Landfill and Otay Landfill before 2035, the County and City could still demonstrate it has more than 15 years of permitted landfill capacity at the other facilities as required by the State's Integrated Waste Management Act. However, there may not be sufficient landfill capacity in the region to accommodate forecasted regional growth through 2035. As a result, despite waste management plans in place throughout the region focused on diverting an increasing percentage of waste from landfills, forecasted regional growth would generate solid waste at a level that would likely exceed the capacity of permitted solid waste disposal facilities in the region,. Regional growth and land use change would have a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Construction of transportation network improvements that would be implemented by the year 2035 would primarily generate C&D debris and a minimal amount of municipal solid waste (i.e., associated with construction workforce and transit station operations) While much of the C&D debris materials would be processed and diverted from landfills in accordance with recycling programs and policies, small quantities of municipal solid waste produced from these construction projects would end up in landfills. The need to dispose of waste as part of the transportation network improvements would contribute to reduced capacity of landfills in the region, which may not be sufficient to accommodate the region's waste disposal needs by 2035 because the landfill's capacity may not be able to sustain the amount of solid waste disposal generated by projects under the Plan. Therefore, transportation network improvements would generate solid waste at a level that would likely exceed the capacity

of permitted solid waste disposal facilities in the region and would require new or expanded solid waste disposal facilities. Transportation network improvements and programs would have a significant impact.

2035 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs in the proposed Plan by 2035 would generate solid waste and C&D debris that may not be accommodated by the regional landfills. Although the forecasted growth and network improvements would comply with programs, policies, and practices to reduce the rate of solid waste generation, this impact (U-2) in the year 2035 would be significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. Regional growth forecasted to occur between 2036 and 2050 would produce both C&D debris and municipal solid waste during operations. It is anticipated that the majority of construction-phase C&D debris would likely be diverted, while lower diversion rates are expected during operation of new developments. Existing programs, policies, and practices in place throughout the region would continue to reduce the rate of solid waste generation (amount per person or per employee) and divert a percentage of solid waste from landfills to recycling facilities. However, all of the currently permitted landfills would be closed before 2050, and the County and cities would have to expand the permitted landfill capacities within their jurisdictions to demonstrate they have more than 15 years of permitted landfill capacity, as required by the State's Integrated Waste Management Act (CalRecycle 2024a). Because there may not be sufficient landfill capacity in the region to accommodate forecasted regional growth through 2050, forecasted regional growth would generate solid waste at a level that would exceed the capacity of permitted solid waste disposal facilities in the region, even with waste reduction measures in place. Regional growth and land use change would have a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Construction of transportation network improvements that would be implemented by the year 2050 would primarily generate C&D debris and a minimal amount of municipal solid waste (i.e., associated with construction workforce and transit station operations) While much of the C&D debris materials would be processed and diverted from landfills in accordance with recycling programs and policies, small quantities of municipal solid waste that would be produced from these construction projects would end up in landfills. The need to dispose of waste as part of the transportation network improvements would contribute to reduced capacity of landfills in the region, which may be insufficient to accommodate the region's waste disposal needs by 2050. Therefore, transportation network improvements would generate solid waste at a level that would exceed the capacity of permitted solid waste disposal facilities in the region and would require new or expanded solid waste disposal

facilities. Transportation network improvements and programs would have a significant impact on the solid waste disposal system in 2050.

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs in the proposed Plan by 2050 would generate solid waste and C&D debris that may not be accommodated by the regional landfills. Although the forecasted growth and network improvements would comply with programs, policies, and practices to reduce the rate of solid waste generation, this impact (U-2) in the year 2050 would be significant.

MITIGATION MEASURES

U-2 GENERATE SOLID WASTE IN EXCESS OF STATE OR LOCAL STANDARDS OR IN EXCESS OF THE CAPACITY OF LOCAL INFRASTRUCTURE; IMPAIR THE ATTAINMENT OF SOLID WASTE REDUCTION GOALS; OR FAIL TO COMPLY WITH FEDERAL, STATE, AND LOCAL MANAGEMENT AND REDUCTION STATUTES AND REGULATIONS RELATED TO SOLID WASTE.

2035, 2050

U-2a Implement Mitigation Measures for New/Expanded Solid Waste Facilities.

During planning, design, and project-level CEQA review of solid waste facility projects, the County of San Diego, cities, and other solid waste management agencies can and should apply necessary mitigation measures to avoid or reduce significant environmental impacts associated with the construction or expansion of new or expanded solid waste facilities. Significant environmental impacts requiring mitigation may be identified in the following resource areas: air quality; biological resources; cultural resources; energy; greenhouse gas emissions; hydrology and water quality; noise and vibration; geology, soils, and paleontological resources; transportation; tribal cultural resources; and water supply. Mitigation measures may be similar to those described in this EIR for construction of development projects.

U-2b Reduce Construction Waste.

During planning, design, and project-level CEQA review and prior to the construction or demolition of transportation network improvement projects and development projects, SANDAG shall, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions can and should, implement measures to reduce construction waste to comply with waste reduction goals identified by the state and local agencies, consisting of, but not limited to, the following:

- Ensure that source reduction techniques and recycling measures are incorporated into project construction and demolition.
- Reuse or recycle construction and demolition waste.

This mitigation measure would extend the life of existing landfills and delay the need to construct new or expanded landfills.

U-2c Reduce Operational Waste.

During planning, design, project-level CEQA review and construction of development projects, the County of San Diego, cities, and other local jurisdictions can and should integrate green building waste management measures such as those identified in the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), Energy Star Homes, Green Point Rated Homes, and the California Green Builder Program. These measures consist of, but are not limited to, the following:

- Prepare and apply a waste management plan that promotes solid waste diversion.

- Implement source reduction through (1) using materials that are more durable and easier to repair and maintain, (2) designing to generate less scrap material through dimensional planning, (3) increasing recycled content, (4) using reclaimed materials, and (5) using structural materials in a dual role as finish material (e.g., stained concrete flooring, unfinished ceilings, etc.).
- Reuse existing structures and shells in renovation projects.
- Design for flexibility through the use of moveable walls, raised floors, modular furniture, moveable task lighting, and other reusable building components.
- Develop an indoor recycling program and space.

These mitigation measures would extend the life of existing landfills and delay the need to construct new or expanded landfills.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant impacts related to the construction of new or expanded solid waste facilities in 2035 and 2050. Implementation of mitigation measure U-2a would reduce these impacts through project-level planning, design, and CEQA mitigation measures. Mitigation measures U-2b and U-2c would further reduce this impact by extending the life of existing landfills and delaying the need to construct new or expanded landfills or landfill capacity. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, this impact (U-2) would remain significant and unavoidable.

4.15.5 Cumulative Impacts Analysis

C-PS-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO PUBLIC SERVICES

C-U-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO UTILITIES

C-REC-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO RECREATIONAL RESOURCES

The area of geographic consideration for cumulative impacts on public services and utilities is Southern California. Public services and utilities are common infrastructure throughout the region, and land use change and the transportation system would influence the location and demand for future development of new or additional services and utilities across the region. The provision of public services and utilities can be linked to jurisdictions, but often service providers cover large areas spanning multiple jurisdictional boundaries. Also, while some recreational facilities are local and serve only a small neighborhood, other recreational facilities provide opportunities for the population throughout the region. Thus, it is necessary to consider the region as a whole and the overall amount of development that would generate additional pressure and demand on services, utilities, and recreation facilities.

A hybrid approach for the analysis of cumulative public services and utility impacts allows for an overarching discussion of regional impacts associated with general patterns of regional urbanization, growth, and land use change that would create new or additional demand for services, utilities, and recreation facility use, or dictate where new or expanded infrastructure is located, while also allowing for specific consideration of any projects with known impacts to public services and utilities.

Growth, land use change, and transportation system improvements occurring throughout the Southern California region would impact public services and utilities. Significant cumulative impacts related to public services and

utilities would occur if the combination of impacts from the proposed Plan and impact projections in adopted plans would cause a substantial physical deterioration of public facilities or cause substantial adverse physical impacts associated with the provision of, or need for, new or physically altered public facilities to maintain adequate fire and police protection, schools, libraries, and recreation facilities; or result in the expansion or construction of wastewater treatment, storm water drainage, electricity/natural gas, or solid waste disposal facilities to adequately meet projected capacity needs or comply with regulations, the construction of which would cause significant environmental impacts.

The plans considered and relied on for this cumulative analysis include the SCAG 2024–2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and its EIR (SCAG 2024a, 2024b). Additionally, public service or utility providers, including cities, counties, special districts, school districts, and utilities that operate in Southern California, have adopted long-term plans that forecast the demand for services and identify specific facilities projects required to meet projected demand and needs.

Impacts of the Proposed Plan

As discussed above, the regional growth associated with the proposed Plan would require or result in the construction of new public services facilities or expansion of existing facilities, due to the higher levels of public service demand. This would result in short-term construction-related impacts, as well as operational impacts, to resources such as air quality, noise, and traffic. These impacts are typically reduced through actions of the implementing agency, including adherence to existing regulations and BMPs, but are considered significant because impact mitigation to less-than-significant levels for all projects cannot be guaranteed. Therefore, as described in paragraphs above, public service and utilities impacts due to the regional growth and land use change in the proposed Plan are significant in 2035 and 2050 (Impacts PS-1, U-1, and U-2).

Implementation of transportation network improvements would require minor use of public services and utilities and would generally not cause the need for new or expanded facilities. However, transportation network improvements associated with the proposed Plan would contribute to substantial adverse physical impacts associated with the construction of new or expanded storm water facilities in 2035 and 2050 (Impact U-1) and also result in substantial adverse physical impacts associated with the construction of new or expanded solid waste facilities in 2035 and 2050 (Impact U-2).

Implementation of regional growth and land use changes, as well as transportation network improvements, would result in increased demand for recreation facilities leading to accelerated deterioration and contribute to the physical removal of open space park and recreation lands. The proposed Plan would result in the removal of 2,031 acres of open space park and recreation lands by 2035 and 518 acres by 2050. Collectively, these impacts (Impact REC-1) would result in the substantial physical deterioration of existing park and recreation facilities.

Impacts of Related Projects

Projects planned in the Southern California region, such as the Navy Old Town Campus (OTC) Revitalization Project, border/POE facility improvements, airport expansions in the San Diego region, or port/maritime improvements associated with the Port Master Plan Update, would result in impacts related to increased demand for governmental utilities, such as wastewater collection and treatment facilities, storm water drainage facilities, energy infrastructure and solid waste facilities (U.S. Department of the Navy 2021). This regional growth would require or result in the construction of new facilities or expansion of existing facilities, due to the higher levels of public service demand. For example, the environmental impact statement (EIS) for the Navy OTC Revitalization Project determined that the project would result in increased density under several alternative options that would contribute to significant additional proposed growth in dwelling units, population, jobs, and nonresidential uses over the targets contained in the applicable community plan. An additional 40.2 acres of parkland would be required to meet the City of San Diego population-based standard for parkland if the property were to transfer out of federal ownership. Other projects, such as Mt. Etna Drive Developments, would similarly contribute to increased population growth and therefore result in additional demand on public services, recreational facilities, and utilities throughout the region.

Impact Projections in Adopted Plans

The County of San Diego General Plan EIR identified significant impacts on public services and utilities associated with the construction or expansion of police protection facilities, expansion of school facilities, and library facilities. Regionally, cumulatively considerable impacts on public services and utilities would result from implementation of the County of San Diego General Plan Update (County of San Diego 2011). The SCAG 2024–2050 RTP/SCS analyzes impacts on the SCAG region up to 2050 and found that even with implementation of identified mitigation measures, significant impacts on public services would result due to the considerable effects to the cumulative response times of police, fire, and emergency services in Southern California; direct and cumulative demand for school facilities; loss of open space and recreational lands; demand on existing recreational facilities; and direct and cumulative demand for solid waste services in the SCAG region (SCAG 2024a). Thus, regionally cumulatively considerable impacts on public services and utilities would result from implementation of the SCAG 2024–2050 RTP/SCS.

Throughout Southern California, individual cities and counties have also adopted general plans that guide growth and land use changes within their jurisdictions. Moreover, individual service providers, including cities, counties, special districts, school districts, and utilities, that operate in the Southern California region have adopted long-term plans that forecast the demand for services and identify specific facilities projects that will be required to meet projected needs. Each individual service provider, including cities, counties, special districts, school districts, and utilities, that has an adopted general plan or other long-term plan that forecasts the demand for services and identifies projects that will be required to meet projected needs, is responsible for conducting the appropriate environmental assessment, identifying impacts, and implementing mitigation measures to reduce impacts when possible. Construction-related and operational impacts are typically reduced through actions of the implementing agency, including adherence to existing regulations and BMPs, but are considered significant because impact mitigation to less-than-significant levels for all projects cannot be guaranteed.

Cumulative Impacts and Impact Conclusions

2035

As described above, impacts from construction of expanded or new facilities for public services and utilities from the proposed Plan and adopted plans in the Southern California region would be cumulatively significant in 2035 due to the compounding strain on public services, utilities, and recreational resources from regional growth. Because cumulative public services and utilities impacts, including solid waste and recreational resources impacts, throughout the Southern California region by 2035 would be significant, and because the proposed Plan's incremental impacts are significant, the proposed Plan's incremental public services and utilities impacts are also cumulatively considerable and thus significant (Impact C-PS-1, Impact C-U-1, and Impact C-REC-1).

2050

While many regional plans or projection impacts do not extend until the year 2050, public service and utility impacts, similar in nature to those identified for earlier years, would likely persist and also occur in 2050. As described above, impacts from construction and of expanded or new facilities for public services, utilities, and recreational resources from the proposed Plan and adopted plans in the Southern California, including solid waste, would be cumulatively significant in 2050 due to the compounding strain on public services, utilities, and recreational resources from regional growth. Because cumulative public services and utilities impacts, including solid waste and recreational resources impacts, throughout the Southern California region by 2050 would be significant, and because the proposed Plan's incremental impacts are significant, the proposed Plan's incremental public services and utilities impacts are also cumulatively considerable and thus significant (Impact C-PS-1, Impact C-U-1, and Impact C-REC-1).

MITIGATION MEASURES

C-PS-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO PUBLIC SERVICES

C-U-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO UTILITIES

C-REC-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO RECREATIONAL RESOURCES

Mitigation measures to reduce impacts associated with public services and utilities as identified in previous paragraphs in this section would be applicable to cumulative impacts as well.

The previous paragraphs in this section include mitigation measures PS-1, REC-1, U-1a, and U-1b, which call for jurisdictions with responsibility for construction of public facilities, recreation facilities, wastewater treatment facilities, or storm water facilities to apply mitigation measures to avoid or reduce significant environmental impacts associated with the construction or expansion of such facilities. This section also references mitigation measure WS-1a from Section 4.18, "Water Supply," regarding the reduction of water use for construction and operation of projects to conserve water. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level.

Mitigation measure U-2a calls for the reduction of impacts from construction or expansion of solid waste facilities, and mitigation measures U-2b and U-2c would reduce solid waste volumes that would require accommodation in regional landfills through the diversion of construction waste from transportation network improvement projects or other development projects and the implementation of green building waste management measures. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level.

Similarly, the SCAG 2024–2050 RTP/SCS EIR included mitigation measures to reduce impacts on public services, such as coordination with emergency service providers, avoidance and conservation of recreation and open space areas, patterns of urban development and land use that reduce costs on infrastructure and make better use of existing facilities green building measures, source reduction and recycling for construction projects, and waste management strategies. However, even with the implementation of mitigation measures, the EIR concluded that significant and unavoidable public service impacts would result.

Consistent with the above analysis, the proposed Plan's incremental contributions to cumulative public services and utilities impacts in years 2035 and 2050 would remain significant and cumulatively considerable post mitigation due to the compounding strain on public services, utilities, and recreational resources from regional growth.

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4.16 TRANSPORTATION

This section evaluates the transportation impacts of the proposed Plan.

4.16.1 Existing Conditions

The San Diego regional transportation system is a complex and expansive multimodal network that supports the demand for personal travel and is the backbone of the region's economic base. The transportation network connects residents and visitors to places of employment, education, shopping, recreation, and residences. The transportation network is also essential for the movement of goods and continued economic development.

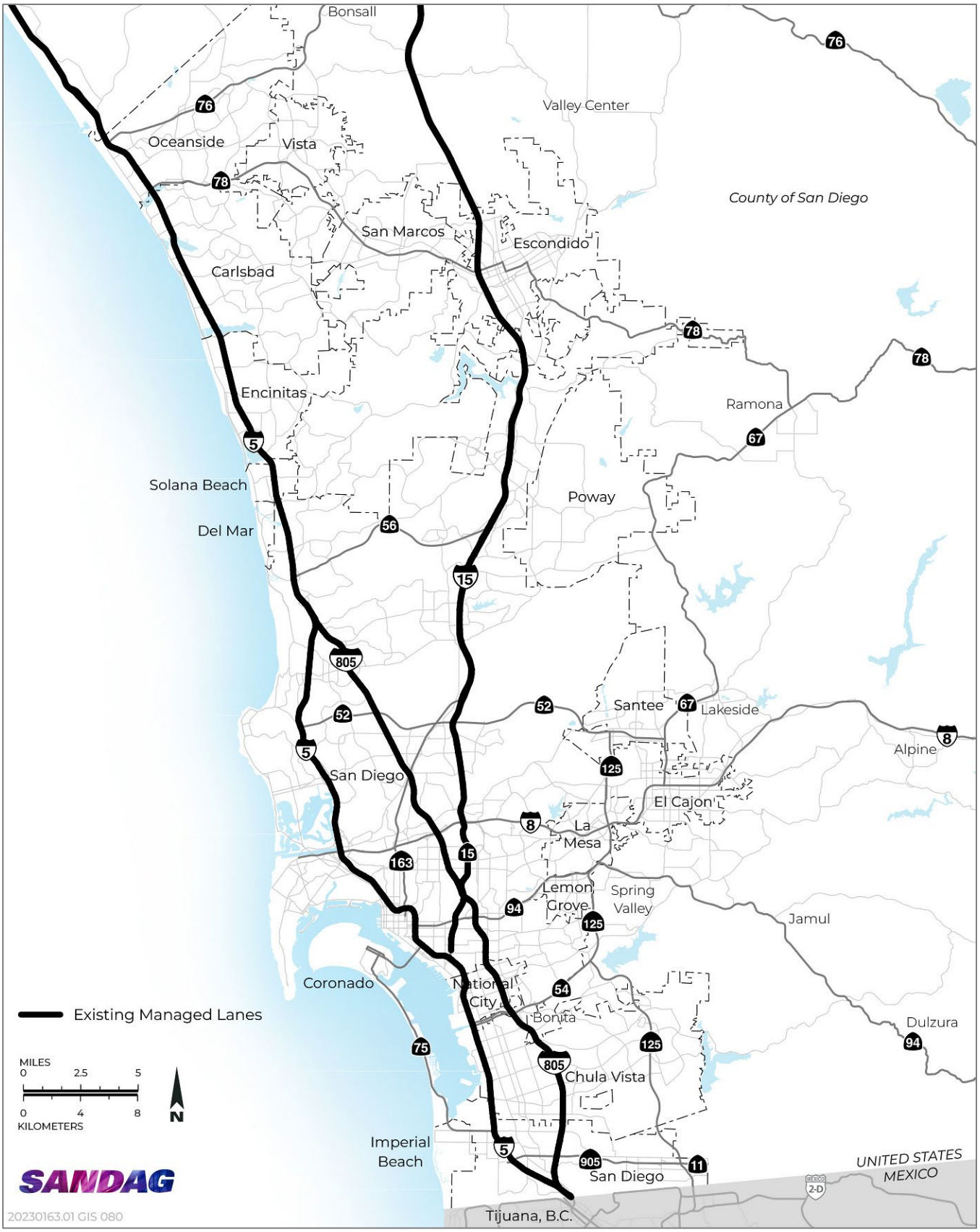
The transportation system includes interstates, state highways, arterial roadways, local roadways, public transportation systems, nonmotorized transportation facilities, maritime and aviation facilities, and land ports of entry (POEs). The regional roadway system is an interconnected network of freeways, state highways, toll roads, arterial roadways, and local roadways. The roadway network allows for the movement of personal vehicles, micromobility transport, bicycles, buses, commercial vehicles, ride-share services, and heavy trucks. The regional public transit system includes local and regional bus operations, regional and interregional commuter rail services, and light rail service. The freight railroad network includes two freight rail corridors distributing cargo and goods. Nonmotorized transportation facilities generally include walkways and bikeways. Often bikeway facilities, such as bike routes, bike lanes, and cycle tracks, are located within the roadway right-of-way. Shared facilities, such as multiuse paths, are generally not associated with a roadway facility. The airport system consists of commercial, general, and military aviation facilities serving passenger, freight, business, recreational, and military needs. Individual components of the regional transportation network are described in the following sections.

Both the current (year 2025) and baseline year (year 2022) conditions of the region's transportation network are discussed in the following sections. SANDAG uses a disaggregate third-generation activity based model (ABM3) which is calibrated to year-2022 conditions under its base year scenario. The ABM3 is the most up-to-date transportation forecast within the San Diego region and is the best tool in which the metrics used to evaluate effects of land use growth and transportation network improvements can be measured at a regional level, including activity and tour (trip) generation, mode split, average trip length, and vehicle miles traveled (VMT). Therefore, the majority of the transportation impact analysis presented in Section 4.16.4. "Environmental Impacts and Mitigation Measures," below, was conducted using the ABM3 and uses year 2022 as the base year scenario. Transportation conditions evolve slowly, and usually only minor changes in the network occur over a 3-year period. Therefore, as shown in the following sections, the differences between baseline year 2022 and current conditions are minor (less than 2 percent for most facility types) and would not affect the overall findings of the transportation impact analysis.

ROADWAY NETWORK

The primary purpose of the roadway network (Figure 4.16-1) is to facilitate the movement of people and goods. The roadway network within the region serves many purposes and can accommodate several modes of travel, such as buses, personal automobiles, commercial automobiles, the movement of freight, and bicycles and micromobility vehicles. Local streets and arterials traverse communities and are typically used for shorter trips, while the region's freeways and state highways provide access to major job centers, educational institutions, recreation, and travel to destinations outside the region. The regional roadway network is a complex and expansive system that is planned, designed, built, operated, and maintained by numerous agencies, such as the region's local jurisdictions, Caltrans, tribal governments, and SANDAG.

Table 4.16-1 summarizes the existing roadway network within the San Diego region.



Source: Data received from SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.16-1 Existing Roadway Network

Table 4.16-1 Existing Roadway Facilities in the Region

Facility Type	Year 2022 Centerline Miles	Year 2022 Lane Miles	Year 2024 Centerline Miles	Year 2024 Lane Miles
Freeway: general purpose	335	2,417	335	2,420
Freeway: Managed Lanes	39	114	53	141
Tollway	11	48	11	48
State highways	276	641	276	641
Regional arterial network	1,045	3,773	1,046	3,792
Local roadways	2,936	6,696	2,945	6,727

Notes: centerline miles = total miles of roadway type, regardless of the number of lanes provided; lane miles = total miles of roadway multiplied by the number of lanes along each segment.

Transportation forecast activity-based model (ABM3) (which is calibrated to year-2022) and year 2024 transportation network.

Source: Data provided by SANDAG in 2025.

As shown in Table 4.16-1, the total tollway and state highway centerline miles and lane miles did not increase between year 2022 and year 2024. Freeway general purpose lanes, regional arterials, and local roadways saw only a nominal increase in both centerline miles (less than 0.3 percent) and lane miles (0.5 percent) over the same period. Finally, freeway managed lanes saw a more substantial increase of 35.2 percent in centerline miles and an increase of 23.7 percent in total lane miles over this period.

Public Transit

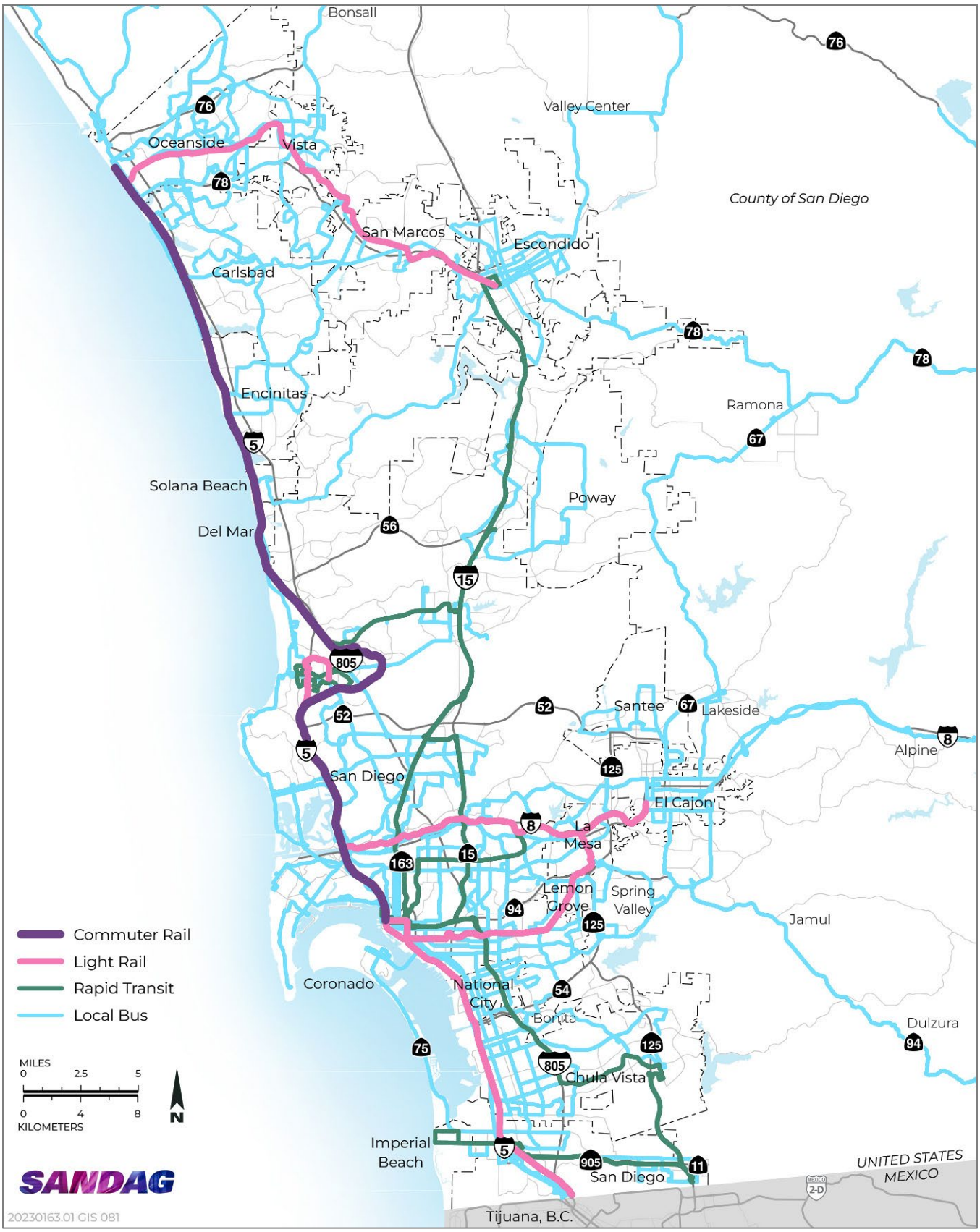
The primary forms of public transportation throughout the San Diego region are commuter rail, light rail, bus rapid transit (*Rapid*), and local and express bus services. Additionally, on-water transit services, such as ferries and water taxis, are operated in the San Diego Bay, connecting between Downtown San Diego and Coronado. The existing transit network is depicted in Figure 4.16-2. Generally, these forms of public transit are centered in the western portion of the region, near the more densely populated coastal communities and commuter corridors. Many of the less dense and rural communities in the eastern portion of the region have limited access to regional public transportation. The commuter rail, light-rail, *Rapid*, and bus services within the region are primarily provided by Metropolitan Transit System (MTS) and North County Transit District (NCTD).

Light Rail

Throughout the San Diego region, light-rail service is provided by NCTD and MTS. The NCTD SPRINTER is a diesel-powered, light-rail system that travels a 22-mile east–west route serving 15 stations and connecting Oceanside, Vista, San Marcos, and Escondido generally along the SR 78 corridor. The SPRINTER operates every 30 minutes in each direction, Monday through Friday, from approximately 4 a.m. until 9 p.m. Trains on Fridays and Saturdays run later, and trains on Saturdays, Sundays, and holidays operate every 30 minutes from 10 a.m. until 6 p.m. and hourly before and after those hours (NCTD 2024a).

The San Diego Trolley is a light-rail passenger service operated by San Diego Trolley, Inc., which is owned by MTS. The San Diego Trolley system consists of four lines, including the UC San Diego Blue Line, Orange Line, Sycuan Green Line, and the County Connector Copper Line. There are 53 trolley stations within the region, connected by 54.3 miles of rail. Each of these four lines is described below (MTS 2025a):

- The UC San Diego Blue Line currently covers 26.3 miles and includes 32 stations. The route extends between UC San Diego/Westfield University Town Center (UTC) and the San Ysidro transit station at the United States–Mexico border. The route also accesses the Old Town Transit Station, Santa Fe Depot, National City, and Chula Vista. The Blue Line currently runs at 7- to 8-minute headways during peak periods and 15-minute headways in off-peak periods Monday through Sunday. Late night service (after 11 p.m.) on this line runs every 30 minutes.



Source: Data received from SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.16-2 Existing Transit Network

- The Orange Line currently covers 17.1 miles and includes 18 stations, extending from the San Diego Courthouse Station in Downtown San Diego to the El Cajon Transit Center via southeastern San Diego, Lemon Grove, and La Mesa. The Orange Line currently runs at 7- to 8-minute headways during peak periods (between the Spring Street Station and City College Station) and 15-minute headways in off-peak times until 8:15 p.m. when headways increase to 30 minutes Monday through Friday. On Saturdays and Sundays, the Orange Line currently runs at 15-minute headways during midday, and 30-minute headways during mornings and evenings.
- The Sycuan Green Line services 19.8 miles and includes 24 stations, operating from the 12th and Imperial Station in Downtown San Diego to the Old Town Transit Center via the bayside alignment, then east to the 70th Street station near San Diego State University (SDSU). The Green Line operates a 15-minute service during peak times Monday through Friday and midday Saturdays, and a 30-minute service during other times of the day.
- The County Connector Copper Line currently covers 3.8 miles and includes 4 stations, extending from the El Cajon Transit Center to Santee Town Center. The Copper Line replaced existing Green and Orange Line service, east of the El Cajon Transit Center, for the purpose of reducing the impacts of a previous single-track segment and improving service reliability between El Cajon Transit Center and Santee. The Copper Line runs at 15-minute headways during peak times Monday through Friday and midday Saturdays, and a 30-minute service during other times of the day.

Rapid

MTS currently operates nine *Rapid* bus routes within the southern portions of the county. It should be noted that the current *Rapid* bus routes partially operate within an exclusive right-of-way, as is more typical with bus rapid transit services. The current *Rapid* bus services provide high-frequency, limited-stop bus service from various transit centers within the region to downtown or one of the major universities in the region (UC San Diego, SDSU, and the University of San Diego).

Bus

MTS operates almost 100 fixed bus routes and ADA complementary paratransit service throughout its service area. MTS's service area primarily covers the central and southern portions of the San Diego region. Fixed-route bus service includes local, urban, express[1], premium express, and rural routes (MTS 2025b). Bus services are provided by the San Diego Transit Corporation, which is owned by MTS. MTS bus service extends from the international border to as far north as Escondido. All MTS buses are equipped with a lift or a ramp for boarding mobility impaired riders.

The NCTD bus system, known as the BREEZE, serves the northern San Diego region. BREEZE operates approximately 30 bus routes from Oceanside south to La Jolla/UTC, southeast to Escondido, northeast to the Pala community, and north to Fallbrook (NCTD 2024b). NCTD also provides an on-demand FLEX bus service, which includes routes to Ramona and Marine Corps Base (MCB) Camp Pendleton. The NCTD service area also includes four Native American reservations governed by the Rincon Band of Luiseño Indians, Pala Band of Mission Indians, Pauma Band of Luiseño Indians, and San Pasqual Band of Diegueno Mission Indians. NCTD's BREEZE buses are all accessible to persons with disabilities. All buses are equipped with a lift or ramp to assist in boarding mobility-impaired riders. Finally, NCTD services include the LIFT paratransit service, which provides origin-to-destination service for people with disabilities unable to use BREEZE buses or rail services.

Passenger and Regional Commuter Rail

Throughout the San Diego region, passenger and commuter rail services are provided by Amtrak, NCTD, and Metrolink, all of which travel along different segments of the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor. The LOSSAN Rail Corridor is the second-busiest intercity passenger rail corridor in the United States and the busiest state-supported Amtrak route. The LOSSAN Rail Corridor service includes 41 stations and more than 95 daily passenger trains, with an annual ridership of nearly 1.6 million on Amtrak Pacific Surfliner intercity trains and 3.74 million on Metrolink and COASTER commuter trains (OCTA 2024).

[1] Express bus routes are typically longer routes with fewer stops to allow for shorter travel times over longer distances. Unlike Rapid bus routes, express bus routes do not operate within an exclusive right-of-way.

Amtrack's Pacific Surfliner provides intercity connections between downtown San Diego, Orange County, Los Angeles, Santa Barbara, and San Luis Obispo. It also connects to the nationwide rail system via Union Station in Los Angeles. The Pacific Surfliner offers 10 daily round trips from San Diego to Los Angeles Union Station, and 5 round trips from Los Angeles to Goleta (just north of Santa Barbara), with 2 daily trips extending to San Luis Obispo.

The COASTER is operated by NCTD and also travels along the LOSSAN Rail Corridor. The COASTER provides passenger commuter rail service with eight stops along 41 miles of track between Downtown San Diego and Oceanside. The COASTER primarily serves commuters on weekdays, with more than 20 trains scheduled during typical commute hours. The COASTER operates 7 locomotives and 28 bi-level coaches (NCTD 2024c).

Metrolink is a regional passenger commuter rail service, formed by the Southern California Regional Rail Authority, that operates within the LOSSAN Rail Corridor. The Metrolink system consists of nine routes with 67 stations along 437.5 route miles. Metrolink provides service to 25,053 average weekday riders. The only Metrolink station within the San Diego region is located in Oceanside, and it runs along the Orange County Line. The Orange County Line (which runs from Oceanside to Los Angeles) has 15 stations and 87.2 route miles, with an average of 4,802weekly riders (Metrolink 2025).

Micro-transit

Micro-transit is a service that offers flexible routing or flexible scheduling of minibus vehicles, which are typically electric powered. Micro-transit serves a range of 1.5-4.5 miles carrying up to 15 passengers. NEVs typically have a service range of 0.5 to 2 miles, carry up to 6 passengers, and are permitted to operate on streets with speed limits of 35 miles per hour or less. Both micro-transit and NEVs are typically requested with a smartphone app and pick-up and drop-off activities occur anywhere within a defined service area, at designated locations, or a hybrid of the two.

Free Ride Everywhere Downtown (FRED), which is operated by Circuit, is a local example of on-demand (via cell phone app) curb-to-curb service anywhere within Downtown San Diego. There are currently no publicly operated stop-to-stop micro transit services in the San Diego region.

Tables 4.16-2 and 4.16-3 summarize the year 2022 and current transit services provided within the San Diego region, respectively.

Table 4.16-2 Year 2022 Transit Services in the Region

Agency	Type	Total Number of Routes	Total Route Miles	Total Number of Stops	Total Number of Major Stops	Average Daily Passengers[1]	Annual Passengers[2]
MTS	Light rail	3	72	63	63	90,745	29,739,499
	Rapid	9	155	69	38	13,051	4,021,024
	Bus	86	853	2,231	179	77,065	23,663,562
	Total	98	1,080	2,363	280	180,861	57,424,085
NCTD	Commuter rail	1	41	8	8	1,746	588,409
	Light rail	1	22	15	15	4,104	1,322,380
	Rapid	1	6	11	0	N/A	N/A
	Bus	35	441	901	0	12,639	3,944,001
	Lift	N/A	N/A	N/A	0	244	72,376
	Total	38	510	935	23	18,733	5,927,166
Amtrak	Passenger Rail	1	41	4	4	4,477	1,634,087

[1] National Transit Database FY 24.

[2] Passenger Count Program (PCP) FY22 and FY24.

Transportation forecast activity-based model (ABM3) (which is calibrated to year-2022) and year 2024 transportation network.

Source: Data provided by SANDAG in 2025.

Table 4.16-3 Year 2024 Transit Services in the Region

Agency	Type	Total Number of Routes	Total Route Miles	Total Number of Stops	Total Number of Major Stops	Average Daily Passengers[1]	Annual Passengers[2]
MTS	Light rail	4	72	63	63	121,002	39,649,485
	Rapid	10	155	69	38	21,290	6,364,477
	Bus	85	853	2,231	179	96,329	29,354,733
	Total	99	1,080	2,363	280	238,621	75,368,695
NCTD	Commuter rail	1	41	8	8	2,521	852,993
	Light rail	1	22	15	15	5,761	1,822,849
	Rapid	1	6	11	0	N/A	N/A
	Bus	36	441	901	0	15,887	4,924,682
	Lift	N/A	N/A	N/A	0	376	105,244
	Total	39	510	935	23	24,545	7,705,768
Amtrak	Passenger Rail	1	41	4	4	5,436	1,984,069

[1] National Transit Database Fiscal Year (FY) 24

[2] Passenger Count Program (PCP) FY22 and FY24

Transportation forecast activity-based model (ABM3) (which is calibrated to year-2022) and year 20XX 2024 transportation network.

Source: Data provided by SANDAG in 2025.

As shown in Tables 4.16-2 and 4.16-3, the total route miles of transit service did not change between 2022 and 2024, across all three service providers.

ACTIVE TRANSPORTATION

Active transportation facilities within the region include bicycle facilities, such as bike routes, bike lanes, cycle tracks, and multiuse paths, as well as pedestrian facilities, such as sidewalks, pedestrian bridges, and pathways. Active transportation also includes micromobility transport, such as electric scooters (e-scooters), e-bikes, bikeshare, and neighborhood electric vehicles (NEVs).

Bicycle Facilities

The San Diego regional bicycle network is composed of the following five main facility types:

- **Class I Multi-Use Path***:* Also referred to as a bike path or multiuse path, Class I facilities provide a completely separated right-of-way designed for the exclusive use of bicycles and pedestrians with crossflows by motorists minimized. Multiuse paths can provide connections where roadways are non-existent or unable to support bicycle travel. The minimum paved width for a two-way, multiuse path is considered to be an 8-foot paved pathway with a 2-foot-wide graded area adjacent to either side of the pavement (12 feet total width).
- **Class II Bike Lane:** This facility provides a striped lane designated for the exclusive or semi-exclusive use of bicycles, with through travel by motor vehicles or pedestrians prohibited. Bike lanes are one-way facilities located on either side of a roadway. Pedestrian and motorist crossflows are permitted across bike lanes at intersections and driveways. Additional enhancements, such as painted buffers and signage, may be applied. The minimum bike lane width is considered to be 5 feet.
- **Class III Bike Route:** This facility provides shared use of traffic lanes with cyclists and motor vehicles, identified by signage and/or street markings such as "sharrows." Bike routes are best suited for low-speed, low-volume roadways with an outside lane of 14 feet or greater. Bike routes provide network continuity or designate preferred routes through corridors with high demand.

- **Class IV Cycle Track:** Also referred to as separated or protected bikeways, cycle tracks provide a right-of-way designated exclusively for bicycle travel within the roadway. Cycle tracks are physically protected from vehicular traffic both horizontally, through a buffered area, as well as vertically, utilizing treatments such as grade separation, flexible posts, bollards, railings, art pieces, or on-street parking. Cycle tracks can provide for one-way or two-way travel. A one-way cycle track has a minimum 5-foot-wide travel lane with a 3-foot buffer (8 feet in total), while a two-way cycle track has a minimum 8-foot-wide travel way with a 3-foot buffer (11 feet in total) (Caltrans 2025a).
- **Bike Boulevard:** Bike Boulevards are streets with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority. Bike Boulevards use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets. It should be noted that Bike Boulevards are not separately distinguished in the Caltrans Highway Design Manual from Class III Bicycle Routes. However, the National Association of City Transportation Officials' *Urban Bikeway Design Guide* does recognize Bike Boulevards as a separate form of classification.

There are approximately 3,477 lane miles of existing bikeway facilities in the region, as detailed in Table 4.16-4. Class II facilities are the predominant type of bikeway at roughly 66.6 percent of the total, followed by Class III facilities at 20.3 percent. Class I facilities make up about 10.5 percent of the regional total, and Class IV Cycle Tracks make up 2.1 percent. Figure 4.16-3 shows the existing bicycle network throughout the San Diego region.

Table 4.16-4 Existing Bicycle Facilities in the Region

Facility Type	Year 2022 Lane Miles	Year 2022 Percentage of Total	Existing (2024) Conditions Lane Miles	Existing (2024) Conditions Percentage of Total
Class I Multi-Use Path	354	10.4%	366	10.5%
Class II Bike Lane	2,284	66.8%	2,316	66.6%
Class III Bike Route	722	21.1%	707	20.3%
Class IV Cycle Track	45	1.3%	72	2.1%
Bike Boulevard	15	0.4%	16	0.5%
Total	**3,420**	**100.0%**	**3,477**	**100.0%**

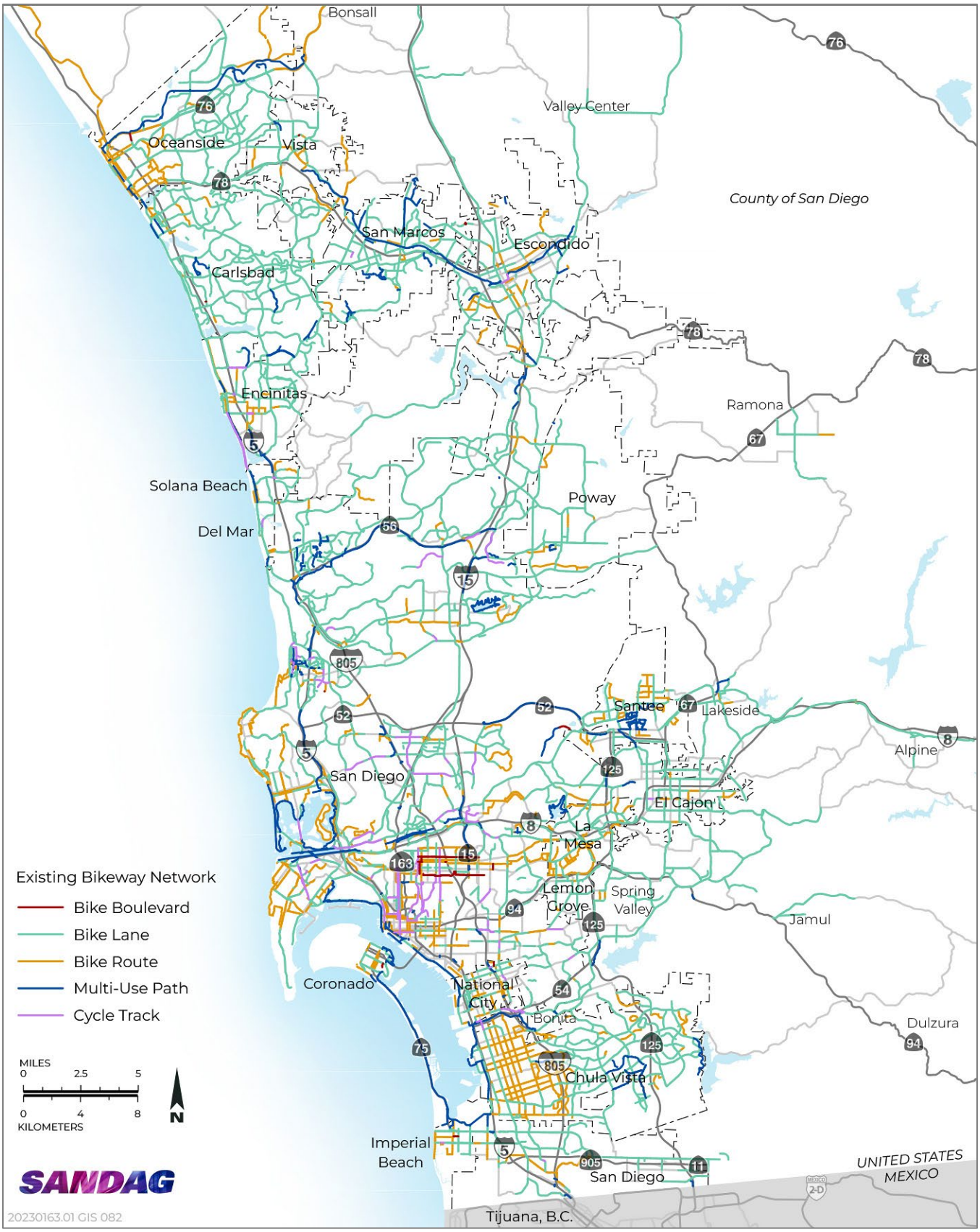
Source: Data provided by SANDAG in 2025; SANGIS.

As shown in the table, the ratio of facility types stayed rather consistent between 2022 and 2024; however, there was an 1.6 percent increase in the lane miles of facilities over this same period.

Micromobility

Micromobility refers to small, lightweight travel devices that generally travel short distances at low speeds. In the San Diego region, popular micromobility devices include e-bikes, e-scooters, and NEVs. Similar to bicycles, e-scooters are not allowed to be ridden on the sidewalk and are required to either be within a bike facility, such as a bike lane, or in the outside travel lane of the roadway.

A NEV is a small electric vehicle that typically operates within a defined service area and fulfills trips that cover a short distance, typically less than 2 miles. NEVs help to facilitate connections to and from transit stations and provide users with an alternative to driving for short trips. NEVs are generally available to rent through public sharing programs or through personal ownership. There are currently no NEV-sharing programs operating within the San Diego region. NEVs are allowed to be driven within the travel lane of roadways with speed limits that do not exceed 35 miles per hour (mph) (California Vehicle Code Sections 385.5 and 21260); however, they generally have a maximum speed of 25 mph. Along higher speed roadways, NEVs are permitted within the bike lane, if adequate width is provided, or within designated facilities.



Source: Data received from SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.16-3 Existing Bicycle Network

There are currently no app based or regional providers for e-bike or e-scooter rentals within the San Diego Region. However, localized shop-based rentals for e-bikes and e-scooters are available within the downtown and beach communities.

Pedestrian Facilities

Walking is also a part of an active transportation network. Pedestrian facilities primarily include sidewalks and crosswalks associated with arterials and roadways, as well as pedestrian bridges and other connections across highways and rail facilities. Generally, most major public roadways within the incorporated jurisdictions of the San Diego region include sidewalk facilities along both sides. Local jurisdictions have the authority to implement their own sidewalk requirements and standards, as long as they are consistent with the minimums set forth the American Disabilities Act (ADA). Additionally, most signalized intersections within the region include crosswalks on legs in which pedestrians are allowed cross, as well as pedestrian curb ramps. The pedestrian ramp requirements included in the ADA has changed the multiple times over the last 20 years, including the most recent update in 2023. As such, a portion of the existing pedestrian ramps within the San Diego region no longer meet current ADA standards. However, any ramp that does not currently meet ADA standards is required to be improved to meet the current standards as part of any construction or improvements at the intersection or along the adjacent roadway. Therefore, non-compliant ramps will be updated overtime, as well as in conjunction with any improvement included in the proposed Program that occur at a non-compliant ramp location.

Trail facilities are also considered part of the pedestrian network. The trail facilities in the San Diego region are further described and analyzed in Section 4.15, "Public Services, Recreation, and Utilities," of this EIR, along with other recreational facilities.

PARKING

On- and off-street parking within the San Diego region is generally regulated within each local jurisdiction's municipal code. Generally, local jurisdictions within the San Diego region require that a minimum number of parking spaces be provided on-site and directly adjacent to the land use in which they support. Typically, the minimum number of parking spaces is determined based on the type and size of land use in which they are intended to serve. Under specific circumstances (such as urban core areas), jurisdictions will typically allow for parking to be located in a centralized, shared, off-site location, that is within a specific distance of the uses in which it serves. These type of centralized shared parking strategies are generally most effective in dense and mixed-use areas with land uses that have offsetting times of peak parking demand. As an example, the parking demand for commercial and office uses typically occurs in the middle of the day and these uses have little to no demand at night. Conversely residential uses have lower parking demands during the daytime but experience their peak demand at night. Centralized shared parking programs allow jurisdictions to more efficiently accommodate the parking demand of both uses by sharing the same pool of parking spaces between both uses. The commercial demand fills the spaces during the daytime, while the residential uses fill those same spaces during the night; thus, reducing the overall number of spaces needed to accommodate both uses.

The State of California adopted AB-2097 in September 2022, this bill restricts jurisdictions from imposing parking minimums for most land uses if the project is located within one-half mile of public transit. As such, land uses within these areas are no longer subject the local jurisdictions parking requirements. Finally, Caltrans also provides Park & Ride locations at strategic points along the region's freeway network, as well as joint locations, with transit agencies (MTS and NCTD), at major transit stations.

AIRPORTS

The San Diego region is home to 16 public-use and military airports, as shown in Figure 4.9-2 and discussed further in Section 4.9, "Hazards and Hazardous Materials." Located adjacent to Downtown San Diego, the San Diego International Airport (SDIA) is the busiest single-runway commercial service airport in the nation. The airport served approximately 15.6 million passengers in 2021 and hosted 16 passenger carriers.

Other regional airports include Oceanside Municipal Airport, McClellan-Palomar Airport, Montgomery Field, Gillespie Field Airport, and Brown Field Municipal Airport. Rural airfields, generally located in the eastern portion of the San Diego region, are Fallbrook Community Airpark, Ramona Airport, Borrego Valley Airport, Ocotillo Airport, Agua Caliente Airport, and Jacumba Airport. Military airfields in the region are Marine Corps Air Station Camp Pendleton, Marine Corps Air Station Miramar, Naval Air Station North Island, and Naval Outlying Field Imperial Beach (SDIA 2021).

GOODS MOVEMENT AND FREIGHT

The movement of goods and freight throughout the San Diego region is an important component to the region's transportation operations. The San Diego region's location is critical in the international transport of goods through multiple international POEs, with Mexico to the south and the Ports of Los Angeles and Long Beach to the north. The San Diego region is also home to two international marine terminals: the National City Marine Terminal (NCMT) and the Tenth Avenue Marine Terminal (TAMT).

Truck

The predominant mode in San Diego's diverse and expansive goods movement network is commercial trucking. Trucking has played a pivotal role in enabling the region to harness the economic benefits of growing international trade. In 2019, Mexico became the United States' top overall trade partner. Currently, more than 90 percent of California–Mexico trade is moved by truck. In 2019, the Otay Mesa and Tecate POEs processed a combined $48.3 billion in total bilateral trade, and that number is expected to grow over the coming years (SANDAG 2021). The most common commodities that cross the California–Mexico border by truck are high-value items, such as electronics, medical devices, and automobiles. These commodities are expected to continue to dominate cross-border trade, especially with the passage of the United States–Mexico–Canada Trade Agreement. International trade, however, accounts for only a portion of the goods that trucks carry through San Diego County. Freight traveling within the county or to and from other domestic locations accounts for more than 85 percent of the truck tonnage on the region's interstate freeways, highways, and local roads, which equates to approximately 50 million tons per year (SANDAG 2016).

Rail

In addition to commercial truck crossings, San Diego also has a rail freight crossing at its San Ysidro Port of Entry, where the Main Line—owned by the MTS subsidiary San Diego and Arizona Eastern Railway Company (SD&AE)—terminates. Freight on this short line is operated by the San Diego and Imperial Valley Railroad (SDIV). A defunct rail crossing, which would connect the SD&AE Main Line through the Tijuana–Tecate short line to the currently nonoperational Desert Line, also exists about 5 miles east of the Tecate POE. While accounting for only a small portion of total cross-border trade, approximately $96 million of goods pass through San Diego's rail crossings. These rail imports consist primarily of agricultural goods and raw materials, such as stone, iron, and steel.

San Diego's rail infrastructure also carries a significant amount of domestic freight. Of the approximately 3,200 rail carloads carried by SDIV in 2019, about half are transported between locations other than the international border. The region is also served by the LOSSAN Rail Corridor, which carries approximately $1 billion of freight annually by its Class I freight operator, the Burlington Northern Santa Fe (BNSF) Railway Company (NCTD 2020).

Maritime

While the majority of imports that pass through the San Diego goods movement network complete a portion of their journey on trucks or trains, many international goods arrive in the region by ship. Between the TAMT and the NCMT, more than 1.9 million metric tons of waterborne cargo are processed by San Diego's seaports annually (USACE 2022). In addition to standard shipping containers, San Diego's maritime ports are equipped to process breakbulk and refrigerated cargo. NCMT primarily handles lumber and automobiles, while TAMT receives a wider variety of goods, including fruit, sand/cement, and petroleum products. Both TAMT and NCMT have on site rail connections and are minutes away from major freeways for transport of waterborne cargo by rail or truck.

By providing the region with valuable goods and high-quality employment, the Port of San Diego is an important economic driver. A 2017 economic impact analysis found that industrial and maritime commerce at the port directly contributed 13,348 jobs and $2.65 billion in economic output to the county. With tourism activity and indirect economic benefits included, the Port of San Diego's total economic impact on the region is estimated to be more than $9.4 billion annually (Port of San Diego 2019).

Air Cargo

Another way goods enter and leave San Diego County is through its airports. In addition to being the nation's busiest single-runway commercial airport, SDIA handled more than 147,000 tons of cargo in 2021 (SDIA 2021). Mail makes up a significant portion of the cargo that arrives at the airport. Upon arrival, mail is trucked to off site sorting facilities before being sent to its final destination. Unlike the region's maritime ports, which almost exclusively processes international goods, SDIA primarily handles domestic cargo.

Pipeline

Finally, San Diego's goods movement network also includes two privately owned pipelines that bring in about 700,000 tons of aviation fuel and gasoline per year (Port of San Diego 2019).

Freight Rail

Freight rail services in the San Diego region are predominantly operated within the LOSSAN Rail Corridor by the BNSF Railway. Union Pacific Railroad trains also operate within the corridor north of the San Diego region (OCTA 2024). The LOSSAN Rail Corridor covers a six-county coastal region spanning 351 miles along the Southern California coast, with over 60 miles located in the San Diego region. More than 70 freight trains run along the LOSSAN Rail Corridor each day. As noted above in the "Public Transit" section, passenger and commuter rail services also operate within the LOSSAN Rail Corridor.

The SD&AE Rail Corridor straddles the United States–Mexico border, connecting San Diego, Tijuana, Tecate, and the Imperial Valley. The US section of the railroad is owned by MTS, and the 44.3 miles in Mexico are owned by the Mexican national railway, Ferrocarril Sonora-Baja California Railroad. The SD&AE runs on four lines (or "branches") totaling 108 miles, each of which are described below (MTS 2013).

- **Main Line:** Extends from Center City San Diego south to San Ysidro/international border at Tijuana with a total length of 15.5 miles. This line extends through Mexico (44.3 miles) and connects with the Desert Line (see below).
- **La Mesa Branch:** Extends from Downtown San Diego east to the city of El Cajon (though the City of La Mesa) with a total length of 16.1 miles.
- **Coronado Branch:** Extends from National City south to Imperial Beach with a total length of 7.2 miles. The Coronado Branch is currently not in use.
- **Desert Line:** Extends north and east from the international border (junction called Division) to Plaster City with a total length of 69.9 miles, where it joins the Union Pacific Line from El Centro. The Desert Line is currently not in use; however, efforts are currently being made to rehabilitate degraded portions of this line and start rail services again.

The SDIV Railroad currently provides freight services on the Main Line and La Mesa Branch (MTS 2013).

The freight rail corridors within the region are displayed in Figure 4.16-4.

TRANSPORTATION PROGRAMS

Transportation programs generally combine physical and digital infrastructure to better manage the operations of the region's transportation network.

Transportation Demand Management

TDM refers to programs and strategies that manage and reduce traffic congestion during peak travel times. Typical TDM programs include carpooling and vanpooling; promoting alternative work schedules; teleworking; and increasing bicycle, pedestrian, and transit use. These programs are designed to reduce congestion and the overall VMT generated within the region. The main goal of TDM programs is generally to make more efficient use of the existing transportation network within the region and to better maximize the movement of people and goods.

The comprehensive TDM program for the San Diego region is the Sustainable Transportation Services program, which is operated by SANDAG in cooperation with the region's 511 transportation information services. The goal of Sustainable Transportation Services is to reduce traffic congestion during peak times, as well as decrease greenhouse gas (GHG) emissions and other environmental pollutants, by reducing the number of commuters driving to work or school alone each day. The Sustainable Transportation Services program pulls together trip-reduction strategies and state-of-the-art web tools to provide access to convenient transportation choices that reduce auto dependency, vehicle energy consumption, and emissions. Specific programs and services provided by Sustainable Transportation Services include a vanpool subsidy program, transit solutions, regional support for biking, a Guaranteed Ride Home program, information about teleworking, and bike and pedestrian safety program support for schools (SANDAG 2025a).

As of 2023, 71 percent of commuters in the San Diego region drive alone to work, while only 18 percent carpool and 3 percent take transit. The Sustainable Transportation Services program works with employers to offer their employees choices other than driving alone. In 2023, these programs made significant impacts on changing travel behavior (SANDAG 2025a):

- The Sustainable Transportation Services program currently has 395 active vanpools, which helped almost 26,000 people commute in 2023.
- 269 employees from 16 different employers signed up to try transit for the first time.
- During Bike Anywhere Day, more than 9,000 people across the region rode their bikes.

Transportation System Management/Intelligent Transportation Systems

Transportation system management (TSM) and intelligent transportation systems (ITSs) provide the means to effectively manage the overall transportation system, including the demands on the system. TSM/ITSs use innovative technologies that maximize the efficiency of the transportation network and promote greater multimodal system efficiencies that support changes in the modes in which people choose to use to travel (mode changes) over time, which can ultimately lower GHG emissions. TSM/ITS components are discussed in additional detail in Chapter 2, "Project Description," of this EIR.

Integrated Corridor Management

In 2006, SANDAG and its partners initiated the development and implemented the Integrated Corridor Management (ICM) system pilot project ICM connected the transportation operations systems for multiple jurisdictions along the northern section of the I-15 corridor. Post analysis evaluation of the ICM project resulted in substantial improvements to the performance of the I-15 corridor. ICM enabled multiple systems to "talk" to each other and coordinated their operations to maximize efficiency regardless of which jurisdiction owned or operated the individual system. The ICM system also monitored changing roadway conditions and congestion based on real-time information and then generated automated response plans to address the situation.



Source: Data received from SANDAG in 2025; adapted by Ascent in 2025.

Figure 4.16-4 Freight Rail Corridor

The system had the ability to reevaluate and generate new response plans as traffic conditions change further. An ICM multimodal response plan included several key features:

- Coordination of the I-15 Express Lanes system with Caltrans' changeable message signs, 511 traveler information, ramp meters, and arterial signal systems to bypass major incidents or manage daily congestion.
- System automation to monitor congestion and select action plans.
- Real-time action control changes to traffic signal and ramp meter timing to better manage traffic entering or exiting the freeway system and manage traffic signals across agencies.

As part of the ongoing ICM project, a coordinated detour messaging system was activated in April 2016 with alternate route signs installed on surface streets along the I-15 corridor in the cities of Escondido, Poway, and San Diego. With the use of Caltrans overhead changeable message signs on I-15, the ICM provided the congestion management tools to direct motorists off the freeway to avoid delays, and provide alternate route to help guide motorists through surface streets and back onto the freeway as soon as possible (USDOT 2025). The ICM pilot project served as an early generation Advance Transportation and Congestion Management Technologies Deployment concept (ATCMTD) for the San Diego region. SANDAG is leveraging its technical, institutional, and operational lessons learned from the ICM pilot to develop a next generation ICM concept through the implementation of the Regional Border Management System (RBMS). This next generation will include tolling, and situational transportation conditions command and control for cross border traffic as part of SANDAG's planned new State Route 11/Otay Mesa East Land Port of Entry project.

Shared Mobility

Shared mobility options for carpooling and on-demand rideshare have increased in usage over the past decade. On-demand rideshare services are made possible by smartphone applications that allow users to request a ride in real time. The application-based services connect riders with drivers or other riders and facilitate the most efficient trips to their destinations.

- **Dynamic carpooling:** Application-based service that matches drivers with empty seats to passengers seeking rides to similar destinations. This ridesharing service creates efficiency and reduces congestion but does not allow the users to make a profit. Scoop is an example of dynamic carpooling services that is available within the San Diego Region.
- **Ride-hailing services:** Application-based services that allow users to request a ride from paid drivers, who generally use their personal vehicles. Ride-hailing services are presented in a variety of ways, including "pooling" services that connect multiple riders to shared rides, or individual rides, which pick up and drop off riders at designated destinations. Uber and Lyft are the main ride-hailing services operating in the San Diego region.
- **Carshare:** Application-based service that allows for the short-term rental of a fleet vehicle or a personal vehicle via a smartphone app. Round-trip carshares allow users to pick-up and return a vehicle to the same parking spot, while free-floating carshare services allow users to pick-up and drop-off vehicles anywhere within a designated service area. These types of services allow rentals by the hour or day. Peer-to-peer carshare services allow private vehicle owners to rent their car to users within their community. Zipcar and Getaround are the only publicly available carshare services currently operating in the San Diego region.

4.16.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

US Department of Transportation Regional Transportation Plan Requirements

Under federal transportation law, the US Department of Transportation requires that metropolitan planning organizations (MPOs), such as SANDAG, prepare long-range regional transportation plans (23 US Code [USC] 134). In federally designated air quality nonattainment or maintenance areas, the long-range transportation plan is

to be updated at least every 4 years. The proposed Plan would be the latest update of the San Diego region's long-range transportation plan.

Federal requirements for long-range transportation plans include the following (23 USC 134[i][2]):

- **Identification of transportation facilities:** An identification of transportation facilities (including major roadways, public transportation facilities, intercity bus facilities, multimodal and intermodal facilities, nonmotorized transportation facilities, and intermodal connectors) that should function as an integrated metropolitan transportation system, giving emphasis to those facilities that serve important national and regional transportation functions.
- **Performance measures and targets:** A description of the performance measures and performance targets used in assessing the performance of the transportation system.
- **System performance report:** A system performance report and subsequent updates evaluating the condition and performance of the transportation system with respect to the performance targets, including progress achieved by the MPO in meeting the performance targets in comparison with system performance recorded in previous reports.
- **Mitigation activities:** A discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan. The discussion must be developed in consultation with federal, state, and tribal wildlife, land management, and regulatory agencies.
- **Financial plan:** A financial plan that demonstrates how the adopted transportation plan can be implemented, indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan, and recommends any additional financing strategies for needed projects and programs. For the purpose of developing the transportation plan, the MPO, transit operator, and state must cooperatively develop estimates of funds that will be available to support plan implementation.
- **Operational and management strategies:** Operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods.
- **Capital investment and other strategies:** Capital investment and other strategies to preserve the existing and projected future metropolitan transportation infrastructure, provide for multimodal capacity increases based on regional priorities and needs, and reduce vulnerability of the existing transportation infrastructure to natural disasters.
- **Transportation and transit enhancement activities:** Proposed transportation and transit enhancement activities including consideration of the role that intercity buses may play in reducing congestion, pollution, and energy consumption in a cost-effective manner and strategies and investments that preserve and enhance intercity bus systems, including systems that are privately owned and operated.

Also, regional transportation plans (RTPs) must be financially realistic (i.e., account for revenue constraints), balancing capital and operating costs with reasonable revenue expectations, as agreed upon by MPOs and their transportation agency partners in the planning process (23 Code of Federal Regulations [CFR] 450.324).

Additionally, in metropolitan areas that are in nonattainment for ozone or carbon monoxide under the federal Clean Air Act (CAA), the MPO must coordinate the development of a transportation plan with the process for development of the transportation control measures of the State Implementation Plan required by the CAA. In each metropolitan area, the MPO must consult, as appropriate, with state and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of a long-range transportation plan. Each MPO must provide individuals, affected public agencies, representatives of public transportation employees, public ports, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the

disabled, and other interested parties with a reasonable opportunity to comment on the transportation plan. A transportation plan involving federal participation must be published or otherwise made readily available by the MPO for public review.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

Road Repair and Accountability Act of 2017

SB 1, also referred to as the Road Repair and Accountability Act of 2017, was signed into law on April 28, 2017, increasing transportation funding and instituting reforms. SB 1 includes an annual investment of $5.4 billion to repair roads, freeways, and bridges in communities throughout the state. SB 1 is intended to address a backlog of repairs and upgrades to the state's transportation facilities, while simultaneously ensuring a sustainable travel network for the future. Funds from SB 1 are split equally between state and local investments.

Active Transportation Program

Pursuant to SB 99 (Chapter 359, Statutes of 2013) and AB 101 (Chapter 354, Statutes of 2013), the Active Transportation Program (ATP) was created to encourage increased use of active modes of transportation, such as biking and walking. The ATP consolidates various federal and state transportation programs, including the Transportation Alternatives Program, Bicycle Transportation Account, and State Safe Routes to School, into a single program with a focus to make California a national leader in active transportation (Caltrans 2025b). The ATP is administered jointly by the California Transportation Commission (CTC) and Caltrans and combines many federal and state funding streams previously used for bicycle, pedestrian, safety, and other related purposes into one funding stream. In 2017, the Road Repair and Accountability Act (SB 1) added approximately $100 million per year in additional funds for the program (SANDAG 2018a). The purpose of the ATP includes the following objectives:

- increase the proportion of biking and walking trips;
- increase safety for nonmotorized users;
- increase mobility for nonmotorized users;
- advance the efforts of regional agencies to achieve greenhouse gas–reduction goals;
- enhance public health, including the reduction of childhood obesity through the use of projects eligible for Safe Routes to Schools Program funding;
- ensure disadvantaged communities fully share in program benefits (25 percent of program); and
- provide a broad spectrum of projects to benefit many types of active transportation users.

California RTP Requirements

Every Metropolitan Planning Organization (MPO) is required by federal regulation (49 USC. 5304(f) and 23 CFR 450(b)) and California statute (Government Code (GC) Section 65080) to conduct long range planning to ensure that the region's transportation vision and goals are clearly identified and to ensure effective decision making in furtherance of the vision and goals. The long-range plan, known as the RTP or Metropolitan Transportation Plan (MTP), is an important planning and policy document that is based on the unique needs and characteristics of a region. The RTP impacts a region's economy, environment, public health, safety, and social equity, along with communicating a regional vision to the State and federal government.

The California Transportation Commission (CTC) updated the Regional Transportation Plan Guidelines in January 2024 (CTC 2024). The purposes of these RTP Guidelines are to: 1) Promote an integrated, statewide, multimodal, regional transportation planning process and effective transportation investments; 2) Set forth a uniform transportation planning framework throughout California by identifying federal and State requirements and statutes impacting the development of RTPs; 3) Promote a continuous, comprehensive, and cooperative transportation planning process that facilitates the rapid and efficient development and implementation of

projects that maintain California's commitment to public health and environmental quality; and 4) Promote a planning process that considers the views of all stakeholders.

Senate Bill 375

SB 375 (Chapter 728, Statutes of 2008) requires California's MPOs to prepare a Sustainable Community Strategy (SCS) that demonstrates how the region will meet regional GHG-reduction targets through integrated land use, housing, and transportation planning. In 2010, the California Air Resources Board (CARB) established per capita regional GHG reduction targets for passenger vehicles to be met by 2020 and 2035. These targets were updated in 2018. For the San Diego region, the updated targets are 15 percent below 2005 levels in 2020 and 19 percent below 2005 levels in 2035.

The SCS is incorporated into the MPO's RTP. CARB must review the SCS to determine if it would enable the MPO to meet regional GHG-reduction targets once implemented.

Assembly Bill 1358 — California Complete Streets Act

AB 1358, the Complete Streets Act (Government Code Sections 65040.2 and 65302), was signed into law in September 2008. As of January 1, 2011, the law required cities and counties, when updating the part of a local general plan that addresses roadways and traffic flows, to ensure that those plans account for the needs of all roadway users. Specifically, the legislation requires cities and counties to ensure that local roads and streets adequately accommodate the needs of bicyclists, pedestrians, and transit riders, as well as motorists.

California Bicycle Transportation Act

The California Bicycle Transportation Act was enacted in 1994 to establish a bicycle transportation system that is designed and developed to achieve the functional commuting needs of employees, students, businesspeople, and shoppers. The bicycle transportation system should take into consideration route selection, the physical safety of the bicyclist and their property as a major planning component, and the capacity to accommodate bicyclists of all ages and skills. As defined in the California Bicycle Transportation Act, bikeways are categorized as Class I, Class II, Class III, or Class IV facilities. Additionally, the California Bicycle Transportation Act requires Caltrans, in cooperation with county and city governments, to establish minimum safety design criteria for each bikeway classification and roadways where bicycle travel is permitted, and also requires Caltrans to establish uniform specifications and symbols for signs, markers, and traffic control devices to designate bikeways, regulate traffic, improve safety and convenience for bicyclists, and alert pedestrians and motorists of the presence of bicyclists. Furthermore, the Act requires all cities and counties to have an adopted bicycle master plan to apply for Bicycle Transportation Account funding.

Senate Bill 743

SB 743 (Steinberg) was signed into law by Governor Jerry Brown on September 27, 2013, and encourages development of mixed-use, transit-oriented infill projects by (1) establishing new CEQA exemptions for transit-oriented developments located in transit priority areas (TPAs) that are consistent with an adopted specific plan; (2) eliminating the requirement to evaluate aesthetic and parking impacts in those targeted development areas, and (3) directing the Governor's Office of Planning and Research (OPR) (now known as the Governor's Office of Land Use and Climate Innovation) to develop an alternative metric to evaluate transportation-related impacts under CEQA.

SB 743 exempts from CEQA, a residential, employment center, or mixed-use development project, including any subdivision, or any zoning, change that meets all of the following criteria:

1. The project is proposed within a TPA.
2. The project is undertaken to implement and is consistent with a specific plan for which an environmental impact report has been certified.
3. The project is consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy accepted by CARB.

Furthermore, "[a]esthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment." However, the exemption for aesthetic impacts does not include impacts on historic or cultural resources. Local governments retain their ability to regulate a project's transportation, aesthetics, and parking impacts outside of the CEQA process pursuant to local design review ordinances or other discretionary powers.

For infill development, including transit-oriented development, SB 743 provides a rationale for the development of a new metric to evaluate CEQA transportation impacts. Prior to SB 743, CEQA transportation impacts were primarily assessed (at least at the project level) through level of service and other congestion or delay-based analyses, which focused exclusively on motor vehicle delay. This often penalizes infill and active transportation projects. SB 743 establishes that the new transportation impact analysis methodology should appropriately balance the needs of congestion management with statewide goals related to transit-oriented mixed-use infill development, promotion of public health through active transportation, and reduction of GHG emissions.

SB 743 also directed OPR to identify appropriate criteria for the evaluation of transportation impacts in CEQA Guidelines amendments, and provided that once these amendments are adopted, automobile delay, as measured by "level of service" and other similar metrics, no longer constitutes a significant environmental effect under CEQA. OPR selected VMT as the preferred transportation impact metric and applied its discretion to require its use statewide for land use projects and to recommend its use for transportation projects. The revised CEQA Guidelines that implement SB 743 became effective on December 28, 2018, and indicate in CEQA Guidelines Section 15064.3 that VMT is the basis for evaluation of transportation impacts for land use projects. The revised guidelines state that, except as provided in Section 15064.3(b)(2) for roadway capacity projects, a project's "effect on automobile delay shall not constitute a significant environmental impact," although automobile delay may still be appropriate for evaluation of projects as part of the planning process. For roadway capacity projects, the CEQA Guidelines specify that agencies have discretion to determine the appropriate measure of transportation impacts consistent with CEQA and other applicable requirements.

In December 2018, OPR issued a technical advisory on implementing SB 743 requirements, including recommendations for VMT thresholds of significance for certain types of land use projects (OPR 2018). Also, Caltrans has issued guidance on how to evaluate VMT impacts of land use projects affecting the state highway system and state highway system transportation projects (Caltrans 2020a).

Public Resources Code Section 30253

Public Resources Code Section 30253, Part 4, establishes a policy that development within the coastal zone must minimize energy consumption and VMT.

Assembly Bill 2731

AB 2731 of 2020 authorizes SANDAG to obtain site control to support the redevelopment of the Old Town Center site, including a transit and transportation facilities project, in the city of San Diego before completing the environmental review for those actions. Requirements of CEQA for transit-oriented development projects occurring at the Old Town Center site that meet certain requirements are satisfied by a specific environmental impact statement prepared by the US Department of the Navy. Further environmental review for transit-oriented development projects is to be conducted only if certain events occur.

California Transportation Plan 2050

The California Transportation Plan 2050 (CTP 2050) provides a common framework for guiding transportation decisions and investments by all levels of government and the private sector. Statutorily mandated federal and state law require that Caltrans facilitate, develop, and prepare the CTP. The development of the CTP 2050 was a multi-year effort involving cross-sector coordination with State, regional, and local partners; extensive research; public engagement; technical analysis; and oversight from multiple committees. The CTP 2050 builds on concurrent efforts included in Caltrans' planning documents, RTPs, other statewide plans and studies such as the 2017 Climate Change Scoping Plan, Strategic Highway Safety Plan, and Statewide Housing Assessment. It also draws from research on demographic shifts, technology trends, and economic growth to help inform where the

state is headed, what strategies can be employed, and what challenges and opportunities the state may face along the way. To evaluate future conditions and plan benefits, the CTP 2050 employed a suite of technical tools and models to help inform policy-decision making. Caltrans will continue to work with stakeholders and the public to update the CTP every five years (Caltrans 2021a).

The California Freight Mobility Plan

The California Freight Mobility Plan (CFMP) is a comprehensive plan that governs the immediate and long-range planning activities and capital investments by the state with respect to freight movement. The plan summarizes the ongoing state of freight in California and makes recommendations on further investments in freight mobility. The plan details short- and long-term policies, strategies, and investments, with a focus on trucking, including parking, truck-only lanes, tolling, and autonomous trucks.

The CFMP also complies with California State Government Code Section 13978.8(b)(1) (Assembly Bill 14, Lowenthal) and the provisions of United States Code 49 USC 70202: State freight plans (Infrastructure Investment and Jobs Act, or IIJA), which requires each state that receives funding under the National Highway Freight Program to develop a State Freight Plan every four years (Caltrans 2023).

California Highway Design Manual

The *California Highway Design Manual* (HDM) is published by Caltrans and establishes uniform policies, procedures, and standards to carry out the freeway and state highway design functions within the state (Caltrans 2020b). The HDM also provides guidance, policies, and standards for the design of bicycle facilities.

California Manual on Uniform Traffic Control Devices

The *California Manual on Uniform Traffic Control Devices* (California MUTCD) is published by the State of California/Caltrans and is issued to adopt uniform standards and specifications for all official traffic control devices in California, in accordance with Section 21400 of the California Vehicle Code (Caltrans 2020c). The California MUTCD incorporates the US Federal Highway Administration's *Manual on Uniform Traffic Control Devices* and incorporates all policies on traffic control devices issued by Caltrans.

Assembly Bill 130

Assembly Bill 130 (AB 130) was signed in to law in June 2025. The bill primarily focuses on the incentivizing infill housing development within urban areas by exempting them from CEQA. AB 130 also requires that the California Governor's Office of Land Use and Climate Innovation (LCI) develop a mitigation fee program that allows projects to mitigate their associated VMT related impacts by paying a fee to fund transit-oriented development and affordable housing throughout the state. The fees will be deposited into a fund administered by the Department of Housing and Community Development (HCD) that will fund VMT reducing projects, including "affordable housing or related infrastructure projects, including infrastructure necessary for higher density uses." LCI is required to issue initial guidance for using this new mitigation by July 1, 2026, and issue subsequent guidance at least once every three years, which includes starting the rulemaking process for any subsequent guidance by January 1, 2028.

Strategic Highway Safety Plan

The California Strategic Highway Safety Plan (SHSP) is a comprehensive, statewide transportation safety plan which provides a collaborative framework for reducing fatalities and serious injuries across all travel modes and on all public roads. The SHSP utilizes a data-driven process to identify key safety needs and guides resource and investment decisions that provide the greatest potential to achieve the plan's goal of zero traffic fatalities and serious injuries on all of California's public roadways. Per the Federal Highway Administration, "A Strategic Highway Safety Plan (SHSP) is a major component and requirement of the Highway Safety Improvement Program (HSIP) (23 USC. § 148). It is a statewide-coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. (Caltrans 2020b).

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

TransNet Extension Ordinance and Expenditure Plan

In 2008, 67 percent of San Diego County voters approved the *TransNet* Extension Ordinance and Expenditure Plan (Commission Ordinance 04-01) to extend to 2048 the half-cent sales tax for regionwide transportation improvements originally approved in 1987 (Commission Ordinance 87-1). The revenues must be used solely for the improvements identified in the Expenditure Plan for the extension ordinance. SANDAG allocates the revenues in its capacity as the San Diego County Regional Transportation Commission.

The Expenditure Plan identifies capital improvements for highways (Express Lane/high-occupancy vehicle lanes and general purpose lanes), capital improvements and operations and maintenance support for rail transit and bus rapid transit, local bus and senior and disabled transportation services, local streets and roads, bicycle and pedestrian facilities, transportation-related community infrastructure to support smart growth development, environmental mitigation and enhancement projects, and administrative expenses, including an Independent Taxpayer Oversight Committee. When allocating revenues, the extension ordinance requires that SANDAG "shall make every effort to maximize State and federal transportation funding to the region" (Section 5[C]). Projects receiving *TransNet* funds are required to accommodate travel by pedestrians and bicyclists in accordance with the best available standards and guidelines (Section 4[E][3]).

Section 16 of the extension ordinance describes the process for amending the Expenditure Plan. Amendments to the Environmental Mitigation Program (Section 2[D]) and projects included in the Expenditure Plan for the original ordinance in 1987 that remain uncompleted (e.g., State Route 76 East Segment and the Mid-Coast Corridor Transit Project) require approval by the voters of San Diego County. Other provisions requiring voter approval to be amended relate to imposition of the half-cent sales tax (Section 3), maintenance of effort requirements for local revenues (Section 8), the regional transportation congestion improvement program (Section 9), and the Independent Taxpayer Oversight Committee (Section 11). Other provisions may be amended by a two-thirds vote of the SANDAG Board of Directors (Board). Section 5 of the extension ordinance provides that the Expenditure Plan must be amended as necessary to maintain consistency with the RTP.

Designing for Transit

The *Design for Transit: A Manual for Integrating Public Transportation and Land Development in the San Diego Metropolitan Area* is published by MTS (2018). The manual is designed to help planners, developers, architects, and engineers understand the physical requirements of public transportation. The manual provides specific design standards for public transportation facilities, including bus and light-rail transit within the San Diego region. The manual also recommends measures that can improve transit service and enhance safe access to transit on local streets through Complete Streets design strategies.

Amended 2021 Regional Plan

The Amended 2021 Regional Plan is a 30-year plan that serves as both the long-range RTP and SCS for the San Diego region. (It will be replaced by the 2025 Regional Plan.) The Amended 2021 Regional Plan must comply with specific state and federal mandates, including an SCS, per SB 375 (Steinberg 2008), that achieves GHG emission reduction goals set by CARB; compliance with federal civil rights requirements (Title VI); and environmental justice considerations, air quality conformity, and a public participation process. The SANDAG Board adopted the Final Amended 2021 Regional Plan on December 10, 2021 (Amended in October 2023). The following key policies that address the circulation system are included Amended 2021 Regional Plan:

- **Land use and regional growth:** The Amended 2021 Regional Plan vision for land use focuses on development and growth in Mobility Hub areas to preserve the region's open space and support transportation investments by reducing VMT. SANDAG will consider how land use programs, projects, and policies it supports address social equity in relation to regional access to affordable housing, proximity to jobs and transit, opportunities for residents to live where they work and play, convenient access to multimodal transportation options, and other opportunities for work, commerce, and recreation.

- **Transportation demand management:** SANDAG will continue to administer and monitor the Sustainable Transportation Services program by providing regional rideshare, employer outreach, and bike education and secure parking services to help reduce commute-related traffic congestion and VMT. Beyond commute trips, TDM programs are expanded to include grants and incentives that make it easier and safer to use active modes for short trips.

  Vision Zero: Vision Zero is a national campaign to eliminate all traffic-related deaths and serious injuries by focusing on policies and the redesign of streets to create a transportation system that is safe for everyone. Vision Zero utilizes crash data to identify safety issues and recommend solutions, develop a regional safety policy, further construct the regional bike network and build out jurisdictions' complete streets networks, and fund educational programs

- **Fix It First:** Amended 2021 Regional Plan Amended 2021 Regional Plan The Fix It First strategy aims to repair existing roads and create a system for sustained maintenance in the future, creating a safe and efficient transportation network for all users. The Fix It First strategy can help reduce pollution exposure by maintaining infrastructure that facilitates use of efficient routes and does not neglect facilities that could force users to seek inefficient and longer routes. The Fix It First strategy can prioritize funding in disadvantaged communities and places that have not seen investment to maintain older facilities that are in various states of disrepair.

- **Transportation system management and operations:** Transportation system management and operations (TSMO) employs a series of intelligent transportation system strategies designed to maximize the capacity and efficiency of the existing and future transportation system. TSMO includes the establishment of institutional and governance actions to help advance and facilitate cross-agency collaboration to ensure that existing and proposed transportation systems are not operated or managed as independent systems but as a multimodal transportation system. These strategies will help SANDAG manage the complete corridor system in a coordinated way across jurisdictions and operators that include capital and technology investments.

- **Value pricing:** The Amended 2021 Regional Plan incorporates a variety of pricing strategies, including Amended 2021 Regional Plana network of Express Lanes, a fee on the fares charged for rides provided by transportation network companies, and further subsidization of transit fares. Pricing strategies such as these are in different phases of planning, design, pilot, and deployment in different regions and are also being explored at the state and federal level.

The Amended 2021 Regional Plan was amended in October 2023 to remove the Road Usage Charge component of the plan.

Regional Transportation Improvement Program

The Regional Transportation Improvement Program (RTIP) is a 5-year program of major transportation projects funded by federal, state, *TransNet* local sales tax, and other local and private funding and also includes proposed local streets and roads projects. The Final 2025 RTIP (SANDAG 2024a) covers five fiscal years (FY 2025 through FY 2029) and incrementally implements the Amended 2021 Regional Plan. The SANDAG Board adopted the 2025 RTIP on September 27, 2024. The Federal Highway Administration and Federal Transit Administration approved the 2025 RTIP and its air quality conformity determination on December 16, 2024. SANDAG consulted with local jurisdictions through public meetings of the various SANDAG committees and working groups that are responsible for the development and oversight of the projects. These committees include the Transportation Committee, the Cities/County Transportation Advisory Committee, the Social Equity Working Group, the Interagency Technical Working Group on Tribal Transportation Issues, the Independent Taxpayer Oversight Committee, and the San Diego Region Conformity Working Group.

San Diego and Imperial Counties Sustainable Freight Implementation Strategy

The San Diego and Imperial Counties Sustainable Freight Implementation Strategy (Sustainable Freight Strategy) analyzes and prioritizes innovative strategies for implementation to improve the efficiency and sustainability of goods within the San Diego Association of Governments (SANDAG) and Imperial County Transportation Commission (ICTC) region. The report outlines the analysis of the system's existing conditions and proposes

several key strategies for implementation. While these key strategies serve as a baseline for improving the supply chain network, additional innovative strategies have been assessed and outlined for implementation for future scenarios. The goal of the Sustainable Freight Strategy is to create a more sustainable supply chain network through regional freight projects and policies that reduce emissions while fostering trade. The objectives of the Sustainable Freight Strategy include the following: develop partnerships with public and private sectors, address environmental justice concerns from freight impacts, pilot innovative technologies, identify funding opportunities for implementation, and address workforce gaps in implementing new technologies (SANDAG 2024b).

Regional Active Transportation Network in the 2025 Regional Plan

An update to the Regional Active Transportation Network is included in the 2025 Regional Plan to improve safety and mobility for people who travel the region by foot, bike, scooter, transit, or other means outside of a car. Projects are sited along corridors identified within the last adopted Regional Bike Plan (2010), the 2013 Early Action Program (EAP) projects, local jurisdictions' plans, Comprehensive Multimodal Corridor Plans (CMCPs), Safety Focus Network, Systemic Safety Network, or existing bikeways. This updated network is comprised of nearly 600 miles of bikeways first included in San Diego Forward the 2015 Regional Plan, combined with approximately 300 additional miles of bikeways as accounted for in subsequently adopted planning efforts including local jurisdiction plans and regional comprehensive multimodal corridor plans. The updated network features 182 miles of Existing/In Construction Bikeways, and 721 miles of Planned Bikeways totaling 903 miles of Regional Active Transportation Network. The breakdown of the network by facility type is: 162 miles of off-street bikeways, 517 miles of on-street bikeways, and 224 miles of bikeways featuring a mix of on and off-street facilities

Riding to 2050 — San Diego Regional Bike Plan

Riding to 2050 — San Diego Regional Bicycle Plan (Riding to 2050) (SANDAG 2010a) establishes the plan for the regional bicycle system within the San Diego region and was adopted by the Board in April 2010. The plan is intended to guide the development of the regional bicycle system through the year 2050. Riding to 2050 outlines a range of recommendations to facilitate accomplishing the following regional goals:

- Increase the number of people who bike and frequency of bicycle trips for all purposes.
- Encourage the development of Complete Streets.
- Improve safety for bicyclists.
- Increase public awareness and support for bicycling in the San Diego region.

Riding to 2050 includes recommendations for bicycle infrastructure improvements, bicycle-related programs, implementation strategies, and policy and design guidelines (SANDAG 2010a).

Riding to 2050 presents an interconnected network of bicycle corridors that would enable residents to bicycle with greater safety, directness, and convenience within and between major regional destinations and activity centers. While bicycle planning and policy-making is primarily focused on the local level, Riding to 2050 provided an opportunity to improve regional coordination and connectivity of bicycle facilities between jurisdictions. The network selection and classification process included on-going consultation with the SANDAG Bicycle-Pedestrian Working Group, which was composed of staff from each of the 19 local jurisdictions. (SANDAG 2010b.)

On September 27, 2013, the Board approved the Regional Bike Plan Early Action Program (Bike Plan EAP) (SANDAG 2018b)—a $200 million initiative to expand the Regional Bike Network regionwide and finish high-priority projects within a decade. The adopted Bike Plan EAP comprises 38 projects, totaling roughly 77 miles of new bikeways that will make it much easier for people to ride their bikes to school, work, transit stations, and other major destinations. The Bike Plan EAP is funded by *TransNet*, the regional half-cent sales tax for transportation approved by San Diego County voters. *TransNet* funding will be leveraged to bring in state and federal dollars so that the region can complete more bike projects and reap even greater economic, health, and mobility benefits.

SANDAG Vision Zero Action Plan

In November 2022, the SANDAG Board of Directors adopted a resolution acknowledging the critical role SANDAG plays in implementing safe streets across the region. With this resolution, SANDAG affirmed that traffic-related deaths and serious injuries are preventable and directed staff to develop an action-oriented plan to reduce or eliminate fatal and serious injury crashes. The Vision Zero Action Plan outlines the SANDAG approach for reaching the Vision Zero goal by 2050. This Action Plan details a multi-layered approach for supporting traffic safety in the region and advancing Vision Zero goals at the local government level. The successful outcome of this plan is a regional road network that allows everyone—regardless of whether they walk, bike, roll, drive, or ride transit—to arrive at their destinations safely whenever they travel. The Vision Zero Action Plan was adopted in November 2024 (SANDAG 2024c).

Parking Strategies for Smart Growth

SANDAG developed a *Parking Strategies for Smart Growth* guide as part of its Planning Tools for the San Diego Region (SANDAG 2010b). This guide provides a benchmark and compares the various parking regulations within the region, as well as how those regulations compare to national standards. Additionally, the guide provides example policies on how jurisdictions can implement smart growth parking policies and programs. SANDAG also developed a regional parking management toolbox that provides jurisdictions within the San Diego region with a framework for evaluating, implementing, and managing parking management strategies that support their economic development, sustainability, and mobility goals (SANDAG 2014).

SANDAG's Sustainable Transportation Services program, which focuses on transportation demand management (TDM) strategies, also contains parking management programs and opportunities that employers and jurisdictions can use to better manage their parking demand. The sustainable transportation services program currently offers vanpool/carpool assistance, ride-matching programs, and telework programs to assist employers with transportation and parking demand management.

Regional Safe Routes to School Strategic Plan

In September 2010, SANDAG began engaging key stakeholders and the region's residents in the development of the Draft Regional Safe Routes to School Strategic Plan; the final Strategic Plan was accepted by the SANDAG Transportation Committee on March 2, 2012. The Regional Safe Routes to School Strategic Plan aims to make walking and bicycling to school safer and to provide more attractive travel choices for families throughout the region. The plan identifies a regional strategy to support local communities in establishing new Safe Routes to School programs, as well as sustaining and enhancing existing efforts (SANDAG 2012).

Improving safety conditions is a central goal of Safe Routes to School programs, which can be accomplished by improving the built environment, educating students, engaging community members, enforcing traffic laws, and instituting programs designed to address personal security concerns. Safe Routes to School programs support more sustainable, compact, well-designed communities interconnected by a transportation system that expands travel choices and reduces GHG emissions. Safe Routes to School programs also help achieve this vision by reducing peak-period vehicle trips and providing active transportation to school with more viable and attractive options. Addressing school safety and accessibility improves the overall walkability of affected neighborhoods (SANDAG 2012).

General Plan Circulation Elements

As mandated by state law, general plans must have a circulation element (sometimes referred to as a transportation or mobility element) that is consistent with all other elements of the general plan (Government Code Section 65302). Circulation elements describe the individual jurisdictions' transportation system, including roadways as well as public transit, pedestrian, and bicycle facilities, and outline goals and policies. Circulation elements and their compatibility with land use plans are an important part of overall regional transportation planning, because each general plan works to harmonize local land uses and development patterns with transportation goals and needs. The planning horizon for local general plans is often between 15 and 20 years. In the San Diego region, there are 19 general plans prepared by individual jurisdictions.

Comprehensive Multimodal Corridor Plans

Comprehensive Multimodal Corridor Plans (CMCPs) are designed to reduce vehicle miles traveled and greenhouse gas emissions, and identify mobility solutions in our region's busiest travel corridors. CMCPs are one of the strategies SANDAG is using to carry out the Amended 2021 Regional Plan and inform the development of the 2025 Regional Plan, SANDAG's blueprint for enhancing the region's quality of life through equitable, sustainable, and accessible transportation.

CMCPs are data driven and analyze demographics, employment centers, economics, and travel patterns to help SANDAG and Caltrans make informed decisions on strategies and funding in major travel corridors throughout the region. The goal is to reduce congestion in highly traveled corridors by providing more transportation choices for residents, commuters, visitors, and commercial cargo, while also preserving the local community's social character and creating opportunities for neighborhood enhancement projects.

As part of California Senate Bill 1, the Road Repair and Accountability Act of 2017, CMCPs must be completed for the region to be eligible to compete for certain state and federal funding and grant opportunities for future transportation improvements (SANDAG 2025b).

4.16.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the CEQA Guidelines Appendix G checklist questions. Checklist questions for transportation are provided in Section XVII of CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan. Notably, Appendix G, Section XVII, question (d) regarding whether the proposed Plan would result in inadequate emergency access is addressed under HAZ-4 in Section 4.9, "Hazards and Hazardous Materials."

For purposes of this EIR, implementation of the proposed Plan would have a significant transportation impact if it would:

TRA-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

TRA-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals.

TRA-3 Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses.

TRA-4 Lead to a lack of parking supply that would cause significant secondary environmental impacts not already analyzed in other resource chapters of this EIR. (Note: This question is not included in the Appendix G checklist questions.)

The analysis discloses transportation impacts. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's transportation impacts would be worsened by climate change. Therefore, a climate change analysis for transportation impacts is not included in this section.

4.16.4 Environmental Impacts and Mitigation Measures

TRA-1 CONFLICT WITH A PROGRAM, PLAN, ORDINANCE, OR POLICY ADDRESSING THE CIRCULATION SYSTEM, INCLUDING TRANSIT, ROADWAY, BICYCLE, AND PEDESTRIAN FACILITIES.

Analysis Methodology

The emphasis of the analysis is on plan inconsistency and conflicts between the proposed Plan's transportation network improvements and programs, and existing applicable regional programs, plans, ordinances, or policies addressing the circulation system and on whether any inconsistencies would result in significant environmental effects compared to existing conditions. The proposed Plan is considered consistent with the provisions of the identified regional plans if it meets the general intent of the applicable plans. The regulatory setting provides a brief overview of the relevant regional planning documents and their primary goals. However, the proposed Plan consistency conclusions are based upon the planning documents as a whole.

Because the proposed Plan identifies and proposes transportation network improvements at a regional level, plan consistency was reviewed against other regional plans and policies. Because of the close relationship between forecasted regional growth and land use change and planned transportation network improvements and programs on travel behavior, this section analyzes their combined effect, instead of separate analyses for regional growth and land use change and transportation network improvements and programs.

SB 375 requires RTPs to use "the most recent planning assumptions considering local general plans and other factors." Therefore, it can be assumed the proposed Plan would generally be consistent with transportation programs, plans, ordinances, and policies of the individual jurisdictions in the region.

This analysis reviews the proposed Plan against the Amended 2021 Regional Plan and Riding to 2050 plan, presented in additional detail in Section 4.16.2, "Regulatory Setting," to determine if there are any conflicts. Both plans were developed with and reflect extensive local jurisdiction planning input.

To determine if the proposed Plan is consistent with the programs, plans, policies, and ordinances contained in the current regional planning documents, the infrastructure and demand for each mode (transit, vehicular, pedestrian, and bicycle) were compared to baseline year 2022 conditions. If the proposed Plan is shown to be consistent with the policies contained in Amended 2021 Regional Plan and Riding to 2050, it is assumed to be consistent with the current planning documents and have a less-than-significant impact.

The impact analysis considers consistency of the proposed Plan's transportation network improvements and programs, but not the proposed Plan's regional growth and land use change, with the transportation content of the Amended 2021 Regional Plan and Riding to 2050. This approach is taken because the Impact TRA-1 significance criterion is limited to "circulation system "(i.e., transportation) issues.

Impact Analysis

2035

Transportation Network Improvements and Programs

Table 4.16-5 outlines the transportation network and projected travel demand, by mode, under proposed Plan Year 2035 conditions. Proposed Plan Year 2035 conditions are compared to Baseline Year 2022 conditions to identify how the implementation of the plan would affect the transportation network and transportation demand throughout the San Diego Region.

Table 4.16-5 Transportation System Analysis – Year 2035

Mode	Category	Baseline Year 2022	Year 2035 Proposed Plan	Change from Baseline Year 2022
Transit	Miles of Transit Service	107,875	328,229	220,354
	Commuter Rail	2,197	4,393	2,196
	Light Rail Transit	15,416	24,507	9,092
	Rapid	13,104	144,186	131,081
	Bus	77,158	155,143	77,985
	Population within TPAs	786,769	1,885,975	1,099,206
	Employment within TPAs	739,664	1,531,064	791,400
	Service Population within TPAs	1,526,433	3,417,039	1,890,606
	Average Daily Transit Trips	207,582	481,660	274,078
	Transit Mode Share	1.4%	3.2%	1.8%
	Average Length of Transit Trip (miles)	9.2	9.3	0.1
Auto	Miles of Roadways	6,998	7,418	420
	Freeway (includes auxiliary lanes)	2,584	2,752	168
	General Purpose Lanes	2,417	2,465	49
	HOV/Managed Lanes	119	285	166
	Tollway	48	1.87	-46
	State Highway	641	642	1
	Regional Arterials	3,773	4,024	251
	Average Daily Vehicle Trips	13,146,382	13,754,857	608,474
	HOV Trips	2,047,292	2,006,805	-40,487
	Auto Mode Share	79.2%	76.0%	-3.2%
	Average Length of Vehicle Trip (miles)	6.7	6.9	0.2
	SB743 VMT per Resident	16.7	15.9	-0.8
	SB743 VMT per Employee[1]	13.0	12.3	-0.7
	VMT Per Service Population[2]	14.4	14.4	0.0
Bicycle	Lane Miles of Bike Facilities	3,420	3,803	383
	Class I	354	520	166
	Class II	2,284	2,036	-248
	Class III	722	629	-93
	Class IV	45	501	456
	Bike Boulevard	15	118	103
	Average Daily Bicycle Trips	208,520	209,896	1,376
	Bicycle Mode Share	1.4%	1.4%	0.0%
	Average Length of Bicycle Trip (miles)	3.7	3.9	0.2
Pedestrian	Average Daily Pedestrian Trips	2,265,441	2,473,834	208,393
	Pedestrian Mode Share	15.3%	16.2%	0.9%
	Average Length of Pedestrian Trip (miles)	0.9	0.9	0.0

[1] VMT per employee accounts for trips from work commute tours & at-work subtours only

[2] Service population includes non-institutionalized population and employment within the area

Source: ABM3, March 2025.

The metrics outlined in Table 4.16-5 show that the proposed Plan is consistent with the circulation system policies outlined in the Amended 2021 Regional Plan and Riding to 2050, and therefore, do not conflict with them:

Amended 2021 Regional Plan

- *Land Use and Regional Growth*. Implementation of the proposed Plan would increase transit ridership, as well as the number of walking and biking trips within the proposed Plan region; showing that it will provide convenient access to multi-modal travel options, as prescribed by the policy. Additionally, the proposed Plan would increase the total service population within TPAs; thus, increasing the proximity of jobs and residents to transit opportunities, as prescribed by the policy. Therefore, the proposed Plan is consistent with the portions of this policy that relate to the circulation system.
- *Parking and Curb Management*. The proposed Plan includes system wide investments towards parking and curb management strategies that are included in the Amended 2021 Regional Plan. Parking management strategies have been included in the proposed Plan's Transportation Demand Management Policy. Therefore, the proposed Plan is consistent with this policy.
- *Transportation Demand Management*. The proposed Plan includes similar policy language and Transportation Demand Management strategies and programs to the Amended 2021 Regional Plan. Additionally, as shown in Table 4.16-5, implementation of the proposed Plan would reduce the vehicular mode share within the region by 3.2 percentage points, maintaining one of the intents of this policy by reducing the number of single-occupant vehicle trips within the region. Therefore, the proposed Plan is consistent with this policy.
- *Vision Zero*. The proposed Plan includes similar policy language and Vision Zero based transportation network improvements, strategies, and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Fix It First*. The proposed Plan includes similar policy language and Fix It First strategies and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Transportation System Management and Operations*. The proposed Plan includes similar policy language and Transportation System Management and Operations strategies and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Value Pricing*. The proposed Plan will maintain the managed lanes, fees charged to Transportation Network Companies, and transit subsidy programs included within the policy. Therefore, the proposed Plan is consistent with this policy.

The proposed Plan is also consistent with the following goals from Riding to 2050:

- *Increase the number of people who bike and frequency of bicycle trips for all purposes*. As shown in Table 4.16-5, implementation of the proposed Plan would increase bicycle ridership within the region by 1,376 daily trips under Year 2035 conditions.
- *Improve safety for bicyclists*. As shown in Table 4.16-5, the proposed Plan would increase the total number of protected and separated bicycle facilities within the region (Class I and Class IV facilities). These facilities provide cyclists their own right-of-way within the roadway and reduce the number of conflicts with vehicular traffic, resulting in safer conditions.

2035 Conclusion

Under Year 2035 conditions, the proposed Plan would implement over 383 additional lane miles of bicycle facilities and over 220,000 additional miles of transit service within the region. The proposed Plan would also increase the number of bicycle, pedestrian, and transit trips generated within the region, while reducing the vehicular mode share from 79.2 percent to 76.0 percent, compared to Baseline Year 2022 conditions. These characteristics of the proposed Plan are generally consistent with the policies outlined in the Amended 2021 Regional Plan and Riding to 2050 and therefore, the proposed Plan would not conflict with them. Additionally, the policy language and goals in the proposed Plan and the Amended 2021 Regional Plan are similar. Therefore, implementation of the proposed Plan, under Year 2035 conditions, would result in a less-than-significant impact.

2050

Transportation Network Improvements and Programs

Table 4.16-6 outlines the transportation network and projected travel demand, by mode, under proposed Plan Year 2050 conditions. Proposed Plan Year 2050 conditions are compared to Baseline Year 2022 conditions to identify how the implementation of the plan would affect the transportation network and travel demand throughout the San Diego Region.

Table 4.16-6 Transportation System Analysis – Year 2050

Mode	Category	Baseline Year 2022	Year 2050 Proposed Plan	Change from Baseline Year 2022
Transit	Miles of Transit Service	107,875	334,227	226,353
	Commuter Rail	2,197	4,030	1,833
	Light Rail Transit	15,416	34,401	18,985
	Rapid	13,104	142,154	129,050
	Bus	77,158	153,643	76,485
	Population within TPAs	786,769	1,919,031	1,132,262
	Employment within TPAs	739,664	1,623,552	883,888
	Service Population within TPAs	1,526,433	3,542,583	2,016,150
	Average Daily Transit Trips	207,582	516,794	309,212
	Transit Mode Share	1.4%	3.4	2.0%
	Average Length of Transit Trip (miles)	9.2	9.3	0.1
Auto	Miles of Roadways	6,998	7,514	516
	Freeway (includes auxiliary lanes)	2,584	2,777	193
	General Purpose Lanes	2,417	2,322	-94
	HOV/Managed Lanes	119	453	334
	Tollway	48	1.87	-46
	State Highway	641	645	4
	Regional Arterials	3,773	4,092	319
	Average Daily Vehicle Trips	13,146,382	13,984,751	838,369
	HOV Trips	2,047,292	1,970,400	-76,892
	Auto Mode Share	79.2%	73.6%	-5.6%
	Average Length of Vehicle Trip (miles)	6.7	6.9	0.2
	SB743 VMT per Resident	16.7	15.4	-1.3
	SB743 VMT per Employee[1]	13.0	11.8	-1.2
	VMT Per Service Population[2]	14.4	14.1	-0.3
Bicycle	Lane Miles of Bike Facilities	3,420	7,114	3,694
	Class I	354	1,077	723
	Class II	2,284	3,142	858
	Class III	722	824	102
	Class IV	45	1,785	1,740
	Bike Boulevard	15	286	271
	Average Daily Bicycle Trips	208,520	243,061	34,541

Mode	Category	Baseline Year 2022	Year 2050 Proposed Plan	Change from Baseline Year 2022
	Bicycle Mode Share	1.4%	1.6%	0.2%
	Average Length of Bicycle Trip (miles)	3.7	4.5	0.8
Pedestrian	Average Daily Pedestrian Trips	2,265,441	2,655,865	390,424
	Pedestrian Mode Share	15.3%	17.4%	2.1%
	Average Length of Pedestrian Trip (miles)	0.9	0.9	0.0

[1] VMT per employee accounts for trips from the work commute tours and at-work subtours only

[2] Service population includes non-institutionalized population and employment within the area

Source: ABM3, March 2025

As discussed below, the metrics outlined in Table 4.16-6 show that the proposed Plan is consistent with the circulation system policies outlined in the Amended 2021 Regional Plan and Riding to 2050, and therefore, do not conflict with them:

Amended 2021 Regional Plan

- *Land Use and Regional Growth*. Implementation of the proposed Plan would increase transit ridership, as well as the number of walking and biking trips within the proposed Plan region. This projection suggests the proposed Plan would provide convenient access to multi-modal travel options, as prescribed by the policy. Additionally, the proposed Plan would increase the total service population within TPAs; thus, increasing the proximity of jobs and residents to transit opportunities, as prescribed by the policy. Therefore, the proposed Plan is consistent with portions of this policy that relate to the circulation system.
- *Parking and Curb Management*. The proposed Plan includes system wide investments towards parking and curb management strategies that are similar to those included in the Amended 2021 Regional Plan. Additionally, parking management strategies similar to those in the Amended 2021 Regional Plan have been included in the proposed Plan's Transportation Demand Management Policy. Therefore, the proposed Plan is consistent with this policy.
- *Transportation Demand Management*. The proposed Plan includes similar policy language and Transportation Demand Management strategies and programs to the Amended 2021 Regional Plan. Additionally, as shown in Table 4.16-6, implementation of the proposed Plan would reduce the vehicular mode share within the region by 3.2 percentage points, maintaining one of the intents of this policy by reducing the number of single-occupant vehicle trips within the region. Therefore, the proposed Plan is consistent with this policy.
- *Vision Zero*. The proposed Plan includes similar policy language and Vision Zero based transportation network improvements, strategies, and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Fix It First*. The proposed Plan includes similar policy language and Fix It First strategies and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Transportation System Management and Operations*. The proposed Plan includes similar policy language and Transportation System Management and Operations strategies and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Value Pricing*. The proposed Plan will maintain the managed lanes, fees charged to Transportation Network Companies, and transit subsidy programs included within the policy. Therefore, the proposed Plan is consistent with this policy.

The proposed Plan is also consistent with the following goals from Riding to 2050:

- *Increase the number of people who bike and frequency of bicycle trips for all purposes*. As shown in Table 4.16-6, implementation of the proposed Plan would increase bicycle ridership within the region by 34,541 daily trips, under Year 2050 conditions.

- *Improve safety for bicyclists*. As shown in Table 4.16-6, the proposed Plan would increase the total number of protected and separated bicycle facilities within the region (Class I, Class II, and Class IV facilities). These facilities provide cyclists their own right-of-way within the roadway and reduce the number of conflicts with vehicular traffic, resulting in safer conditions.

2050 Conclusion

Under Year 2050 conditions the proposed Plan would implement over 3,694 additional lane miles of bicycle facilities, and over 226,000 additional miles of transit service within the region. The proposed Plan would also increase the number of bicycle, pedestrian, and transit trips generated within the region, while reducing the vehicular mode share from 79.2 percent to 73.6 percent, compared to Baseline Year 2022 conditions. These characteristics of the proposed Plan are generally consistent with the policies outlined in the Amended 2021 Regional Plan and Riding to 2050 and would not conflict with them. Additionally, the policy language and goals in the proposed Plan and the Amended 2021 Regional Plan are similar. Therefore, implementation of the proposed Plan, under Year 2050 conditions, would result in a less-than-significant impact.

2036-2050

Transportation Network Improvements and Programs

Table 4.16-7 outlines the anticipated change in transportation network and projected travel demand, by mode, between Base Year 2036 conditions and proposed Plan Year 2050 conditions, to identify how the implementation of the plan would affect the transportation network and travel demand throughout the San Diego Region.

Table 4.16-7 Transportation System Analysis – Years 2036 to 2050

Mode	Category	Baseline Year 2036[1]	Year 2050 Proposed Plan	Change from Baseline Year 2036
Transit	Miles of Transit Service	328,229	334,227	5,998
	Commuter Rail	4,393	4,030	-363
	Light Rail Transit	24,507	34,401	9,894
	Rapid	144,186	142,154	-2,032
	Bus	155,143	153,643	-1,500
	Population within TPAs	1,885,975	1,919,031	33,056
	Employment within TPAs	1,531,064	1,623,552	92,488
	Service Population within TPAs	3,417,039	3,542,583	125,544
	Average Daily Transit Trips	481,660	516,794	35,134
	Transit Mode Share	3.2%	3.4	3.4
	Average Length of Transit Trip (miles)	9.3	9.3	0.0
Auto	Miles of Roadways	7,418	7,514	96
	Freeway (includes auxiliary lanes)	2,752	2,777	25
	General Purpose Lanes	2,465	2,322	-143
	HOV/Managed Lanes	285	453	168
	Tollway	1.87	1.87	0
	State Highway	642	645	3
	Regional Arterials	4,024	4,092	68
	Average Daily Vehicle Trips	13,754,857	13,984,751	229,894
	HOV Trips	2,006,805	1,970,400	-36,405
	Auto Mode Share	76.0%	73.6%	-2.40%

Mode	Category	Baseline Year 2036[1]	Year 2050 Proposed Plan	Change from Baseline Year 2036
	Average Length of Vehicle Trip (miles)	6.9	6.9	0.0
	SB743 VMT per Resident	15.9	15.4	-0.5
	SB743 VMT per Employee[2]	12.3	11.8	-0.5
	VMT Per Service Population[3]	14.4	14.1	-0.3
Bicycle	Lane Miles of Bike Facilities	3,420	7,114	3,694
	Class I	520	1,077	557
	Class II	2,036	3,142	1,106
	Class III	629	824	195
	Class IV	501	1,785	1,284
	Bike Boulevard	118	286	168
	Average Daily Bicycle Trips	209,896	243,061	33,165
	Bicycle Mode Share	1.4%	1.6%	0.20%
	Average Length of Bicycle Trip (miles)	3.9	4.5	0.6
Pedestrian	Average Daily Pedestrian Trips	2,473,834	2,655,865	182,031
	Pedestrian Mode Share	16.2%	17.4%	1.20%
	Average Length of Pedestrian Trip (miles)	0.9	0.9	0.0

[1] The changes between Base Year 2036 and proposed Plan Year 2035 conditions are assumed to be negligible; thus, Base Year 2036 conditions were derived from Table 4.16-5.

[2] VMT per employee accounts for trips from the work commute tours and at-work subtours only

[3] Service population includes non-institutionalized population and employment within the area

Source: ABM3, March 2025

As discussed below, the metrics outlined in Table 4.16-7 show that the proposed Plan is consistent with the circulation system policies outlined in the Amended 2021 Regional Plan and Riding to 2050, and therefore, do not conflict with them:

Amended 2021 Regional Plan

- *Land Use and Regional Growth*. Implementation of the proposed Plan would increase transit ridership, as well as the number of walking and biking trips within the proposed Plan region. This projection suggests the proposed Plan would provide convenient access to multi-modal travel options, as prescribed by the policy. Additionally, the proposed Plan would increase the total service population within TPAs; thus, increasing the proximity of jobs and residents to transit opportunities, as prescribed by the policy. Therefore, the proposed Plan is consistent with portions of this policy that relate to the circulation system.
- *Parking and Curb Management*. The proposed Plan includes system wide investments towards parking and curb management strategies that are similar to those included in the Amended 2021 Regional Plan. Additionally, parking management strategies similar to those in the Amended 2021 Regional Plan have been included in the proposed Plan's Transportation Demand Management Policy. Therefore, the proposed Plan is consistent with this policy.
- *Transportation Demand Management*. The proposed Plan includes similar policy language and Transportation Demand Management strategies and programs to the Amended 2021 Regional Plan. Additionally, as shown in Table 4.16-7, implementation of the proposed Plan would reduce the vehicular mode share within the region by 2.4 percentage points, maintaining one of the intents of this policy by reducing the number of single-occupant vehicle trips within the region. Therefore, the proposed Plan is consistent with this policy.

- *Vision Zero*. The proposed Plan includes similar policy language and Vision Zero based transportation network improvements, strategies, and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Fix It First*. The proposed Plan includes similar policy language and Fix It First strategies and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Transportation System Management and Operations*. The proposed Plan includes similar policy language and Transportation System Management and Operations strategies and programs to the Amended 2021 Regional Plan. Therefore, the proposed Plan is consistent with this policy.
- *Value Pricing*. The proposed Plan will maintain the managed lanes, fees charged to Transportation Network Companies, and transit subsidy programs included within the policy. Therefore, the proposed Plan is consistent with this policy.

The proposed Plan is also consistent with the following goals from Riding to 2050:

- *Increase the number of people who bike and frequency of bicycle trips for all purposes*. As shown in Table 4.16-7, implementation of the proposed Plan would increase bicycle ridership within the region by 33,165 daily trips, over this time period.
- *Improve safety for bicyclists*. As shown in Table 4.16-7, the proposed Plan would increase the total number of protected and separated bicycle facilities within the region (Class I, Class II, and Class IV facilities). These facilities provide cyclists their own right-of-way within the roadway and reduce the number of conflicts with vehicular traffic, resulting in safer conditions.

2036-2050 Conclusion

Over this time period the proposed Plan would implement over 3,694 additional miles of bicycle facilities, and over 5,998 additional miles of transit service within the region. The proposed Plan would also increase the number of bicycle, pedestrian, and transit trips generated within the region, while reducing the vehicular mode share from 76.0 percent to 73.6 percent, compared to Baseline Year 2036 conditions. These characteristics of the proposed Plan are generally consistent with the policies outlined in the Amended 2021 Regional Plan and Riding to 2050 and would not conflict with them. Additionally, the policy language and goals in the proposed Plan and the Amended 2021 Regional Plan are similar. Therefore, implementation of the proposed Plan between Base Year 2036 and Year 2050 conditions, would result in a less-than-significant impact.

MITIGATION MEASURES

No mitigation measures are required for this impact.

TRA-2 CONFLICT OR BE INCONSISTENT WITH CEQA GUIDELINES SECTION 15064.3 BY NOT ACHIEVING THE SUBSTANTIAL VMT REDUCTIONS NEEDED TO HELP ACHIEVE STATEWIDE GHG REDUCTION GOALS.

Analysis Methodology

Section 15064.3(B) of the CEQA Guidelines criteria for analyzing and determining transportation impacts, states:

> (b) Criteria for Analyzing Transportation Impacts.
>
> (1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.
>
> (2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway

> capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152.
>
> (3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.
>
> (4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

As noted above, VMT is an appropriate measure to identify transportation-related impacts under CEQA. The specific guidelines provided by CEQA Guidelines Section 15064.3(b)(1) and (2) are intended to be applied at the project level; as such, they are not directly applicable to the program-level transportation network improvements and the regional growth from land use changes that are included in the proposed Plan. However, Section 15064.3(b)(4) does allow for lead agencies to determine the methodology for evaluating VMT, and CEQA Guidelines Section 15064(b) provides lead agencies with discretion to establish a threshold of significance.

In response to the implementation of SB 743 and CEQA Guidelines Section 15064.3(b), the State developed additional guidance on how VMT-related impacts can be evaluated, as well as how to establish impact thresholds using the new VMT metric. Key guidance on transportation impacts and VMT is provided by the OPR VMT Technical Advisory (OPR 2018), and the CARB Scoping Plan for Achieving Carbon Neutrality, adopted on November 16, 2022 (CARB 2022). However, neither document provides guidance or thresholds in regard to assessing the significance of VMT impacts for RTPs at the regional level. The recommendations of both documents are discussed below:

OPR Technical Advisory on Evaluating Transportation Impacts in CEQA: The OPR Technical Advisory provides guidance on determining significance thresholds and assessing VMT. The guidance provided within the Technical Advisory is directed to specific projects by project type (i.e., residential, retail, office, etc.) and local plans (i.e. general plans) and includes recommendations for evaluating transportation impacts. The Technical Advisory utilizes the findings of the 2017 Climate Change Scoping Plan as substantial evidence to establish a VMT threshold for certain land use development projects, stating that:

> In summary, achieving 15 percent lower per capita (residential) or per employee (office) VMT than existing development is both generally achievable and is supported by evidence that connects this level of reduction to the State's emissions goals.

The OPR Technical Advisory does somewhat address VMT-related impacts associated with the development and implementation of General Plans, noting:

> A general plan, area plan, or community plan may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed the respective thresholds recommended above.

However, the Technical Advisory does not provide guidance on the VMT-related impacts that may be associated with regional plans, such as an RTP and SCS, as included in the proposed Plan.

2022 Scoping Plan for Achieving Carbon Neutrality: In November 2022, CARB published an update of the CARB 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals (CARB 2022). The 2022 Scoping Plan establishes strategies for achieving the AB 1279 goals of achieving 85 percent reduction of anthropogenic GHG

emissions, and carbon neutrality by 2045. The 2022 Scoping Plan concludes that the State is not on track to meet the CARB 2017 VMT reduction goals, thus the 2022 Scoping Plan recommends that the State reduce VMT per capita generation by 30 percent, from the Year 2019 conditions, by Year 2045 to achieve its climate goals. The 2022 Scoping Plan also sets an interim VMT per capita reduction target of 25 percent by Year 2030 conditions.

The 2022 Scoping Plan notes that it does not set regulatory limits on VMT and that the authority to reduce VMT largely lies with state, regional, and local transportation, land use, and housing agencies, along with the legislature and its budgeting choices.

VMT Analysis Approach

This EIR's VMT analysis was largely quantitative, consistent with CEQA Guidelines Section 15064.3. The ABM3 was utilized to derive the VMT metrics analyzed under each analysis scenario. The ABM3 is a travel demand forecasting model that incorporates census data and travel surveys to inform the algorithms of the model's projections. It uses a simulated population based on existing and projected demographics, to match residents to employment, and forecasts the daily travel on the regional transportation network. In addition, the model tracks the daily travel of individuals in the simulated population, including origins, destinations, travel distances, and mode choices. This allows the ABM3 to project transportation metrics such as trip generation, trip assignment, and VMT at both a regional and local level.

The ABM3 has three forecast scenarios: Baseline Year 2022, which provides a forecast of the year the model inputs (land uses, mobility network, and socio-economic data) are based on, Interim Year 2035, and Horizon Year 2050 conditions. The Year 2035 and 2050 scenarios are derived based on the planned land uses and mobility improvements within the region, as well as population and employment projections. The different components of the proposed Plan are projected to be implemented over 25 years with a buildout year projected in approximately 2050.

Because of the close relationship between forecasted regional growth, land use change, and planned transportation network improvements and programs on travel behavior, this section analyzes their combined effect on per capita VMT and total VMT, instead of providing separate analyses for regional growth and land use change and transportation network improvements and programs.

Significance Thresholds

VMT Per Capita: 2022 Scoping Plan notes "we also know we are not on track to achieve the VMT reduction called for in the 2017 Scoping Plan and will need to double down to achieve the even more ambitious target called for in the Scoping Plan Scenario." As a response to this, the 2022 Scoping Plan includes a target to reduce the statewide VMT per capita to 25 percent below 2019 levels by 2030, as well as the overall target to reduce the statewide VMT per capita to 30 percent below 2019 levels by 2045. While these targets are not regulatory requirements, they are intended to inform future planning processes. Therefore, the updated VMT per capita reduction goals included in 2022 Scoping Plan are used as a guide to determine whether the proposed Plan would reach the substantial VMT reductions needed to help achieve statewide GHG reduction goals.

CARB stresses that the VMT developed in its estimates "is not household-generated VMT, and the values are not directly comparable to the output from a local or regional travel demand model." ABM3 derives VMT estimates based on household-generated VMT; as such, the results of the model may not directly align with the results of the 2022 Scoping Plan. However, ABM3 is currently the best tool within the San Diego region for estimating baseline and future year VMT metrics, including total VMT and VMT per capita; therefore, the ABM3 was used in the analysis of the 2022 Scoping Plan VMT reduction goals.

ABM3 does not include scenarios for year 2019, 2030, and 2045 conditions, which are the timeframes in which the 2022 Scoping Plan VMT reductions goals are set. Therefore, to project the VMT analysis metrics under these scenarios, the results from ABM3 Year 2035 and 2050 scenarios were interpolated to derive the VMT metrics for the 2022 Scoping Plan target years (years 2030 and 2045).

Total VMT. Because there are no State-recommended total VMT significance thresholds for regional plans such as the proposed Plan, a qualitative threshold was used: would the proposed Plan achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals? If the proposed Plan would cause substantial

increases in total VMT, then it would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals and would, therefore, result in a significant impact on VMT.

Interim VMT per Capita Targets (for Informational Purposes). As noted above, the State's VMT per capita reduction goal is 25 percent below Year 2019 conditions by Year 2030 and 30 percent by Year 2045. The State did not establish any additional interim year targets. However, for informational purposes, and to further evaluate if the proposed Plan would be on track to meet the State's VMT reduction goals, an interim year VMT reduction goal was estimated for Year 2035 conditions. The interim year target was derived based on a straight-line interpretation of the full 25 percent and 30 percent reductions in VMT per capita that the region has to achieve by Year 2030 and Year 2045, respectively:

Year 2035

Year 2045 – Year 2030 = 15 years.

- 30 percent Year 2045 reduction goal – 25 percent Year 2030 reduction goal = 5 percent reduction over the 15 years
- 5 percent / 15 years = 0.3 percent reduction per year between Year 2030 and Year 2045
- 0.3 percent reduction per year X 5 years (Year 2035 – Year 2030) = 1.7 percent
- 1.7 percent + 25 percent (Year 2030 target) = 26.7 percent

In addition, it was assumed that for 2050, the ultimate 30 percent reduction goal for 2045 would be maintained.

The thresholds described above are unique to the proposed Plan, due to its regional and comprehensive nature. These thresholds are not intended for application to other project types, in particular to individual land use projects for which State-recommended per capita VMT thresholds may be appropriate.

Impact Analysis

As noted under the significance thresholds, CARB 2022 utilizes Year 2019 conditions as the year in which the VMT reduction goals are measured against. Therefore, TRA-2 utilizes a starting year of 2019 instead of the analysis Base Year of 2022.

2030

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Table 4.16-8 summarizes the VMT projections and analyses developed under Year 2030 conditions. Total VMT and VMT per capita results are presented and compared between Starting Year - Year 2019 and proposed Plan Year 2030 conditions to identify VMT-related impacts.

Table 4.16-8 VMT Analysis – Year 2030

Metric	Starting Year - Year 2019[1]	Year 2030 Proposed Plan	Difference between Starting Year - Year 2019 and Year 2030 Proposed Plan	% Change between Starting Year - Year 2019 and Year 2030 Proposed Plan
Total VMT (daily)[2]	77,181,443	79,810,491	2,629,048	3.4%
VMT per Capita (miles)[2]	16.9	16.2	-0.7	-4.1%

[1]The ABM 3 does not include a year 2019 scenario; therefore, the year 2019 VMT metrics were derived via linear interpolation using year 2022 and year 2035 data.

[2] The VMT calculations do not include the off-model VMT reduction in Appendix M to the proposed Plan because the reduction was not calculated for 2030 conditions. Therefore, the VMT figures may be slightly overstated in this analysis. However, the reduction is minor (less than 0.23 percent) and not anticipated to reduce the impacts to less than significant. See Appendix M of the proposed Plan for additional details.

Source: ABM3, March 2025.

As shown in Table 4.16-8, implementation of the proposed Plan, under Year 2030 conditions, would result in a 4.1 percent decrease in the region's VMT per capita, as compared to Starting Year - Year 2019 conditions. This is less than the 25 percent reduction needed to meet the State's Year 2030 VMT per capita reduction goal.

Implementation of the proposed Plan, under Year 2030 conditions, would also result in an increase in the total daily VMT generated by the region of 2,629,048 (3.4 percent) compared to Starting Year - Year 2019 conditions. The increase is considered substantial because it increases the overall VMT production within the San Diego Region and does not help to achieve the statewide GHG reduction targets, as discussed in the previous paragraph; therefore it is significant.

2030 Conclusion

As shown in Table 4.16-7, implementation of the proposed Plan, under Year 2030 conditions, would result in a decrease in VMT per capita of 4.1 percent below Starting Year - Year 2019 conditions. This is less than the 25 percent reduction needed to achieve the State's Year 2030 interim VMT per capita reduction goal and is therefore inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals, and a significant impact. Implementation of the proposed Plan would also result in an increase of 2,629,048 (3.4 percent) daily VMT generated within the San Diego region compared to Starting Year - Year 2019 conditions, which is considered a substantial increase. Therefore, this impact (TRA-2) is considered significant in the year 2030 because the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals.

2035

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Table 4.16-9 summarizes the VMT projections and analyses developed under Year 2035 conditions. Total VMT and VMT per capita results are presented and compared between Starting Year - Year 2019 and proposed Plan Year 2035 conditions to identify VMT-related impacts.

Table 4.16-9 VMT Analysis – Year 2035

Metric	Starting Year - Year 2019[1]	Year 2035 Proposed Plan	Difference between Starting Year - Year 2019 and Year 2035 Proposed Plan	% Change between Starting Year - Year 2019 and Year 2035 Proposed Plan
Total VMT (daily)[2]	77,181,443	81,005,512	3,824,069	5.0%
VMT per Capita (miles)[2]	16.9	15.9	-1.0	-5.9%

[1]The ABM 3 does not include a year 2019 scenario; therefore, the year 2019 VMT metrics were derived via linear interpolation using year 2022 and year 2035 data.

[2] The VMT calculations do not include the off-model VMT reduction in Appendix M to the proposed Plan because the reduction was not calculated for 2030 conditions. Therefore, the VMT figures may be slightly overstated in this analysis. However, the reduction is minor (0.23 percent) and is not anticipated to reduce the impacts to less than significant. See Appendix M of the proposed Plan for additional details.

Source: ABM3, March 2025.

As shown in Table 4.16-9, implementation of the proposed Plan, under Year 2035 conditions, would result in a 5.9 percent decrease in the region's VMT per capita, as compared to Starting Year - Year 2019 conditions. This is less than the 26.7 percent reduction needed to meet the State's Year 2035 VMT per capita interim reduction goal.

Implementation of the proposed Plan, under Year 2035 conditions, would also result in an increase to the total daily VMT generated by the region of 3,824,069 (5.0 percent) compared to Starting Year - Year 2019 conditions. The increase is substantial because it increases the overall VMT production within the San Diego Region and does not help to achieve the statewide GHG reduction targets, as discussed in the previous paragraph; therefore, it is significant.

2035 Conclusion

As shown in Table 4.16-9, implementation of the proposed Plan, under Year 2035 conditions, would result in a decrease in VMT per capita of 5.9 percent below Starting Year - Year 2019 conditions. This is less than the 26.7 percent reduction needed to achieve the State's Year 2035 interim VMT per capita reduction goal, and is therefore inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals, and a significant impact. Implementation of the proposed Plan would also result in an increase of 3,824,069 (5.0 percent) daily VMT generated within the San Diego region compared to Starting Year - Year 2019 conditions, which is considered a substantial increase. Therefore, this impact (TRA-2) is considered significant in the year 2035 because the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals.

2045

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Table 4.16-10 summarizes the VMT projections and analyses developed under Year 2045 conditions. Total VMT and VMT per capita results are presented and compared between Starting Year - Year 2019 and proposed Plan Year 2045 conditions to identify VMT-related impacts.

Table 4.16-10 VMT Analysis – Year 2045

Metric	Starting Year - Year 2019[1]	Year 2045 Proposed Plan	Difference between Starting Year - Year 2019 and Year 2045 Proposed Plan	% Change between Starting Year - Year 2019 and Year 2045 Proposed Plan
Total VMT (daily)[2]	77,181,443	81,351,592	4,170,149	5.4%
VMT per Capita (miles)[2]	16.9	15.6	-1.3	-7.7%

[1]The ABM 3 does not include a year 2019 scenario; therefore, the year 2019 VMT metrics were derived via linear interpolation using year 2022 and year 2045 data.

[2] The VMT calculations do not include the off-model VMT reduction in Appendix M to the proposed Plan because the reduction was not calculated for 2030 conditions. Therefore, the VMT figures may be slightly overstated in this analysis. However, the reduction is minor (0.15 percent) and is not anticipated to reduce the impacts to less than significant. See Appendix M of the proposed Plan for additional details.

Source: ABM3, March 2025.

As shown in Table 4.16-10, implementation of the proposed Plan, under Year 2045 conditions, would result in a 7.7 percent decrease in the region's VMT per capita, as compared to Starting Year - Year 2019 conditions. This is less than the 30 percent reduction needed to meet the State's Year 2045 VMT per capita reduction goal.

Implementation of the proposed Plan, under Year 2045 conditions, would also result in an increase to the total daily VMT generated by the region of 4,170,149 (5.4 percent) compared to Starting Year - Year 2019 conditions. The increase is substantial because it increases the overall VMT production within the San Diego Region and does not help to achieve the statewide GHG reduction targets, as discussed in the previous paragraph; therefore, it is significant.

2045 Conclusion

As shown in Table 4.16-10, implementation of the proposed Plan, under Year 2045 conditions, would result in a decrease in VMT per capita of 7.7 percent below Starting Year - Year 2019 conditions. This is less than the 30 percent reduction needed to achieve the State's Year 2045 VMT per capita reduction goal and is therefore inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals, and a significant impact. Implementation of the proposed Plan would also result in an increase of 4,170,149 daily VMT (5.4 percent) generated within the San Diego region compared to Starting Year - Year 2019 conditions, which is considered a substantial increase. Therefore, this impact (TRA-2) is considered significant in the year 2045 because the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals.

2050

Regional Growth and Land Use Change and Transportation Network Improvements and Programs

Table 4.16-11 summarizes the VMT projections and analyses developed under Year 2050 conditions. Total VMT and VMT per capita results are presented and compared between Starting Year - Year 2019 and proposed Plan Year 2050 conditions to identify VMT-related impacts.

Table 4.16-11 VMT Analysis – Year 2050

Metric	Starting Year - Year 2019[1]	Year 2050 Proposed Plan	Difference between Starting Year - Year 2019 and Year 2050 Proposed Plan	% Change between Starting Year - Year 2019 and Year 2050 Proposed Plan
Total VMT (daily)[2]	77,181,443	81,524,632	4,343,189	5.6%
VMT per Capita (miles)[2]	16.9	15.4	-1.5	-8.9%

[1]The ABM 3 does not include a year 2019 scenario; therefore, the year 2019 VMT metrics were derived via linear interpolation using year 2022 and year 2050 data.

[2] The VMT calculations do not include the off-model VMT reduction in Appendix M to the proposed Plan because the reduction was not calculated for 2030 conditions. Therefore, the VMT figures may be slightly overstated in this analysis. However, the reduction is minor (0.15 percent) and is not anticipated to reduce the impacts to less than significant. See Appendix M of the proposed Plan for additional details.

Source: ABM3, March 2025.

As shown in Table 4.16-11, implementation of the proposed Plan, under Year 2050 conditions, would result in an 8.9 percent decrease in the region's VMT per capita, as compared to Starting Year - Year 2019 conditions. This is less than the 30 percent reduction needed to meet the State's Year 2050 VMT per capita reduction goal.

Implementation of the proposed Plan, under Year 2050 conditions, would also result in an increase to the total daily VMT generated by the region of 4,343,189 (5.6 percent) compared to Starting Year - Year 2019 conditions. The increase is substantial because it increases the overall VMT production within the San Diego Region and does not help to achieve the statewide GHG reduction targets, as discussed in the previous paragraph; therefore it is significant.

2050 Conclusion

As shown in Table 4.16-11, implementation of the proposed Plan, under Year 2050 conditions, would result in a decrease in VMT per capita of 8.9 percent below Starting Year - Year 2019 conditions. This is less than the 30 percent reduction needed to achieve the State's Year 2045 VMT per capita reduction goal and is therefore inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals, and a significant impact. Implementation of the proposed Plan would also result in an increase of 4,343,189 daily VMT (5.6 percent) generated within the San Diego region compared to Starting Year - Year 2019 conditions, which is considered a substantial increase. Therefore, this impact (TRA-2) is considered significant in the year 2050 because the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals.

MITIGATION MEASURES

TRA-2 CONFLICT OR BE INCONSISTENT WITH CEQA GUIDELINES SECTION 15064.3 BY NOT ACHIEVING THE SUBSTANTIAL VMT REDUCTIONS NEEDED TO HELP ACHIEVE STATEWIDE GHG REDUCTION GOALS.

Achieving further reductions in the total and per capita VMT generated within the region depends upon additional State policy actions and funding, as well as local jurisdictions' review and entitlement of individual land use development projects and Regional Arterial System (RAS) transportation projects, which could create inconsistencies with what is projected in the proposed Plan. In addition, transportation sponsors other than SANDAG, such as Caltrans, must evaluate and potentially mitigate any induced VMT that may be associated with the implementation of enhancements to the freeway and State highway system.

Therefore, mitigation measure TRA-2 focuses on project-specific mitigation measures that can and should be implemented to further reduce the region's total VMT and VMT per capita.

2030, 2035, 2045, and 2050

TRA-2: Achieve Further VMT Reductions for Transportation and Development Projects. During the project design and project-level CEQA review phases of transportation network improvements or land use development projects, SANDAG shall, and other transportation project sponsors (the Local jurisdictions) can, and should implement project-level VMT reduction measures in addition to those included in the Regional Plan. VMT reducing measures consist of, but are not limited to, the following:

- **Require TDM Strategies:** SANDAG and other transportation project sponsors (the Local jurisdictions) can, and should require all transportation network improvements or land use development projects, that are identified to have a significant VMT-related impact, to implement feasible TDM strategies to help offset their impacts. This mitigation measure will further reduce the proposed Plan's VMT because the potential VMT reductions associated with two TDM programs, which include vanpool and carshare were not incorporated into ABM3. Strategies, such as free shuttles, parking facilities for carshare, and site design features to facilitate walking, biking, and transit can, and should be used by land development projects to reduce VMT-related impacts. Additional project-level TDM measures not included in the proposed Plan should also be used, including walking, school bus programs, school pool programs, subsidized transit passes, unbundled parking, preferential parking programs for carpools/vanpools, and bike sharing programs.
- **Reduce Parking Minimums:** Local jurisdictions can, and should evaluate the feasibility of reducing their currently required parking minimums. Reducing the parking minimums for different land use types, where appropriate, can decrease project-level VMT by up to 13.7 percent (CAPCOA 2024).
- **Implement Additional Active Transportation Facilities Not Included in the Proposed Plan:** To further reduce local VMT-related impacts and take advantage of the regional bike network, SANDAG and other transportation project sponsors (the Local jurisdictions) can, and should implement additional active transportation facilities that provide connections from the regional bicycle network to local neighborhoods. The proposed Plan includes funding for Complete Streets investments in Mobility Hub areas, including implementation of bicycle and pedestrian facilities that provide local connections throughout Mobility Hub areas; however, the associated VMT reductions from this funding have not yet been determined; thus, they were not yet included in the EIR's VMT analysis. Therefore, this mitigation measure would achieve further VMT reductions through the funding of additional, locally based multi-modal facilities that were not assumed in the proposed Plan analysis. The implementation of locally based multi-modal facilities, funded through the proposed Plan, can reduce VMT on the roadway network adjacent to the multi-modal facility by 0.8 percent for bicycle facilities, and up to 6.4 percent for pedestrian facilities (CAPCOA 2024).
- **VMT Credit/Banking Program for Local VMT Reducing Infrastructure and Programs:** SANDAG can and should participate and help facilitate a VMT Credit/Banking Program where local jurisdictions can submit and bank VMT reduction credit for VMT reducing infrastructure and/or programs which the jurisdiction has implemented. Local jurisdictions would be able to sell their banked VMT reduction credits to development projects within the region or use the credits to offset their own VMT-related impacts associated with roadway capacity improvements. Revenues received from the program must be used to advance the timing or implementation of new VMT reducing infrastructure. This program may be used to fund and/or prioritize the development of local VMT reducing infrastructure and programs that are not included within the proposed Plan, thereby reducing VMT productions within the San Diego region beyond than what is projected in Tables 4.16-7 through 4.16-10. This program is currently being developed as part of a Caltrans Partnership Grant that was awarded to SANDAG and the County of San Diego.
- **VMT Exchange Program for Local VMT Reducing Infrastructure:** SANDAG can and should participate and help facilitate a regional VMT exchange program that allows local jurisdictions to advertise unfunded VMT reducing in which land use development projects can implement to offset their VMT-related impacts. This will allow land use development projects located in more rural and suburban jurisdictions with limited VMT

mitigation options to offset their VMT-related impacts by constructing infrastructure in other local jurisdictions with more VMT reducing opportunities. This program may fund construction of local VMT reducing infrastructure not included in the proposed Plan that not have been funded otherwise. The measure could thereby reduce VMT production within the San Diego region beyond the reductions projected in Tables 4.16-7 through 4.16-10. Similar to the VMT Credit/Banking Program, this program is currently being developed as part of a Caltrans Partnership Grant that was awarded to SANDAG and the County of San Diego.

The following mitigation measures presented in Section 4.8, "Greenhouse Gas Emissions," will further reduce both the total VMT and VMT per capita:

- GHG-4a *Allocate Grant Funding to Projects that Reduce GHG Emissions*.
- GHG-4b *Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans*.
- GHG-4d *Implement Measures to Reduce GHG Emissions from Transportation Projects*.
- GHG-4e *Implement Measures to Reduce GHG Emissions from Development Projects*.

The following mitigation measures presented in Section 4.3 "Air Quality" will further reduce both the total VMT and VMT per capita:

- AQ-2b. *Regional Plan VMT Credit/Banking Program*.

SIGNIFICANCE AFTER MITIGATION

2030, 2035, 2045, 2050

By Plan Year 2050, the proposed Plan would reduce the region's VMT per capita by 8.9 percent over Starting Year 2019 conditions. As outlined in Tables M-17 through M-19 in Appendix M of the proposed Plan, there are some TDM strategies (Vanpool and Carsharing programs) included in the proposed Plan that are too minor to be incorporated into ABM3 and were therefore excluded from the transportation impact analysis assumptions. As noted within Appendix M of the proposed Plan, these reductions could further reduce the total VMT generated within the region by an additional 0.15 percent by Year 2050. These reductions were calculated based on their influence of the total VMT generated within the region. As such, these strategies would likely have further reduce the region's VMT per capita, since the majority of trips within the region are home-based (i.e. trips starting and/or ending at the residents dwelling unit). Therefore, by 2050, the region could achieve reductions of up to of 9.05 percent (8.9 percent + 0.15 percent) in VMT per capita, over Starting Year 2019 conditions, if these strategies are fully implemented. This would exceed the CARB target reduction of 30 percent by 2045.

As noted in the mitigation section, TDM strategies generally are required and implemented at the project level by local agencies. The VMT reductions associated with these project-level TDM measures can vary greatly based on the project type, location, and size; therefore, an overall regionwide reduction cannot be estimated at the program level. It is also assumed that any VMT reductions associated with the VMT Credit/Banking Program would go towards offsetting the VMT-related impacts associated with the roadway infrastructure improvements included within the proposed Plan. While some additional VMT reduction credits may be available to offset the VMT-related impacts associated with land use development projects, the scope and the magnitude of the available credits is unknown at this time.

As outlined in Tables 4.5-7 through 4.5-10, the regional VMT per capita is more than 20.95 percent higher than the threshold to meet, or keep pace with, the State's GHG reduction goals under each horizon year (20.95 percent = 30 percent threshold – VMT per Capita 9.05 percent below the 2019 rates). Therefore, the full implementation of the proposed mitigation, under any horizon year, would not reduce impacts to a less than significant level for any horizon year (i.e., 2030, 2035, 2045, or 2050). Additionally, the identified VMT reductions associated with the mitigation measures would not significantly reduce the daily VMT generated within the San Diego region to a

level that would no longer be considered substantial. Therefore, this impact would be significant and unavoidable under the proposed Plan.

SANDAG cannot require local agencies implementing development projects, or other transportation project sponsors, to adopt the above mitigation measures. It is ultimately the responsibility of the CEQA lead agency to determine and adopt mitigation. Therefore, this impact would be significant and unavoidable.

TRA-3 SUBSTANTIALLY INCREASE HAZARDS DUE TO A DESIGN FEATURE (E.G., SHARP CURVES OR DANGEROUS INTERSECTIONS) OR INCOMPATIBLE USES.

Analysis Methodology

The focus of this analysis is to determine if implementation of the proposed Plan would lead to new or increased safety hazards within the region's transportation network. The proposed Plan contains various projects that would modify or expand the regional transportation network. These projects were developed to address existing deficiencies and/or future needs given projected population, employment, and travel growth in the region. If implementation of these projects were determined to increase hazards within the region's transportation network (e.g., increase the likelihood of collisions or other dangers) there would be a significant impact. The impact analysis focuses on consistency with design standards related to traffic safety in order to determine whether impacts are significant. The impact analysis considers the proposed Plan's transportation network improvements and programs, but not the proposed Plan's regional growth and land use change, because the Impact TRA-3 significance criterion is limited to transportation project safety hazard issues.

Impact Analysis

2035

Transportation Network Improvements and Programs

The proposed Plan would expand regional transportation safety programs and efforts. Highlighted below are several planning efforts included in the proposed Plan that would improve transportation safety within the region:

- *Development of Regional Vision Zero Program:* The proposed Plan introduces the Vision Zero Program with the aim of keeping all roadway users—especially vulnerable users—safe through the use of data, project prioritization, education, and community engagement. See Appendix A of the 2025 Regional Plan for more information.
- *Proposed Plan Network Development*: Safety data (crash history) was applied to project bundles during the network-development process through an evaluation criteria. See Appendix N of the 2025 Regional Plan for more information.
- *Federal Transportation Performance Management*: Planning and programming are informed by five safety performance targets for all public roads and seven transit safety performance targets that the lead CEQA agency monitors and updates on a regular schedule. See Appendix P of the 2025 Regional Plan for more information.
- *Strategic Highway Safety Plan*: The proposed Plan is consistent with the 2020 Strategic Highway Safety Plan (SHSP). SANDAG supported the development of this statewide plan and continues support of plan implementation through SHSP Challenge Area Teams.
- *Comprehensive Multimodal Corridor Plans (CMCPs)*: These subregional plans develop groupings of transportation projects that are evaluated using performance measures, including safety improvements (SANDAG 2025b).

The transportation network improvements and programs in the proposed Plan would be required to conform to the design standards of the public agency responsible for implementation. Design standard conformance is a key part of developing networks that provide common expectations for users to minimize hazardous conflicts and conditions that could contribute to collisions. The standards outlined in the California MUTCD, HDM, and MTS'

Design for Transit (see Section 4.16.2), as well as the street design manuals adopted by the local jurisdictions, cover all aspects of the transportation right-of-way, including physical and operational features, as well as appropriate actions during construction. Utilizing infrastructure designs based on established, tested, and peer reviewed standards, as provided within these documents, will help to ensure higher levels of safety both in the construction and operation of the transportation improvements included within the proposed Plan.

The transportation network improvements and programs included under Year 2035 conditions in the proposed Plan would not change the applicable safety design standards of the implementing agencies. The transportation network improvements would be designed consistent with those standards. Further, the proposed Plan includes several planning efforts that would improve transportation safety within the region. Therefore, this impact is less than significant.

2035 Conclusion

Implementation of the proposed Plan by 2035 would not change the applicable design standards of the implementing agencies, and the transportation network improvements would be designed consistent with those standards. Further, the proposed Plan includes several planning efforts that would improve transportation safety. Therefore, impacts would be less than significant.

2050

Transportation Network Improvements and Programs

The proposed Plan would expand regional transportation safety programs and efforts. As highlighted in the 2035 impact analysis, there are several planning efforts included in the proposed Plan that would improve transportation safety within the region.

The transportation network improvements and programs in the proposed Plan would be required to conform to the design standards of the public agency responsible for implementation. Design standard conformance is a key part of developing networks that provides common expectations for users to minimize hazardous conflicts and conditions that could contribute to collisions. The standards outlined in the California MUTCD, HDM, and MTS' *Design for Transit* (see Section 4.16.2), as well as the street design manuals adopted by the local jurisdictions, cover all aspects of the transportation right-of-way, including physical and operational features, as well as appropriate actions during construction. Utilizing infrastructure designs based on established, tested, and peer reviewed standards, as provided within these documents, will help to ensure higher levels of safety both in the construction and operation of the transportation improvements included within the proposed Plan.

The transportation network improvements and programs included under Year 2050 conditions in the proposed Plan would not change the applicable safety design standards of the implementing agencies. The transportation network improvements would be designed consistent with those standards. Further, the proposed Plan includes several planning efforts that would improve transportation safety within the region. Therefore, this impact is less than significant.

2050 Conclusion

Implementation of the proposed Plan by 2050would not change the applicable design standards of the implementing agencies, and the transportation network improvements would be designed consistent with those standards. Further, the proposed Plan includes several planning efforts that would improve transportation safety. Therefore, impacts would be less than significant.

TRA-4 LEAD TO A LACK OF PARKING SUPPLY THAT WOULD CAUSE SIGNIFICANT SECONDARY ENVIRONMENTAL IMPACTS NOT ALREADY ANALYZED IN OTHER RESOURCE CHAPTERS OF THIS EIR.

Analysis Methodology

Per Public Resources Code Section 2099(d)(1), parking impacts are not considered an environmental impact under CEQA for residential, mixed-use residential, or employment center projects located on an infill site within a TPA.

The majority of the proposed policies in the Plan relating to parking operations and management would be applied within a TPA. Changes in parking operations, supply, and management can have an effect on the way people travel within the region and ultimately influence VMT. These changes may affect air quality, energy, and GHG impacts, as disclosed within Sections 4.3, 4.6, and 4.8 of this EIR, respectively. Therefore, if the implementation of the policies included in the proposed Plan would lead to lack of parking supply causing a significant impact to another resource category not already analyzed in this EIR, the proposed Plan's parking impact would be considered significant.

Parking supply requirements for private land uses are generally developed and regulated by local jurisdictions; thus, the proposed Plan would not directly affect the provision or amount of parking supply for future land use developments. Thus, the parking requirements and potential deficiencies associated with the land use growth is not affected by the proposed Plan. Therefore, a qualitative analysis was conducted to determine if the Pricing Strategies and the Parking Management Strategies, included in the Transportation Demand Management Policy (See Appendix A of the proposed Plan for more information), would reduce the public parking supply, throughout the region, to a level where a lack of public parking supply could cause a significant impact on other environmental resources.

Impact Analysis

2035

Transportation Network Improvements and Programs

Dynamic pricing for on-street parking spaces is included in the pricing strategies and policies included in the proposed Plan. The proposed Plan will promote dynamic pricing for on-street parking spaces, where the hourly cost of parking increases as parking becomes less available. Dynamic pricing incentivizes travelers to utilize other modes of travel during peak times, thus potentially reducing VMT. The CAPCOA Handbook for *Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA 2024), finds that charging for public on-street parking or increasing the existing price of on-street parking can reduce VMT by up to 30 percent. This strategy and its associated effects are incorporated into the ABM3, which uses travel survey data to determine how the cost to operate a vehicle (including gas prices, maintenance, tolls, and parking costs) affects a traveler's choice in modes.

Dynamic pricing for on-street parking was reflected in the ABM3 results for the proposed Plan and is reflected in the VMT results outlined in Table 4.16-6. As shown, the VMT per capita, VMT per employee, and VMT per service population would decrease under the proposed Plan, which includes the effects of dynamic pricing.

It should be noted that the ABM3 does not specifically account for additional localized VMT that could be generated by additional vehicles in search for parking. Therefore, any VMT effects specifically associated with parking shortages cannot be quantified and would be dictated by local conditions, to which the model is not sensitive. The effect on VMT associated with additional vehicles circling around and looking for available parking, or cheaper parking, is likely negligible on a regional scale, and would be offset by the VMT reductions from the dynamic pricing strategy and policy described above.

2035 Conclusion

Proposed Plan pricing strategies and policies were integrated into the Year 2050 VMT results analyzed under Impact TRA-2. These VMT results were relied upon for air quality, energy, and GHG impact analyses conducted in Sections 4.3, 4.6, and 4.8. Therefore, the parking related programs included within the proposed Plans policies are anticipated to reduce VMT and better manage the existing public parking supply that is available today. Therefore, these policies would not lead to a lack of parking supply by 2035. Additionally, any secondary impacts associated with these policies were analyzed in the EIR (See Sections 4.3, 4.6 and 4.8), Thus, this impact is less than significant.

2050

Transportation Network Improvements and Programs

Dynamic pricing for on-street parking spaces is included in the pricing strategies and policies included in the proposed Plan. The proposed Plan will promote dynamic pricing, where the hourly cost of parking increases as parking becomes less available. Dynamic pricing incentivizes travelers to utilize other modes of travel during peak times, thus potentially reducing VMT. The CAPCOA Handbook for *Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (CAPCOA 2024), finds that charging for public on-street parking or increasing the existing price of on-street parking can reduce VMT by up to 30 percent. This strategy and its associated effects are incorporated into the ABM3, which uses travel survey data to determine how the cost to operate a vehicle (including gas prices, maintenance, tolls, and parking costs) affects a traveler's choice in modes.

Dynamic pricing for on-street parking was reflected in the ABM3 results for the proposed Plan and is reflected in the VMT results outlined in Table 4.16-6. As shown, the VMT per capita, VMT per employee, and VMT per service population would decrease under the proposed Plan, which includes the effects of dynamic pricing.

It should be noted that the ABM3 does not specifically account for additional localized VMT that could be generated by additional vehicles in search for parking. Therefore, any VMT effects specifically associated with parking shortages cannot be quantified and would be dictated by local conditions, to which the model is not sensitive. The effect on VMT associated with additional vehicles circling around and looking for available parking, or cheaper parking, is likely negligible on a regional scale, and would be offset by the VMT reductions from the dynamic pricing strategy and policy described above.

2050 Conclusion

Proposed Plan pricing strategies and policies were integrated into the Year 2050 VMT results analyzed under Impact TRA-2. These VMT results were relied upon for air quality, energy, and GHG impact analyses conducted in Sections 4.3, 4.6, and 4.8. Therefore, the dynamic pricing related programs for on-street parking included within the proposed Plans policies are anticipated to reduce VMT and better manage the existing public parking supply that is available today. As such, these policies would not lead to a lack of parking supply by 2050. Additionally, any secondary impacts not already analyzed in the EIR (See Sections 4.3, 4.6 and 4.8). Thus, this impact is less than significant.

MITIGATION MEASURES

No mitigation measures are required for this impact.

4.16.5 Cumulative Impacts Analysis

C-TRA-1 MAKE A CUMULATIVE CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS TO TRANSPORTATION

The geographic scope for the transportation cumulative analysis is the Southern California and northern Baja region. Urban development and transportation systems are not bound by jurisdictional boundaries as movement within, through, and beyond the region is necessary for commuters, personal travel, and goods movement. Thus, it is important to consider both the Southern California region, as well as the connection with northern Baja California, in assessing the proposed Plan's cumulative transportation impacts.[2]

A hybrid approach for the cumulative analysis of transportation impacts allows for an overarching discussion of regional impacts associated with general patterns of regional urbanization, growth, and land use change and how the transportation network both influences, and is affected by, those regional development patterns. Discussion of

[2] It should be noted that the SANDAG model only calculates VMT within the San Diego region.

specific large-scale existing and probable future projects also allows for consideration of cumulative impacts of the proposed Plan in combination with individual projects with known impacts on transportation.

Cumulative impacts related to transportation would occur if future operating conditions of the regional transportation system, including the SANDAG, SCAG, and northern Baja regions, conflict with a program, plan, ordinance or policy addressing the circulation system; conflict with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals; substantially increase hazards due to design features; or result in loss of parking that causes significant adverse environmental impacts not evaluated elsewhere in the EIR.

This cumulative impact assessment relies on the impact analysis within this EIR for the proposed Plan; SCAG Connect SoCal 2024 (SCAG 2024a); SCAG 2025 Federal Transportation Improvement Program (SCAG 2024b); San Diego County Regional Airport Authority 2008 Airport Master Plan, San Diego International Airport, Airport Development Plan EIR (SDIA 2019); SDCRAA Aviation Activity Forecast (SDCRAA 2019); SDCRAA Regional Aviation Strategic Plan Update (SDCRAA 2011); US Environmental Protection Agency: The US–Mexico Border Environmental Program: Border 2025 (EPA 2021);; California-Baja California Border Master Plan (Caltrans 2021b); and 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan (IMPLAN 2013).

Implementation of regional growth, land use change, and transportation network improvements associated with the proposed Plan would not conflict with a program, plan, ordinance or policy addressing the circulation system in 2035 or 2050. As documented in Section 4.16.3, the proposed Plan would increase multi-modal options, including bicycle, pedestrian, and transit trips within the region, in all horizon years, while reducing vehicle trips. These changes would be consistent with the policies outlined in both the Amended 2021 Regional Plan as well as Riding to 2050. In addition, the proposed Plan would not result in hazardous design features because transportation network improvements would be designed in accordance with existing standards. Nor would the proposed Plan result in loss of parking that causes significant adverse environmental impacts not evaluated elsewhere in the EIR. These impacts would be less than significant in 2035 and 2050 (Impacts TRA-1, TRA-3, and TRA-4). However, while implementation of the proposed Plan would result in a decrease in the region's VMT per capita, it will not be enough to achieve the state's VMT reduction goal of 25 percent below baseline year 2019 levels by year 2030 and 30 percent below baseline year 2019 levels by year 2045. Additionally, the proposed Plan would result in a substantial increase in the overall VMT generated by the region in all horizon years (i.e., 2030, 2035, 2045 and 2050 conditions). Therefore, this would result in a significant impact in year 2030, 2035, 2045 and 2050 conditions (Impact TRA-2).

Impacts of Related Projects

Related infrastructure improvement projects, such as the California High Speed Train Project (HST), the expansion of San Diego International Airport Terminals 1 and 2, and cross-border projects such as the State Route 11 (SR 11)/Otay Mesa East Port of Entry Project, would result in potentially significant transportation impacts. The environmental document for the HST project found that the project would have a system-wide positive effect, but localized traffic conditions around some HST system stations would experience a decrease in level of service and some added delays, and transit lines serving the station areas would experience increases in passengers during peak hours (HSR & USDOT 2005). The recirculated EIR for the Airport Development Plan concluded that implementation of that plan would result in significant and unavoidable traffic impacts (SDCRAA 2019). The State Route 11 (SR 11)/Otay Mesa East Port of Entry Project (OME POE) would create a new land POE connecting to a new four-lane toll road along SR 11. The OME POE project is intended to reduce border crossing congestion (Caltrans 2023).

Impacts of Projections in Adopted Plans

The EIR prepared for the SCAG Connect SoCal 2024 PEIR identified a significant and unavoidable impact regarding conflicts or inconsistencies with CEQA Guidelines Section 15064.3(b) due to the potential to increase total daily VMT in 2045. The EIR concluded SCAG Connect SoCal 2024 may not support the State's VMT reduction goals. The EIR also found implementation of the SCAG Connect SoCal 2024 would have cumulatively considerable transportation impacts, such as VMT, in areas outside of the SCAG region (SCAG 2024a). The SCAG 2025 FTIP is

prepared to implement projects and programs listed in the RTP and is developed in compliance with state and federal requirements (SCAG 2024b).

The 2008 Airport Master Plan, San Diego International Airport EIR identified that all traffic-related impacts related to implementation of the Airport Master Plan would be reduced to less than significant with mitigation. However, the SDCRAA lacks the legal authority to implement the identified mitigation measures as the roadway segments, intersections, and freeway ramps are within the responsibility and jurisdiction of other agencies; thus, if the agencies do not implement the measures identified in the EIR, the traffic impacts would remain significant. The EIR analyzed parking supply and did not identify significant parking impacts related to implementation of the plan or alternatives (SDCRAA 2008).

The Border 2025 Program, Master Action Plan for California-Baja California includes objectives to reduce air emissions in the border region by establishing or strengthening programs that reduce the number of vehicles that do not comply with vehicle emissions standards (EPA 2021). In addition, the 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan states that a critical issue for the Baja region is the progressive deterioration of the quality of air associated with the number of vehicles and no provision of sustainable transportation (IMPLAN 2013). While there is no associated environmental documentation for these plans, the actions to improve air quality through better traffic operations and opportunities would benefit regional border transportation issues.

According to the California-Baja California Border Master Plan, there were approximately 16.6 million northbound pedestrian crossings and more than 30 million northbound privately owned vehicle crossings in 2015. Projections for the year 2040 estimate a growth of approximately 68 percent for northbound crossings and the Master Plan addresses concerns and benefits related to border planning. The Master Plan does not have associated environmental analysis documents. The Master Plan concludes that the expansion of residents in the border region will increase cross-border travel demand and continue to add pressure to the POE facilities and connecting roads. Given the current and projected travel demand at the existing POEs, improving the capacity and operations of the current infrastructure is critical to decrease traffic congestion and delays, facilitate international trade, and improve the quality of life for residents in the border region (Caltrans 2021b).

Cumulative Impacts and Impact Conclusions

Transit, Roadway, Bicycle, Pedestrian Facilities

As analyzed under TRA-1, the proposed Plan will not conflict with any program, plan, ordinance, or policy addressing the circulation system under horizon year 2035 and 2050 conditions. The policies within the other regional plans within Southern California are not applicable to the San Diego Region nor do not have the authority to change transportation related policies within the San Diego region, thus, the programs, plans, ordinances, and policies addressing the circulation system within adjacent regions are not applicable to the proposed Plan since they do not overlap. Therefore, when combining impacts of the proposed Plan, other regional plans, and related projects, a significant cumulative impact related to circulation system plans would not occur, and the proposed Plan's contribution would not be cumulatively considerable.

VMT Reductions to Meet GHG Targets

2030

As described in Section 4.16.3, implementation of the proposed Plan in 2030 would result in a significant impact because of increased total annual VMT and because regional VMT per capita would not be reduced to the levels required to meet the state's GHG reduction goals. As detailed above, there are forecasted adverse direct and cumulative transportation impacts, such as VMT, that would result from the implementation of regional plans and related projects, including the SCAG Connect SoCal 2024 Plan.

Because implementation of regional growth and land use change, as well as transportation network improvements associated with the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals and would result in a significant cumulative impact, in combination with the VMT related impacts that were also identified in adjacent regions (SCAG), he transportation impact of increased total

annual and inability to reach the State's VMT per Capita targets is cumulatively considerable between the two regions and thus significant in 2030 (Impact C-TRA-1).

2035

As described in Section 4.16.3, implementation of the proposed Plan in 2035 would result in a significant impact because of increased total annual VMT and because regional VMT per capita would not be reduced to the levels required to meet the State's GHG reduction goals. As detailed above, there are forecasted adverse direct and cumulative transportation impacts, such as VMT, that would result from the implementation of regional plans and related projects including the SCAG Connect SoCal 2024 Plan.

Because implementation of regional growth and land use change, as well as transportation network improvements associated with the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals and would result in a significant cumulative impact, in combination with VMT related impacts that were also identified in adjacent regions (SCAG), the transportation impact of increased total annual VMT and inability to reach the State's VMT per Capita targets is cumulatively considerable and thus significant in 2035 (Impact C-TRA-1).

2045

As described in Section 4.16.3, implementation of the proposed Plan in 2045 would result in a significant impact because of increased total annual VMT and because the regional VMT per capita would not be reduced to the levels required to meet the state's GHG reduction goals. As detailed above, there are forecasted adverse direct and cumulative transportation impacts, such as VMT, that would result from the implementation of regional plans and related projects including the SCAG Connect SoCal 2024 Plan.

Because implementation of regional growth and land use change, as well as transportation network improvements associated with the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals and would result in a significant cumulative impact, in combination with VMT related impacts that were also identified in adjacent regions (SCAG), the transportation impact of increased total annual VMT and inability to reach the State's VMT per Capita targets is cumulatively considerable and thus significant in 2045 (Impact C-TRA-1).

2050

As described in Section 4.16.3, implementation of the proposed Plan in 2050 would result in a significant impact because of increased total annual VMT and because the regional VMT per capita would not be reduced to the levels required to meet the state's GHG reduction goals. As detailed above, there are forecasted adverse direct and cumulative transportation impacts such as VMT that would result from the implementation of regional plans and related projects including the SCAG Connect SoCal 2024 Plan.

Because implementation of regional growth and land use change, as well as transportation network improvements associated with the proposed Plan would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals and would result in a significant cumulative impact, in combination with VMT related impacts that were also identified in adjacent regions (SCAG) the transportation impact of increased total annual VMT and inability to reach the State's VMT per Capita targets is cumulatively considerable and thus significant in 2050 (Impact C-TRA-1).

Hazards Due to a Design Feature or Incompatible Uses

As analyzed under TRA-3, the proposed Plan would not change the applicable design standards of the implementing agencies, and the transportation network improvements would be designed consistent with those standards. Further, the proposed Plan includes several planning efforts that would improve transportation safety. Therefore, impacts would be less than significant under horizon year 2035 and 2050 conditions. The design and safety standards of other regional plans within Southern California are not applicable and do not overlap with the San Diego Region. Therefore, a significant cumulative impact would not occur. Therefore, when combining

impacts of the proposed Plan, other regional plans, and related projects, a significant cumulative impact related to hazards would not occur, and the proposed Plan's contribution would not be cumulatively considerable.

Parking

As analyzed under TRA-4, the proposed Plan would not lead to a lack of parking supply that would cause significant secondary impacts not already analyzed in the EIR under Horizon Year 2035 or 2050 conditions. The parking requirements and policies of other regional plans within Southern California are not applicable and do not overlap with the San Diego Region. Therefore, when combining impacts of the proposed Plan, other regional plans, and related projects, a significant cumulative impact related to parking supply would not occur. and the proposed Plan's contribution would not be cumulatively considerable.

MITIGATION MEASURES

C-TRA-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS TO TRANSPORTATION

2030, 2035, 2045 2050

As detailed in Section 4.16.3, many features currently included in the proposed Plan (e.g., the SCS, increased transit and active transportation investments) have the effect of reducing total annual VMT that might not otherwise occur. Mitigation Measure TRA-2 would further reduce total VMT through implementation of transportation demand management strategies, reducing parking minimums, implementing additional active transportation facilities not identified in the proposed Plan (i.e., local bicycle and pedestrian facilities), and help to facilitate regional VMT credit and exchange programs. In addition, air quality mitigation measure AQ-2b and GHG mitigation measures GHG-4a, GHG-4b, GHG-4d, GHG-4e include additional feasible VMT reduction measures not included in the proposed Plan that SANDAG would or other agencies can and should implement. However, these mitigation measures would not reduce this impact (Impact-C-TRA-1) to a less-than-significant level as they would not reduce VMT per Capita of the Region to meet the State's VMT reduction targets, nor would they reduce the total VMT generated by the region to a less than significant level. Based on the above analysis and lack of further feasible mitigation, the proposed Plan's incremental contributions to cumulative transportation impacts in years 2030, 2035, 2045 and 2050 would remain significant and cumulatively considerable post-mitigation.

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4.17 TRIBAL CULTURAL RESOURCES

This section evaluates the tribal cultural resources impacts of the proposed Plan.

4.17.1 Existing Conditions

PRE-EUROPEAN CONTACT SETTING

The major cultural developments in the San Diego region before the arrival of Spanish colonists in 1769 are generally discussed in three major periods (Paleoindian, or Paleoamerican; Archaic; and Late Prehistoric), each marked by certain changes in the archaeological record. These archaeological changes appear to reflect a variety of shifts in technology, settlement, and land use.

Paleoamerican Period (12,000–7000 BP)

Despite decades of research, the early prehistory of coastal Southern California remains poorly understood. The archaeological record reveals that humans appeared about 13,000 years ago on the Channel Islands, where they lived primarily by fishing and shellfishing. These early island components are of interest because they seem to reflect fully developed maritime economies that were distinct from, but roughly contemporaneous with, the Clovis tradition represented throughout much of interior North America. Identified late-Pleistocene components are lacking on the mainland coast of Southern California, although several sites have yielded calibrated dates in excess of 9,000 years (Erlandson et al. 2007: 58–59). Archaeological complexes represented at these early sites include the San Dieguito complex with its finely worked scrapers and leaf-shaped and stemmed projectile points (Byrd and Raab 2007; Warren 1968), and the La Jolla complex represented by simple flaked cobble tools, relatively abundant groundstone, and flexed burials. Although the temporal and cultural relationship between San Dieguito and La Jolla continues to be debated, human populations were well established along the coast of Southern California very early in the Holocene.

Archaic Period (7000–1200 BP)

Sea-level rise had been occurring since the last glacial maximum (about 18,000 years ago), and during the early Holocene, sea levels increased. However, by around 8000 BP, sea levels began to slow to a rate of about 0.25 meters per century, a process that allowed the formation of a complex mosaic of productive lagoon and estuary habitats at many locations along the region's coastline (Masters and Aiello 2007; Masters and Gallegos 1997). These seem to have supported a significant coastal population during the early Archaic because numerous coastal components have been found that date to this interval.

Archaeological remains in these components typically represent the La Jolla complex and often contain abundant shellfish and fish remains, along with flaked cobble tools, basin metates, manos, discoidals, stone balls, and flexed burials. At the same time, archaeological research suggests that the contemporaneous inland Pauma complex may represent seasonal movements of early Archaic populations between coastal and inland resource areas (True and Pankey 1985; Warren et al. 1961). If so, a relatively broad seasonal range is implied for the early portion of the Archaic.

Although the basic toolkit represented by the La Jolla complex appears to have remained consistent throughout the Archaic, there are some indications of significant shifts in settlement. Compilations of radiocarbon assays for Batiquitos Lagoon (Gallegos 1985; Warren et al. 1961), for example, provide evidence for disuse of this location between about 3000 and 1500 BP.

This and evidence from some other locations in the region led Warren (1964, 1968; Warren et al. 1961) and others (Gallegos 1985; Masters and Gallegos 1997) to postulate a population movement inland and southward in response to siltation and declining productivity of coastal lagoons in the northern portion of the region. More recent data, however, have demonstrated continued settlement and use of coastal resources throughout the late

Archaic period in the region's northern areas (Byrd and Reddy 2002). Rather than widespread population movement away from the coast, the changing coastal ecology may have resulted in more localized settlement adjustments.

Late Prehistoric Period (1500–1769)

In Southern California, the appearance of small, arrowhead-size projectile points and ceramics and the practice of cremation around 1,300 years ago mark the beginning of the Late Prehistoric period. Projectile points commonly found in Late Prehistoric assemblages include Cottonwood Triangular and Desert Side-Notched forms, both thought to mark the introduction of the bow and arrow into the region. Regional populations appear to have been relatively high during the Late Prehistoric, resulting in territorial restrictions, increased sedentism, and subsistence intensification. Villages were relatively stable and occupied for much of the year and were positioned for access to a variety of resource areas. Subsistence is thought to have focused on acorns and grass seeds, along with deer and a variety of small mammals. Along the coast, subsistence focused on the collection of shellfish and nearshore fishing.

Settlement patterns during the Late Prehistoric in the northern section of the San Diego region are not well understood, although the data do suggest some important spatial and temporal variation. The strongest settlement data come from the upper San Luis Rey River drainage system, where investigations by True and Waugh (1982) suggest a transition from a fairly wide-ranging mobility pattern into a territorially constricted pattern of seasonally bipolar movement between upland and lowland settlements. This interior-upland pattern is seen as distinct from that of the lower San Luis Rey River, where residential mobility is thought to have been even lower, with one principal village per group area.

ENTOGRAPHIC CONTEXT

At Spanish contact, the northern portion of the San Diego region was occupied by speakers of a Takic language related to those dialects spoken in the Los Angeles Basin to the north but distinct from the Yuman language spoken to the south in San Diego. These groups were later known generally as the Juaneño and Luiseño, based on their associations with either Mission San Luis Rey or Mission San Juan Capistrano. The region occupied by the Luiseño and Juaneño extended along the coast roughly between Agua Hedionda to approximately Aliso Creek in present Orange County, and inland approximately to Palomar Mountain. The southern coastal portion of the San Diego region was occupied by the Kumeyaay, a Yuman-speaking group also known as the Kamia, Ipai, and Diegueño (Kroeber 1925).

Juaneño

The Acjachemen (or Juaneño) lived in sedentary and autonomous village groups, each with specific subsistence territories encompassing hunting, collecting, and fishing areas. Villages were typically located in valley bottoms, along streams, or along coastal strands near mountain ranges where water was available, and villages were defensible. Inland populations had access to fishing and gathering sites on the coast, which they used during the winter months (Bean and Shipek 1978).

Acjachemen (or Juaneño) subsistence was centered around the gathering of acorns, seeds, greens, bulbs, roots, berries, and other vegetal foods. This was supplemented with hunting mammals such as deer, antelope, rabbit, woodrat, ground squirrels and mice, as well as quail, doves, ducks, and other birds. Bands along the coast also exploited marine resources such as sea mammals, fish, crustaceans, and mollusks. Inland, trout and other fish were taken from mountain streams (Bean and Shipek 1978).

Hunting was done both individually and by organized groups. Tool technology for food acquisition, storage, and preparation reflects the size and quantity of items procured. Small game was hunted with the use of curved throwing sticks, nets, slings, or traps. Bows and arrows were used for hunting larger game. Dugout canoes, basketry fish traps, and shell hooks were used for near-shore ocean fishing. Coiled and twined baskets were made for food gathering, preparation, storing, and serving. Other items used for food processing included large shallow

trays for winnowing chaff from grain, ceramic and basketry storage containers, manos and metates for grinding seeds, and ceramic jars for cooking (Bean and Shipek 1978).

Villages had hereditary chiefs who controlled religious, economic, and territorial activities (Bean and Shipek 1978). An advisory council of ritual specialists and shamans was consulted for environmental and other knowledge. Large villages located along the coast or in inland valleys may have had more complex social and political structures than settlements controlling smaller territories (Bean and Shipek 1978).

Most Acjachemen (or Juaneño) villages contained a ceremonial structure enclosed by circular fencing located near the center of the village. Houses were semisubterranean and thatched with locally available brush, bark, or reeds. Earth-covered semisubterranean sweathouses were also common and were used for purification and curing rituals (Bean and Shipek 1978).

The Acjachemen (or Juaneño) first came into contact with Europeans in 1769 when the expedition led by Gaspar de Portolá arrived in their territory. That same year, the San Diego Mission was established just to the south, followed by the San Juan Capistrano Mission in 1776 and the San Luis Rey Mission in 1798. Poor living conditions at the missions and introduced European diseases led to a rapid decline of the Luiseño population. Following the Mission Period (1769-1834), Acjachemen (or Juaneño) Indians scattered throughout southern California. Some became serfs on the Mexican ranchos, others moved to newly founded "pueblos" (towns) established for them, some sought refuge among inland groups, and a few managed to acquire land grants. Later, many moved to or were forced onto reservations. Although many of their cultural traditions had been suppressed during the Mission Period, the Acjachemen (or Juaneño) were successful at retaining their language and certain rituals and ceremonies. Starting in the 1970s, there was a revival of interest in the Acjachemen (or Juaneño) language and classes were organized. Since then, traditional games, songs, and dances have been performed; traditional foods have been gathered and prepared; and traditional medicines and curing procedures have been practiced (Bean and Shipek 1978).

Luiseño

The Luiseño lived in sedentary and autonomous village groups, each with specific subsistence territories encompassing hunting, collecting, and fishing areas. Villages were typically located in valley bottoms, along streams, or along coastal strands near mountain ranges where water was available and village defense was possible. Inland populations had access to fishing and gathering sites on the coast, which they used during the winter months (Bean and Shipek 1978).

Luiseño subsistence was centered around the gathering of acorns, seeds, greens, bulbs, roots, berries, and other vegetal foods. This was supplemented with hunting mammals such as deer, antelope, rabbit, woodrat, ground squirrels, and mice, as well as quail, doves, ducks, and other birds. Bands along the coast also exploited marine resources, such as sea mammals, fish, crustaceans, and mollusks. Inland, trout and other fish were taken from mountain streams (Bean and Shipek 1978).

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Villages had hereditary chiefs who controlled religious, economic, and territorial activities (Bean and Shipek 1978; Boscana 1933). An advisory council of ritual specialists and shamans was consulted for environmental and other knowledge. Large villages located along the coast or in inland valleys may have had more complex social and political structures than settlements controlling smaller territories (Bean and Shipek 1978).

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Kumeyaay

The territory of the Kumeyaay was bounded by natural geographic features, extending north from Todos Santos Bay near Ensenada, Mexico to the mouth of the San Luis Rey River in north San Diego County, and east to the Sand Hills bordering Imperial Valley and south of what is now the Mexico border, extending east to Cocopa Mountains and the Colorado delta (Luomala 1978).

The primary source of Kumeyaay subsistence was wild vegetal food supplemented with horticulture, as well as small game, including birds and fish. Ethnographic gender roles consisted of men hunting and producing weapons and women gathered wild plants and cultivated the fields. Women also processed and cooked food, utilizing a variety of containers and implements including basketry and plainware or decorated reddish-brown ceramic pottery. Seasonal travel followed the seasonal round and extended vertically, wherein plants were gathered from the lowlands areas in the fall and winter, and families would travel up to the higher mountainous elevations in the spring and summer. Similar to other indigenous Californians, acorns were a primary staple of their diet; indeed, acorns were gathered from six oak trees common to the region. Acorns were processed via a grinding and leaching system and then cooked through a variety of methods, including baking, boiling, and stewing to form bread, soups, stews, mush and gruel. In addition to acorns, mesquite pods, sage seeds, cacti seeds, and grass seeds were all processed into flour. Buds, blossoms, potherbs, agave, wild onion, yucca, cactus fruits, including prickly pears, piñon, and wild plums were among the diet of both groups (Luomala 1978). Although wild gathered plants formed the majority of their diet, the Kumeyaay also practiced limited horticulture within the floodplain areas of their territory, growing such crops as Melons, maize, beans, cowpeas, and teparies (beans). Women sometimes transplanted wild onion and tobacco plants to convenient locations and sowed wild tobacco seeds. The Kumeyaay also practiced deliberate burning of grassland areas in order to propagate seeds. Although less common, larger game primarily including deer were hunted, however, the majority of hunted game consisted of small to medium mammals, such as rodents, rabbits, lizards, insects, and larvae. Birds, including quail, geese, doves and hawks were also caught and consumed. Groups living near coastal or riverine resources fished (Luomala 1978).

Village locations varied from temporary campsites built for mobility and to gather and forage local vegetal resources, to more permanent locales. They were chosen based on several advantageous factors including proximity to good sources of perennial freshwater as well as resource patches and gathering areas. Of equal importance was the location in relation to natural geologic features such as outcroppings, which offer additional protection from would-be attackers. Villages were occupied by exogamous, patrilineal clans. Three or four clans would winter together, then disperse into smaller bands during the spring and summer (Luomala 1978). Like village type, Kumeyaay structures varied with the seasons and region. Summer shelters were of more simple construction and consisted of a wind break, tree, or a cave fronted with rocks. Winter dwellings were built with more permanence and protection from the elements in mind, and had slightly sunken floors with dome-shaped structures made of brush thatch covered with grass and earth. Southern groups, such as those near the Sloughs,

built rectangular-sand covered dwellings, while palm-leaf thatched houses were built in desert areas. The chief usually had the biggest dwelling. The ceremonial structure was communally owned by the village. Dance grounds, owned by clans, were encircled by a rock and brush fence (Gifford 1931; Luomala 1978).

Kumeyaay organization was based upon autonomous tribelets, or bands, each of which had a clan chief and an assistant chief. This position could be hereditary, or one chosen by consensus. The chief's job was to help facilitate conflicts, provide guidance to the band in matters of spiritualism and ceremony, and mediate marriages and conflicts. Another important position within the village was hunt master, a hereditary position based down from father to son, which entailed leading communal hunts and drives and learning specific skills and rituals related to hunting. Everyone in the tribelet had a right to water as well as cached foods, provided they would reciprocate at a later time. Lands and springs were communally owned by the band, however, certain resources within band territory could be claimed by a specific clan or family. Clans did own what they had made or gathered (Luomala 1978). Upon death, the Kumeyaay cremated the body of the deceased. Families may have practiced gift-giving during this primary stage of mourning. Songs were sung throughout the night, speeches were made, and mourners wailed. Once cremated, the individual's ashes were placed in a ceramic urn and buried or hidden in a cluster of rocks. After this ceremony, the deceased loved ones name was not spoken again, and their dwelling was burned to the ground and subsequently avoided. The family customarily held a mourning ceremony one year after the death of a family member. During this ceremony, the clothes of the deceased individual, as well as items that were not previously burned, were burned to ensure that the spirit would not return for his or her possessions. During this ceremony, mourners wailed, sang song cycles, and performed one last dance for the departed spirit (Gifford 1931; Luomala 1978).

It is estimated that the precontact Kumeyaay population ranged from as little as approximately 3,000 (Kroeber 1925) to as many as 9,000 (Luomala 1978). Although avoiding direct impacts from European and Euro-American colonizers, change came to this region as well. Beginning in 1775, the semi-nomadic life of the Kumeyaay was altered as a result of contact with European-Americans, particularly from the influence of the Spanish missions. Despite much resistance from the Kumeyaay, including the burning of San Diego Mission in 1775 by a group of 800 people from 70 villages, the mission system continued and by 1779, San Diego Mission had 1,405 neophytes living in proximity to the mission. Through successive Spanish, Mexican, and Anglo-American control, the Kumeyaay, especially in less remote locales, were forced to adopt a sedentary lifestyle and accept Christianity (Luomala 1978). As of 1968, the Kumeyaay population was somewhere between approximately 1,322 (Shipek 1972, included in Luomala 1978) and 1,522 (Luomala 1978).

ETHNOGRAPHIC RESOURCES AND SACRED SITES

Ethnographic resources that are potential tribal cultural resources include sites, areas, and materials important to Native Americans for religious, spiritual, or traditional uses. These can encompass the sacred character of physical locations (mountain peaks, springs, and burial sites) or particular native plants, animals, or minerals that are gathered for use in traditional ritual activities. Villages, camps and activity areas, burials, rock art, rock features, and traditional hunting, gathering, or fishing sites may also constitute significant California Native American cultural resources. Tribal cultural resources tend to fall into distinctive categories that relate to cosmology or activities that took place. They are found throughout the region but tend to be physical geographic landmarks or in areas close to a water source or resources (such as materials for tool making or readily available food) and on flatter ground. Tribal cultural resources can be found on the surface or buried. Tribal cultural resources close to water sources that were originally just superficial can be buried over time by alluvial action.

Tribal cultural resources are more likely to have been destroyed in historic urbanized and commercial areas; namely along the highly developed coastal region, although this does not preclude the presence in urban or developed settings of buried archaeological resources that may meet the definition of a tribal cultural resource. A greater number of surficial tribal cultural resources and buried archaeological tribal cultural resources are more likely to have been previously documented as traditional cultural places, sacred sites, or archaeological sites resulting from cultural resources studies and outreach to Native Americans during environmental analysis for previous projects throughout the region. In addition, tribal cultural resources that have not been documented or

evaluated may be in the Plan area. Large portions of the Plan area have not been subjected to cultural resource surveys or consultations with California Native American tribes and therefore may contain tribal cultural resources. Additionally, there are likely a number of documented archaeological resources, landscapes, and sacred places that have not been evaluated as tribal cultural resources.

The Native American Heritage Commission (NAHC) maintains the Sacred Lands File (SLF), a confidential inventory of California Native American sacred sites, which may be indigenous material sites, cultural landscapes, locations used for traditional resource gathering, or sacred places. An unknown number of these sites may meet the definition of a tribal cultural resource. A search of the NAHC's SLF completed for the Plan area was obtained from the NAHC on August 13, 2018. Results of the SLF search indicate that California Native American cultural sites are present in the Plan area. The specific locations and descriptions of the sites are confidential. The NAHC also provided a list of tribes that are traditionally and culturally affiliated with the geographic area of the proposed Plan.

4.17.2 Regulatory Setting

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

Health and Safety Code, Section 7050.5

Section 7050.5 of the Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If they are determined to be those of a Native American, the coroner must contact the NAHC by telephone within 24 hours. It is a misdemeanor to knowingly remove, disturb, or disinter human remains from any location other than a dedicated cemetery without legal authorization.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act (PRC Section 5097.9-5097.991) applies to both state and private lands. The act requires, upon discovery of human remains, that construction or excavation activity cease and that the county coroner be notified. If the remains are those of a Native American, the coroner must notify the NAHC, which notifies (and has the authority to designate) the most likely descendants of the deceased. The act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods. Guidance on tribal consultation under this act is further detailed in the California Office of Planning and Research's LCI Technical Advisory on AB 52.

Public Resource Code Section 5097

PRC Sections 5097 through 5097.7 specify the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. The disposition of California Native American human burials falls within the jurisdiction of the NAHC. Section 5097.5 of the code states the following:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

AB 52 and Tribal Cultural Resources

Assembly Bill 52 (AB 52), enacted in 2014, amended CEQA to recognize tribal cultural resources as a new category of cultural resources (PRC Sections 21074 and 21083.09). CEQA requires public agencies to consider the effects of their actions on tribal cultural resources. PRC Section 21084.2 establishes that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." PRC Section 21074 states:

a) "Tribal cultural resources" are either of the following:

    1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following:

        A) Included or determined to be eligible for inclusion in the CRHR.

        B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

    2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe.

b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

AB 52 also established a formal consultation process between lead agencies and California Native American tribes that are traditionally and culturally affiliated with a project area (PRC Sections 21074, 21080.3.1–21080.3.2, 21082.3, and 21084.3). Also, as required by AB 52, the Governor's Office of Land Use and Climate Innovation (LCI) (formerly known as the Governor's Office of Planning and Research) updated Appendix G of the State CEQA Guidelines to provide sample questions regarding impacts on tribal cultural resources (PRC Section 21083.09).

Under AB 52, lead agencies must notify tribes that have requested consultation within 14 days of determining that an application for a project is complete or a notice of preparation is filed (PRC Section 21080.3.1). Tribes then have 30 days to request consultation. Once consultation is initiated, the tribe and lead agency may discuss, for example:

- the significance of the project's potential impacts on tribal cultural resources
- the significance of the resource
- possible alternatives or mitigation measures to reduce those impacts.

According to PRC Section 21080.3.2(a), the consultation may include the type of environmental review, the significance of tribal cultural resources and potential impacts, and any alternatives or preservation or mitigation measures the tribe may recommend to the lead agency (PRC Section 21080.3.2[a]).

If consultation leads to agreed-upon mitigation, those measures must be included in the environmental document (PRC Section 21082.3[a]). If the recommended mitigation is not included in the environmental document, if no mitigation measures were agreed upon in consultation, or if no consultation occurred, and if the proposed project would cause a significant impact on a tribal cultural resource, the lead agency must consider feasible mitigation measures pursuant to PRC Section 21084.3 (PRC Section 21082.3[e]). If no agreement is reached and no feasible mitigation is available, the agency must document this before approving the project. LCI also updated CEQA Guidelines to help agencies evaluate potential impacts on tribal cultural resources.

PRC Section 21084.3 requires agencies to avoid damaging effects to any tribal cultural resource, when feasible, and provides examples of mitigation measures that, if feasible, may be considered to avoid or minimize the significant adverse impacts:

1. Avoidance and preservation of the resources in place, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
2. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, consisting of, but not limited to, the following:

a. protecting the cultural character and integrity of the resource
b. protecting the traditional use of the resource
c. protecting the confidentiality of the resource

3. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
4. Protecting the resource.

California Government Code Sections 7927.000 and 7927.005

These sections of the California Public Records Act help protect archaeological sites from unauthorized excavation, looting, or vandalism. California Government Code Section 7927.000 allows public agencies to withhold records related to California Native American graves, cemeteries, and sacred places, and records related to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, where such records are maintained by the NAHC. Section 7927.005 exempts from disclosure any records about archaeological site information or reports maintained by, or in the possession, agencies such as the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the NAHC, or any local or state agency. This includes records obtained through consultation between a California Native American tribe and a state or local agency.

LOCAL JURISDICTIONS' PRESERVATION POLICIES AND REGULATIONS

County of San Diego: Resource Protection Ordinance (RPO)

The RPO (San Diego County Code of Regulatory Ordinances Sections 86.601–86.608) mandates the evaluation of cultural resources during the county's environmental review process. Significant sites, including those of tribal cultural importance, must be preserved. Section 86.604(g) of the ordinance prohibits grading, excavation, or other damaging activities on such sites except for scientific research conducted under an approved research design by a qualified archaeologist.

County of San Diego: Grading, Clearing, and Watercourses Ordinance

This ordinance requires that grading operations cease if human remains or materials of cultural significance to California Native American tribes are discovered during construction. (San Diego County Code of Regulatory Ordinances Section 87.429). Additionally, grading plans must be modified if unanticipated cultural resources are found, and appropriate mitigation measures must be implemented in coordination with the county and tribal representatives. (San Diego County Code of Regulatory Ordinances Section 87.216(a)(7)).

County of San Diego: Conservation and Open Space Element of the San Diego County General Plan

The Conservation and Open Space Element of the County of San Diego's General Plan includes goals and policies that recognize the importance of protecting cultural resources, including those of significance to California Native American tribes. Goal COS-7 states "Identify, preserve, and protect the County's important cultural resources." Policy COS-7.1 further emphasizes that the County shall "consult with Native American tribes and other interested parties early in the planning process to identify and address potential impacts to cultural resources." The Open Space Element encourages early identification of cultural sites during planning, emphasizes preservation in place as the preferred form of mitigation, and promotes consultation with tribal representatives to ensure that tribal values and traditional knowledge are considered in land use decisions. This Plan includes goals and policies that recognize the importance of protecting cultural resources, as described in the Conservation and Open Space Element of the County of San Diego General Plan (County of San Diego 2011).

County of San Diego: Local Register of Historical Resources

San Diego County maintains a local register of historical resources, which includes sites of local cultural significance. Properties listed in or eligible for the CRHR or the National Register of Historic Places are automatically included. Resources may also be added based on local criteria, including those significant to California Native American tribes.

Local Ordinances in San Diego County

Multiple cities in San Diego County have adopted ordinances that address the protection of historical and cultural resources, including those with tribal cultural significance. Table 4.5-2 lists preservation policies and regulations from jurisdictions across the region. For illustrative purposes, the City of San Diego's approach is summarized below. See also Table 4.5-2 for additional local ordinances.

The City of San Diego's Municipal Code Chapters 11, 12, and 14 establish the Historical Resources Board, designation processes, and development standards for historic resources. These regulations aim to protect, preserve, and restore historical resources, including traditional cultural properties. The city provides explicit guidelines for managing historical resources, including methodologies for assessing impacts and appropriate mitigation strategies. These guidelines are designed to ensure consistency in the management of the city's historical resources, which includes traditional cultural properties, which are often associated with those of tribal cultural significance.

4.17.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts, in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the criteria in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR, and the unique characteristics of the proposed Plan and EIR.

Checklist questions for tribal cultural resources are provided in Section XVIII of CEQA Guidelines Appendix G. Criterion (a)(i) addresses tribal cultural resources that are listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k). Criterion (a)(ii) addresses tribal cultural resources determined to be significant by the lead agency consistent with criteria set forth in PRC Section 5024.1 and the significance of the resource to a California Native American tribe. SANDAG has combined these checklist questions into TCR-1.

For purposes of this EIR, implementation of the proposed Plan would have a significant tribal cultural resource impact if it would result in the following:

TCR-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is either (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or (2) determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.

The analysis discloses impacts to tribal cultural resources. There is insufficient evidence to support a meaningful analysis of how the proposed Plan's tribal cultural resources impacts would be worsened by climate change. Therefore, a climate change analysis for tribal cultural resources impacts is not included in this section.

4.17.4 Environmental Impacts and Mitigation Measures

TCR-1 CAUSE A SUBSTANTAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE, DEFINED IN PUBLIC RESOURCES CODE SECTION 21047 AS EITHER A SITE, FEATURE, PLACE, CULTURAL LANDSCAPE THAT IS GEOGRAPHICALLY DEFINED IN TERMS OF THE SIZE AND SCOPE OF THE LANDSCAPE, SACRED PLACE, OR OBJECT WITH CULTURAL VALUE TO A CALIFORNIA NATIVE AMERICAN TRIBE, AND THAT IS EITHER (1) LISTED OR ELIGIBLE FOR LISTING IN THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES, OR IN A LOCAL REGISTER OF HISTORICAL RESOURCES AS DEFINED IN PUBLIC RESOURCES CODE SECTION 5020.1(K); OR (2) DETERMINED BY THE LEAD AGENCY, IN ITS DISCRETION AND SUPPORTED BY SUBSTANTIAL EVIDENCE, TO BE SIGNIFICANT PURSUANT TO CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCES CODE SECTION 5024.1

Analysis Methodology

This analysis examines the impacts on tribal cultural resources that would result from implementation of the proposed Plan.

Although tribal cultural resources may differ from other types of cultural resources, cultural resources records searches and outreach to the NAHC can identify previously reported cultural resources that may be tribal cultural resources. The impact analysis is based on the NAHC SLF search completed for the proposed Plan and AB 52 consultation conducted between SANDAG and consulting tribes. Information obtained from the NAHC and through tribal consultation, including records searches and outreach to tribes, may help identify resources that qualify as tribal cultural resources under CEQA (Governor's Office of Planning and Research [OPR] 2020). Cultural resources records searches, along with information obtained through outreach to the NAHC and consultation with tribes, may help identify resources that qualify as tribal cultural resources under CEQA. These may include resources listed or eligible for listing in the CRHR or a local register, but may also include resources identified by California Native American tribes as culturally significant based on tribal knowledge and tradition, consistent with PRC Section 21074. Evidence that may support such a finding could include elder testimony, oral history, tribal government archival information, testimony of a qualified archaeologist certified by the relevant tribe, testimony of an expert certified by the tribal government, official tribal government declarations or resolutions, formal statements from a certified Tribal Historic Preservation Officer, or historical/anthropological records. (LCI, 2020).

PRC Section 21084.2 establishes that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." A substantial adverse change to the significance of a historical resource is defined as the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired (CEQA Guidelines Section 15064.5); this definition can also be applied to a substantial adverse change to a tribal cultural resource.

Construction activities are more likely to disturb tribal cultural resources than operations activities because tribal cultural resources are most likely to be encountered during initial ground disturbance. For forecasted regional growth and land use change projects, as well as planned transportation network improvements, the likelihood of encountering tribal cultural resources is thus analyzed based on whether projects would require grading, excavation, or other ground-disturbing activities. Even minimal grading activities can encounter resources, as they have been discovered only inches below the surface. Ground-disturbing activities associated with infill, redevelopment, and infrastructure expansion have the potential to unearth these resources.

Impacts of operations activities on tribal cultural resources are unlikely to be significant, unless they impose a sustained change to the setting or viewshed of a tribal cultural resource (thereby affecting the integrity of its setting and its significance).

Results of the Regional Plan AB 52 Consultation Process

SANDAG regularly coordinates with the Interagency Technical Working Group on Tribal Transportation Issues (Working Group). The Working Group is composed of a representative from each federally recognized tribal government and California tribe in San Diego County that chooses to participate in the Working Group, and serves as a forum for tribal governments in the region to discuss and coordinate transportation issues of mutual concern with the various public planning agencies in the region. The Working Group is co-chaired by a tribal member and a member of the SANDAG executive staff. Tribal representatives are voting members of the Working Group, and SANDAG and other public agencies involved in tribal transportation issues serve as advisory members of the Working Group. The Working Group meets quarterly, as determined by the group. These meetings are not formal consultation pursuant to AB 52, but instead implement a tribal consultation plan developed by the Southern California Tribal Chairmen's Association and SANDAG intended to guide consultation with tribes on regional transportation issues, including the development of the proposed Plan.

As part of formal AB 52 consultation, on January 19, 2023, SANDAG sent letters to 26 tribes to invite them to formal consultation under AB 52 on the EIR for the 2025 Regional Plan:

- Agua Caliente Band of Cahuilla Indians,
- Barona Band of Mission Indians,
- Cahuilla Band of Indians,
- Campo Band of Mission Indians,
- Chemehuevi Indian Tribe,
- Ewiiaapaayp Band of Kumeyaay Indians,
- Iipay Nation of Santa Ysabel,
- Inaja Band of Diegueño Mission Indians,
- Jamul Indian Village of California,
- Kwaaymii Laguna Band of Mission Indians,
- La Jolla Band of Luiseño Indians,
- La Posta Band of the Kumeyaay Nation,
- Los Coyotes Band of Cahuilla Cupeno Indians,
- Manzanita Band of the Kumeyaay Nation,
- Mesa Grande Band of Mission Indians,
- Pala Band of Mission Indians,
- Pauma Band of Luiseño Indians,
- Rincon Band of Luiseño Indians,
- San Luis Rey Band of Mission Indians,
- San Manuel Band of Mission Indians,
- San Pasqual Band of Diegueño Mission Indians,
- Santa Rosa Band of Cahuilla Indians,
- Soboba Band of Luiseño Indians,
- Sycuan Band of the Kumeyaay Nation,
- Torres Martinez Desert Cahuilla Indians, and
- Viejas Band of Kumeyaay Nation.

These letters constituted formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that requested notice, pursuant to PRC 21080.3.1. The letter stated that while the 2025 Regional Plan would be developed consistent with the Tribal Consultation Plan developed by the Southern California Tribal Chairmen's Association and SANDAG, the invitation to conduct AB 52 tribal cultural resource consultation on the Regional Plan EIR was separate from, and in addition to, the collaborative efforts among the tribal governments and SANDAG on development of the 2025 Regional Plan.

Three responses were received. The Yuhaaviatam of San Manuel Nation (formerly known as the San Manuel Band of Mission Indians) emailed SANDAG on January 17, 2023, informing SANDAG that the location of the proposed project was located outside of Serrano ancestral territory and, as such, the Yuhaaviatam of San Manuel Nation would not be requesting to receive consulting party status or to participate in the scoping, development, or review of documents created pursuant to legal and regulatory mandates, thus concluding consultation efforts. The Agua Caliente Band of Cahuilla Indians Tribal Historic Preservation Office emailed SANDAG on January 26, 2023, stating that a records check of the cultural registry revealed that the project is not located within the tribe's Traditional Use Area and that they would defer to the other tribes in the area, thus concluding consultation efforts. The Rincon Band of Luiseño Indians emailed SANDAG on March 9, 2023, and requested consultation. SANDAG and the Rincon Band of Luiseño Indians met virtually on May 26, 2023. At that meeting consultation was held and

concluded on the Supplemental EIR for the Amendment to the 2021 Regional Plan. Also, at that meeting SANDAG consulted on the 2025 Regional Plan EIR. The Rincon Band of Luiseño Indians expressed the desire to engage in the ongoing consultation on the 2025 Regional Plan EIR and be notified of any future listening sessions or workshops on the EIR. Subsequent updates and discussion on the 2025 Regional Plan were facilitated at Tribal Working Group meetings, and meetings were held with the Rincon Band of Luiseño Indians in April and May of 2024.. SANDAG reached out to the Rincon Band of Luiseño Indians on August 19, 2025 to discuss closing consultation. Additional discussions were held between August 19th through 21st , 2025, the outcome of which was to continue consultation. An additional meeting date was set for August 26, 2025, and further materials were requested from SANDAG by the Rincon Band of Luiseño Indians.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Regional growth and land use change would result in potential impacts to tribal cultural resources resulting from a wide variety of construction and ground-disturbing activities, such as grading, excavation, and clearing, which remove or disturb soils and sediments. The likelihood of encountering archaeological tribal cultural resources is greatest for projects that include grading or excavation of areas on which past grading or excavation activities have been minimal. However, development and ground-disturbing activities associated with infill, redevelopment, or expansion of infrastructure also have the potential to impact tribal cultural resources. Because archaeological sites have been found within inches of the ground surface throughout the San Diego region, even minimal grading activities can impact these resources. Excavation and soil removal of any kind, irrespective of depth, have the potential to yield archaeological tribal cultural resources. In addition to the potential for identifying buried tribal cultural resources in urbanized areas of the proposed Plan, such as Downtown San Diego, Chula Vista, and National City, the additional growth forecasted in the less developed portions of the San Diego region, such as Otay and North County Metro, may occur in areas where tribal cultural resources are present.

Tribal cultural resources may have been previously documented as archaeological sites, cultural landscapes, areas of traditional natural resource gathering, or sacred sites, and may be identified only through future consultation with California Native American tribes. A search of the NAHC's SLF completed for the Plan area was obtained from the NAHC on August 13, 2018. Results of the SLF search indicate that California Native American cultural sites are present in the Plan area. The specific locations and descriptions of the sites are confidential. Regional growth and land use changes through 2035 are anticipated to result in significant impacts on tribal cultural resources across the region. This is due to the potential for ground-disturbing activities to unearth previously unidentified tribal cultural resources and the possibility of indirect impacts on culturally sensitive landscapes that are tribal cultural resources.

Adherence to the existing laws, regulations, and programs discussed in Section 4.17.2, "Regulatory Setting," and consultation with California Native American tribes can help avoid or reduce impacts on tribal cultural resources by facilitating early identification of such resources, allowing for project design modifications or avoidance measures, and ensuring that tribes have input into mitigation strategies during construction of development projects associated with regional growth and land change. Given the potential for land use changes to cause substantial adverse changes in the significance of a tribal cultural resource coupled with the nonrenewable nature of these resources if disturbed or altered, implementation of the proposed Plan would result in ground-disturbing

activities and changes in setting related to regional growth and land use change that would cause a substantial adverse change in the significance of a tribal cultural resource. This is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR-67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER.

As stated previously, numerous cultural resources have been documented in the San Diego region, some of which may be identified as tribal cultural resources during tribal consultation, and the potential exists for undocumented tribal cultural resources to be discovered. Given the region's rich cultural setting, construction of transportation network improvements included in the proposed Plan would likely encounter these resources.

Some of the improvements in the proposed Plan completed between 2022 and 2035 would involve only operations changes that would not require construction of new transportation or transit facilities, such as increasing service frequencies or creating new transit routes, and therefore would have little impact on tribal cultural resources. However, improvements that would involve construction of new infrastructure or facilities could encounter tribal cultural resources.

Direct permanent impacts on tribal cultural resources may result from ground disturbance associated with construction, such as grading and excavation, for the planned transportation improvements stemming from the proposed Plan. The development of new transportation facilities, construction of additional lanes, or upgrades to existing facilities may have a relatively higher potential to directly impact tribal cultural resources of an archaeological nature, primarily by grading or excavation in previously undisturbed soil and by the disturbance of buried resources that have not been previously identified.

Transportation construction projects, such as double-tracking at certain locations on the LOSSAN Rail Corridor and construction for the Central Mobility Hub and San Ysidro Mobility Hub, as well as numerous road projects and improvements, would require grading, and potentially trenching, activities that remove or disturb the upper layer of soils and could unearth underlying tribal cultural resources of an archaeological nature, areas of traditional natural resource gathering, or sacred places. Improvements along the I-5 corridor have the potential to impact tribal cultural resources that may be present along the shores, estuaries, lagoons, and bluffs of the San Diego coastline. Direct impacts would be significant if tribal cultural resources cannot be avoided or preserved in place by project design or redesign and are destroyed or substantially altered. Additional major transportation network improvements that could impact tribal cultural resources include new Managed Lanes and Managed Lane connectors on SR 52, SR 78, I-5, I-15, I-805. Direct access ramps are assumed at I-15/Clairemont Mesa Boulevard; I-5/Voigt Drive; and I-15/San Diego State University West. Shoulder-widening and straightening improvements on SR 67 from Mapleview to Dye Rd, and additional improvements to local arterial streets. These projects also have the potential to impact tribal cultural resources resulting from ground disturbance or demolition. The potential for direct impacts on tribal cultural resources may be lower for improvements to existing facilities and modifications to existing roads because these areas have been previously disturbed. However, even if previously disturbed, excavation at depth has the potential to directly impact undocumented tribal cultural resources of an archaeological nature.

Direct impacts would be significant if tribal cultural resources cannot be avoided or preserved in place by project design or redesign and are destroyed or substantially altered such that the significance of the resource would be materially impaired. Disturbance of tribal cultural resource features or places could result in impacts on the traditional use or the cultural character and integrity of the resource and may result in a significant impact if its

contributing characteristics or the character of its physical setting is destroyed or substantially altered such that the significance of the resource would be materially impaired. Permanent direct impacts may be addressed by advance project planning and consulting with tribes that have requested consultation to ensure known tribal cultural resources are identified, avoided, and preserved in place or to develop project alternatives that would minimize impacts on known tribal cultural resources. Permanent direct impacts on tribal cultural resources discovered inadvertently during project construction may be addressed by project redesign to avoid and preserve the resource and by tribal consultation focused on minimizing the impact.

Indirect impacts from construction and operations improvements may result from potential access-related damage to tribal cultural resources when public accessibility increases because of improved transportation networks stemming from the proposed Plan, for example, off-street bike trail projects that take users through open space, like the Oceanside Inland Rail Trail. The likelihood of unauthorized artifact collecting and destruction (intentional or unintentional) of tribal cultural resources of or of damage to or destruction (intentional or unintentional) of tribal cultural resources that are traditional places for gathering natural resources, cultural landscapes, or sacred places increases with improved access. Recreational use, overland vehicle travel, and vandalism have the potential to degrade the integrity and traditional use of the tribal cultural resources. Ensuring that appropriate measures are devised during project planning that would minimize or reduce damage to tribal cultural resources, coupled with requested tribal consultation, may reduce indirect access-related impacts. However, operational impacts associated with increased public access, such as vandalism or inadvertent damage, are anticipated to be limited in extent and geographic scope. These impacts would not constitute a substantial adverse change in the significance of a tribal cultural resource under CEQA and are therefore considered less than significant.

Given the magnitude and location of several of the transportation network improvements and programs occurring between 2022 and 2035, additional ground disturbances are anticipated. As a result, additional tribal cultural resources would be encountered during construction activities between 2022 and 2035. For example, regional growth through 2035 could increase recreational use of open space areas, which in turn could promote erosion or increase the likelihood of damage to tribal cultural resources through increased foot traffic and public access.

Although adherence to the existing laws, regulations, and programs discussed in Section 4.17.2 would reduce impacts on tribal cultural resources upon implementation of the proposed Plan, the is a likelihood that they would not reduce these impacts to a less-than-significant level for all future projects under the proposed Plan. Given the potential for transportation facilities to cause substantial adverse changes in the significance of tribal cultural resources, coupled with the nonrenewable nature of these resources if disturbed or altered, implementation of the proposed Plan would result in ground-disturbing activities and increased access related to transportation network improvements and programs that would cause a substantial adverse change in the significance of a tribal cultural resource. This is a significant impact.

2035 Conclusion

Implementation of the proposed Plan would result in regional growth and land use change and transportation network improvements and programs that could cause a substantial adverse change in the significance of a tribal cultural resource. Therefore, this impact (TCR-1) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0, "Project Description," of this Draft EIR, from 2036 to 2050, regional population is forecast to decrease by 4,112 people (-0.1%), while housing units are projected to increase by 65,577 (4.8%) and employment is forecasted to increase by 103,460 (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5 in Chapter 2, "Project Description." The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated county, and the cities of Carlsbad and El Cajon. Approximately 78.8% of new housing units are in the cities of San Diego (51.6%) and Chula Vista (17.1%)

and the unincorporated county. Similarly, these same two jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050.

As discussed in the 2035 analysis, many areas throughout the San Diego region have a high potential to contain tribal cultural resources. In addition to the resource-sensitive areas mentioned in the 2035 analysis, the additional growth forecasted in both the unincorporated county and western portion of the region between 2035 and 2050 would result in new development in areas such as Otay, and redevelopment in established urban areas such as Downtown, Kearny Mesa, and Midway-Pacific Highway. Additional construction and ground-disturbing activities, such as excavation, grading, clearing, demolition, alteration, and structural relocation, would occur with the potential to directly impact tribal cultural resources. Ground-disturbing activities associated with infill, redevelopment, or expansion of infrastructure have the potential to impact tribal cultural resources, as do changes in setting. Forecasted growth and land use change, as well as changes in setting, would also result in indirect physical impacts on open space areas, such as in the Otay planning area, and thus increase the likelihood of physical impacts on tribal cultural resources located in those areas. For instance, increased recreational use of open space areas could promote erosion or increase the likelihood of damage to tribal cultural resources through increased traffic (foot or otherwise). Regional growth and development through 2050 are anticipated to result in significant cumulative impacts on tribal cultural resources across the region. This is due to the potential for ground disturbing activities to unearth previously unidentified tribal cultural resources and the possibility of indirect impacts on culturally sensitive landscapes. The proposed Plan would contribute to these cumulative impacts by facilitating new development that involves ground disturbance in areas with known or potential tribal cultural resources. Therefore, the Plan's contribution to the significant cumulative impact on tribal cultural resources would be considered cumulatively considerable under CEQA. With additional growth and increased development intensities, and increased use of open space areas, the extent of impacts on tribal cultural resources between 2036 and 2050 would be greater than that experienced by 2035 as more resource-sensitive land would be disturbed over time.

As more land is disturbed and altered for new development and redevelopment between 2036 and 2050, the possibility of irreversible losses of significant tribal cultural resources becomes greater. As discussed in the 2035 analysis, although adherence to the existing laws, regulations, and programs would reduce impacts on tribal cultural resources upon implementation of the proposed Plan, there remains a likelihood that this would not reduce these impacts to a less-than-significant level for all future projects. Given the potential for land use changes to cause substantial adverse changes in the significance of tribal cultural resources, coupled with the nonrenewable nature of these resources if disturbed or altered, implementation of the proposed Plan would result in ground-disturbing activities and changes in setting related to regional growth and land use change that would cause a substantial adverse change in the significance of a tribal cultural resource. This is a significant impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period.

As with the 2035 analysis, there is a likelihood that identified and unidentified tribal cultural resources would occur in transportation network improvement and program areas scheduled for implementation between 2036 and 2050. Projects that would involve construction of new infrastructure or facilities could result in impacts. Major rail projects and improvements, such as continued double-tracking along certain LOSSAN corridor locations and construction of the Purple Line, have the potential to impact tribal cultural resources resulting from ground disturbance or disturbance of tribal cultural resource features or places. Highway improvements, such as Managed Lane construction along I-5, I-15, I-805, SR 52, and SR 56, would require grading and, potentially, trenching activities that remove or disturb the upper layer of soils, and could encounter underlying archaeological tribal cultural resources. Widening and road straightening along rural highways, such as SR 76, SR 79, SR 94, and I-8,

would occur in areas that have seen relatively little development and would disturb new ground. Such construction activities are more likely to disturb tribal cultural resources than construction areas in previously developed areas because tribal cultural resources are most likely to be encountered during initial ground disturbance. Direct impacts would be significant if tribal cultural resources cannot be avoided or preserved in place by project design or redesign and are destroyed or substantially altered. Disturbance of tribal cultural resource features or places could impact the traditional use, or the cultural character and integrity, of the resource and may result in a significant impact if their contributing characteristics or the character of their physical setting is destroyed or substantially altered such that the significance of the resource would be materially impaired.

Indirect impacts from construction and operational improvements may result from increased public accessibility to areas that contain tribal cultural resources. Improved transportation networks under the proposed Plan, for example, off-street bike trail projects that take users through open space, like the proposed San Luis Rey River Trail, could lead to unauthorized access, artifact collecting, and intentional or unintentional damage to tribal cultural resources. These areas often hold cultural and spiritual significance as traditional gathering places for gathering natural resources or sacred landscapes, and increased access has the potential to degrade their integrity. These operational access-related impacts on tribal cultural resources are considered significant under CEQA. However, ensuring that appropriate measures are integrated into project planning, such as avoidance, design modifications, and early tribal consultation, would reduce these impacts, as discussed in the mitigation section of this chapter.

Given the magnitude and location of several of the transportation network improvements occurring between 2036 and 2050, and the number of additional transportation network improvements over those implemented by 2035, additional significant ground disturbances are anticipated. It is therefore likely that more tribal cultural resources would be disturbed between 2036 and 2050.

As discussed in the 2035 analysis, although adherence to the existing laws, regulations, and programs would reduce impacts on tribal cultural resources upon implementation of the proposed Plan, there remains a likelihood that they would reduce these impacts to a less-than-significant level for all future projects under the proposed Plan. Implementation of the proposed Plan would result in ground-disturbing activities and increased access related to transportation network improvements, which may result in significant operational impacts on tribal cultural resources if not mitigated. Given the potential for transportation facilities to cause substantial adverse changes in the significance of tribal cultural resources coupled with the nonrenewable nature of these resources if disturbed or altered, this is a significant impact.

2050 Conclusion

Implementation of the proposed Plan would result in regional growth and land use change and transportation network improvements and programs that could cause a substantial adverse change in the significance of a tribal cultural resource. Therefore, this impact (TCR-1) in the year 2050 is significant.

MITIGATION MEASURES

TCR-1 CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE, DEFINED IN PUBLIC RESOURCES CODE SECTION 21074 AS EITHER A SITE, FEATURE, PLACE, CULTURAL LANDSCAPE THAT IS GEOGRAPHICALLY DEFINED IN TERMS OF THE SIZE AND SCOPE OF THE LANDSCAPE, SACRED PLACE, OR OBJECT WITH CULTURAL VALUE TO A CALIFORNIA NATIVE AMERICAN TRIBE, AND THAT IS EITHER (1) LISTED OR ELIGIBLE FOR LISTING IN THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES, OR IN A LOCAL REGISTER OF HISTORICAL RESOURCES AS DEFINED IN PUBLIC RESOURCES CODE SECTION 5020.1(K); OR (2) DETERMINED BY THE LEAD AGENCY, IN ITS DISCRETION AND SUPPORTED BY SUBSTANTIAL EVIDENCE, TO BE SIGNIFICANT PURSUANT TO CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCES CODE SECTION 5024.1.

2035 2050

TCR-1a: Implement Tribal Cultural Resources Mitigation Measures for Development Projects and Transportation Network Improvements.

During project-level CEQA review of development projects or transportation network improvements that would cause a substantial adverse change in the significance of a tribal cultural resource, the County of San Diego, cities, and other local jurisdictions can and should, SANDAG shall, and other transportation project sponsors, can and should develop project-level protocols and mitigation measures with consulting tribes, consistent with PRC Section 21080.3.2(a) to avoid or reduce impacts on tribal cultural resources during construction and operation of development projects and transportation network improvements. The County of San Diego, cities, and other local jurisdictions can and should, SANDAG shall, and other transportation projects sponsors can and should identify these resources through records searches, survey, consultation, or other means, in order to develop minimization and avoidance methods where possible, and consult with California Native American tribes participating in AB 52 consultation to develop mitigation measures for tribal cultural resources that may experience substantial adverse changes.

To assist AB 52 consultation, the County of San Diego, cities, and other local jurisdictions can and should, SANDAG shall, and other transportation project sponsors can and should comply with the following best practices for complying with AB 52:

- Gather relevant cultural resources information, such as CHRIS records search results, prior archaeological or ethnographic studies, SLF checks, or tribal input, early in the planning process to help identify tribal cultural resources and preserve options for avoidance or preservation in place.
- Build working relationships with tribes that are traditionally and culturally affiliated to the project area or to the agency's geographic area of jurisdiction. In consultation, agencies should deal with officially designated representatives of the tribe who have written designation to speak on behalf of the tribe.
- Avoid inadvertent discoveries of California Native American burials and work with tribes in advance to determine culturally appropriate treatment and disposition if burials are inadvertently discovered.
- Maintain the confidentiality of information shared during consultation, consistent with PRC Section 21082.3(c)(2), unless the tribe provides written consent to disclose. This measure helps prevent looting, vandalism, or damage to tribal cultural resources.
- Implement any mitigation measures agreed upon during AB 52 consultation.

In the absence of any specific mitigation measures agreed upon during AB 52 consultation, the County of San Diego, cities, and other local jurisdictions can and should, SANDAG shall, and other transportation project sponsors can and should develop standard mitigation measures as set forth in PRC Section 21084.3(b).

The following are standard mitigation measures for tribal cultural resources:

1. Avoidance and preservation of the resources in place, consisting of, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
2. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, consisting of, but not limited to, the following:
    a. protecting the cultural character and integrity of the resource
    b. protecting the traditional use of the resource
    c. protecting the confidentiality of the resource
3. Record permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

4. Protecting the resource as agreed upon during the tribal consultation process.

TCR-1b: Implement Monitoring and Mitigation Programs for Development Projects and Transportation Network Improvements.
During project-level CEQA review and during construction of development projects and transportation network improvements, the County of San Diego, cities, and other local jurisdictions can and should, SANDAG shall, and other transportation project sponsors can and should identify and implement monitoring and mitigation measures to reduce impacts on both known and undiscovered tribal cultural resources, during construction and operation activities, as applicable, consisting of but not limited to the following:

- Require tribal cultural resource areas identified in any required monitoring and mitigation plan to be monitored during the grading phase of individual projects by a qualified archaeologist, and tribal monitor who has been approved by the consulting tribe(s).
- Should a previously undiscovered cultural resource be encountered during construction activities that is determined to be a tribal cultural resource by the CEQA lead agency in consultation with California Native American tribes, the qualified archaeologist, or tribal monitor if an archaeologist is not present, shall direct the contractor to temporarily divert all ground-disturbing activities in the area of the discovery and prepare and implement a mitigation plan consistent with, but not necessarily limited to, standard mitigation measures set forth in PRC Section 21084.3(b), in consultation with California Native American tribes.
- The qualified archaeologist shall be responsible for ensuring that all records associated with the survey, testing, data recovery, and monitoring of future projects are curated with an appropriate regional information center, such as the South Coastal Information Center (SCIC) at San Diego State University. The construction contractor(s) and lead agency shall facilitate the respectful reburial of the culturally sensitive soils or objects. This includes providing a reburial location that is consistent with the tribe's preferences, excavation of the reburial location, and assisting with the reburial upon written request by a designated representative of the tribe. This shall be completed in consultation with the California Native American representative and does not include California Native American human remains and associated burial items, the disposition of which should be determined in consultation with the designated Most Likely Descendants (MLDs).
- Upon completion of all ground-disturbing activity, the qualified archaeologist shall prepare and submit a draft and final monitoring report to the CEQA lead agency that describes the results, analysis, and conclusions of all phases of the monitoring program, including the provisions for curation and repatriation, if applicable, and copies of any signed curation agreements to verify completion of the required monitoring program. A copy of the final monitoring report, and appendices thereto, will be provided to designated representatives of consulting tribe(s) upon request.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Implementation of the proposed Plan would result in significant impacts on tribal cultural resources through construction and ground-disturbing activities and unauthorized or unintentional access to sensitive tribal cultural areas in 2035 and 2050. Implementation of mitigation measures TCR-1a and TCR-1b would reduce impacts by incorporating tribal input to avoid or minimize disturbance to tribal cultural resources, ensuring appropriate treatment of discoveries, and implementing mitigation monitoring to detect and address impacts during construction. However, it cannot be guaranteed that all future project-level impacts under the proposed Plan can be mitigated to a less-than-significant level. Therefore, this impact (TCR-1) would remain significant and unavoidable.

4.17.5 Cumulative Impacts Analysis

C-TCR-1 CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE, DEFINED IN PUBLIC RESOURCES CODE SECTION 21074 AS EITHER A SITE, FEATURE, PLACE, CULTURAL LANDSCAPE THAT IS GEOGRAPHICALLY DEFINED IN TERMS OF THE SIZE AND SCOPE OF THE LANDSCAPE, SACRED PLACE, OR OBJECT WITH CULTURAL VALUE TO A CALIFORNIA NATIVE AMERICAN TRIBE, AND THAT IS EITHER (1) LISTED OR ELIGIBLE FOR LISTING IN THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES, OR IN A LOCAL REGISTER OF HISTORICAL RESOURCES AS DEFINED IN PUBLIC RESOURCES CODE SECTION 5020.1(K); OR (2) DETERMINED BY THE LEAD AGENCY, IN ITS DISCRETION AND SUPPORTED BY SUBSTANTIAL EVIDENCE, TO BE SIGNIFICANT PURSUANT TO CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCES CODE SECTION 5024.1.

The area of geographic consideration for cumulative impacts on tribal cultural resources is the Southern California and Northern Baja California region. Because local and regional settlement patterns are closely linked, evaluating the cumulative loss of tribal cultural resources across this entire geographic area is necessary to determine whether such loss would result in a substantial adverse change in the significance of these resources, particularly by diminishing the understanding of the closely interrelated prehistoric and historic context. A significant cumulative impact on tribal cultural resources would occur if the proposed Plan would result in incremental effects that are considered cumulatively significant when considered in combination with the impact projections in adopted plans, and impacts on tribal cultural resources resulting from existing and probable future projects. Significant cumulative impacts related to tribal cultural resources would occur if cumulatively there would be a substantial increase in substantial adverse impacts with regard to the significance of tribal cultural resources.

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan, SCAG's Connect SoCal 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy EIR (SCAG 2024) for the Southern California region, the County of San Diego General Plan Update EIR (County of San Diego 2011), and the California-Baja California 2021 Border Master Plan (Caltrans 2021). Many local jurisdictions provide guidance and protective measures for tribal cultural resources in their general plans and other local planning documents. There are generally no regional plans pertaining to such resources for the Northern Baja California region. The California-Baja California Border Master Plan is a binational comprehensive approach to coordinate planning and delivery of projects at land POEs and transportation infrastructure serving those POEs in the California-Baja California region. The Master Plan does not have an associated environmental analysis document, and no detailed analysis of cultural resource impacts was conducted for this Master Plan (Caltrans 2021).

Impacts of the Proposed Plan

Areas in the San Diego region are known to have a high potential for tribal cultural resources. Implementation of the proposed Plan would result in the construction of development projects and transportation network improvements that would result in a wide range of construction and ground-disturbing activities, such as excavation, grading, and clearing, which remove or disturb the upper layer of soils. Since tribal cultural resources have been found within inches of the ground surface in some areas of the San Diego region, in some locations these ground-disturbing activities would cause a substantial adverse change in the significance of a tribal cultural resource by unearthing or damaging the resource such that its significance would be materially impaired. Implementation of the proposed Plan would necessitate construction activities that in some locations would cause a substantial adverse change in the significance of a tribal cultural resource through the physical demolition, destruction, relocation, or alteration of a resource or its immediate surroundings such that the significance of a tribal cultural resource would be materially impaired. This would occur within each horizon year analyzed (2035 and 2050). Therefore, impacts related to a substantial adverse change in the significance of a tribal cultural resource would be significant (Impact TCR-1).

In addition to direct impacts from construction and ground disturbance, the proposed Plan may also result in indirect impacts on tribal cultural resources through increased public access to previously less accessible areas.

Such access could lead to heightened risks of vandalism, looting, or inadvertent disturbance of sensitive sites, particularly if adequate avoidance and protective measures are not implemented. If not properly managed, these indirect impacts could contribute to a substantial adverse change in the significance of tribal cultural resources.

Impacts of Related Projects

Land development and infrastructure projects throughout the region, such as transportation infrastructure, energy generation and transmission corridors, and commercial and residential land development would likely result in impacts if these projects occur in areas containing tribal cultural resources. For example, projects planned in the Southern California region, such as the Navy Old Town Campus Revitalization Project, San Diego International Airport (SDIA) Airport Development Plan, High-Speed Train (HST), and City of San Diego Pure Water North City, would result in impacts related to destruction or alteration of tribal cultural resources. For example, the HST project in the San Diego region would result in construction of track, bridges and elevated guideways, stations, and other features that may result in destruction or alteration of tribal cultural resources, referred to in the program EIR/EIR as traditional cultural properties (HSRA 2005). The EIR/EIS prepared for the HST project determined that the project would result in significant cumulative impacts on traditional cultural properties. The SDIA Airport Development Plan involved construction activities with the potential to affect tribal cultural resources; however, the EIR for the project (SDCRAA 2020) concluded that such impacts would not be significant under CEQA. The Navy Old Town Campus Revitalization Project EIS did not identify any known tribal cultural resources within the project area. The Native American Heritage Commission indicated that no such resources were present, and the Navy committed to consultation with the SHPO and other interested parties. Mitigation measures, including inadvertent discovery protocols, would reduce impacts to cultural and historic resources to less than significant levels under NEPA (U.S. Department of the Navy 2020, Table ES-1). The City of San Diego Pure Water North City Project EIR/EIS identified impacts to known tribal cultural resources associated with religious or sacred uses or human remains. However, with implementation of mitigation measure MM-HIS-3, as described in Section 6.10, impacts were reduced to a level below significance (City of San Diego 2018, Table ES-1)

Impacts of Projections in Adopted Plans

Implementation of the SCAG 2024-2050 RTP/SCS would result in significant and unavoidable impacts related to adverse changes in the significance of tribal cultural resources. In addition, the SCAG 2024-2050 RTP/SCS's influence on growth would contribute to regionally significant impacts on tribal cultural resources and be cumulatively considerable (SCAG 2024). The EIR prepared for the County of San Diego General Plan Update did not explicitly analyze impacts on tribal cultural resources. ;However, the EIR addresses archaeological resources and includes mitigation measures consistent with SB 18, including coordination with Native American Heritage Commission and local tribal governments (County of San Diego 2011, Section 2.5.6, pp. 2.5-37 to 2.5-40). Because tribal cultural resources were not explicitly addressed, the EIR did not reach a specific significance conclusion for such resources. The California-Baja California Border Master Plan does not provide analysis of impacts on tribal cultural resources; however, projects included in the Master Plan could have adverse impacts on tribal cultural resources due to ground disturbance necessary for construction of infrastructure.

Cumulative Impacts and Impact Conclusions

2035

A significant cumulative impact in the year 2035 would occur if the proposed Plan would result in incremental effects that are considered cumulatively considerable when considered in combination with impacts of cumulative projects and the impact projections in adopted plans within the Southern California and Northern Baja region. As described above, implementation of the proposed Plan, cumulative projects, and other plans would result in ground-disturbing activities that would cause a substantial adverse change in the significance of a tribal cultural resource.

California projects are required to adhere to federal, state, and local regulations, as described in Section 4.17.2, "Regulatory Setting"; however, cumulative growth development located in Mexico would not be subject to compliance with such regulations. Additionally, even with regulations in place, individual tribal cultural resources could still be impacted or degraded from demolition, destruction, alteration, or structural relocation as a result of

new private or public development or redevelopment allowable under the proposed Plan, cumulative projects, or other adopted plans. Therefore, cumulative impacts on tribal cultural resources would be significant. Because the proposed Plan's impacts on tribal cultural resources are significant, the project's contribution to the significant cumulative impact is cumulatively considerable in 2035 (Impact C-TCR-1).

2050

The cumulative analysis presented above for the horizon year of 2035 would be applicable to year 2050, and significant cumulative impacts on tribal cultural resources would occur. By 2050, increases in regional growth and land use change, and the number of transportation network improvements implemented over those that occurred by 2035 would result in adverse impacts related to changes in the significance of a tribal cultural resource. As described in the 2035 analysis, cumulative impacts on tribal cultural resources would be significant because there would be cumulative adverse changes in the significance of those resources due to the proposed Plan, cumulative projects, and other plans, and development located in Northern Baja California. Because the proposed Plan's impacts on tribal cultural resources are significant, the project's contribution to the significant cumulative impact is cumulatively considerable in 2050 (Impact C-TCR-1).

MITIGATION MEASURES

C-TCR-1 CAUSE A SUBSTANTIAL ADVERSE CHANGE IN THE SIGNIFICANCE OF A TRIBAL CULTURAL RESOURCE, DEFINED IN PUBLIC RESOURCES CODE SECTION 21074 AS EITHER A SITE, FEATURE, PLACE, CULTURAL LANDSCAPE THAT IS GEOGRAPHICALLY DEFINED IN TERMS OF THE SIZE AND SCOPE OF THE LANDSCAPE, SACRED PLACE, OR OBJECT WITH CULTURAL VALUE TO A CALIFORNIA NATIVE AMERICAN TRIBE, AND THAT IS EITHER (1) LISTED OR ELIGIBLE FOR LISTING IN THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES, OR IN A LOCAL REGISTER OF HISTORICAL RESOURCES AS DEFINED IN PUBLIC RESOURCES CODE SECTION 5020.1(K); OR (2) DETERMINED BY THE LEAD AGENCY, IN ITS DISCRETION AND SUPPORTED BY SUBSTANTIAL EVIDENCE, TO BE SIGNIFICANT PURSUANT TO CRITERIA SET FORTH IN SUBDIVISION (C) OF PUBLIC RESOURCES CODE SECTION 5024.1.

2035, 2050

Mitigation measures to reduce impacts on tribal cultural resources due to implementation of the proposed Plan as identified in Section 4.17.4, "Environmental Impacts and Mitigation Measures," would be applicable to reducing the proposed Plan's cumulative impacts as well. Mitigation Measures TCR-1a and TCR-1b are measures to avoid or substantially reduce adverse changes in the significance of a tribal cultural resource and protect tribal cultural resources. These mitigation measures also require the implementation of monitoring and data recovery programs during construction. These mitigation measures would be included in project-level planning, design, and CEQA reviews. The measures would be required as part of projects under the proposed Plan for which SANDAG is the lead agency, and would be recommendations when other local jurisdictions act as lead agency. Implementation of these mitigation measures would not reduce impacts that would cause a substantial adverse change in the significance of a tribal cultural resource to less than significant because it cannot be guaranteed that all future project-level impacts under the proposed Plan can be mitigated to a less-than-significant level. Mitigation Measures TCR-1a and TCR-1b would not reduce the proposed Plan's incremental impacts to less than significant. Therefore, the proposed Plan's incremental contributions to cumulative tribal cultural resources impacts in years 2035 and 2050 would remain cumulatively considerable post-mitigation.

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4.18 WATER SUPPLY

This section evaluates the water supply impacts of the proposed Plan.

4.18.1 Existing Conditions

This section describes the general water supply conditions of both potable water and groundwater supply in the San Diego region, including local water supplies, imported water supply, desalination, and water recycling efforts. The existing conditions discussion provided below is primarily summarized from the urban water management plans (UWMPs) prepared by the applicable water supply agencies including the San Diego County Water Authority (SDCWA) and the Metropolitan Water District of Southern California (MWD) (SDCWA 2021a; MWD 2021). UWMPs have a 25-year planning horizon. The existing water supply conditions are based on the most recent available data for the San Diego region. Hydrological conditions and surface and groundwater water quality are addressed in Section 4.10, "Hydrology and Water Quality."

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

The following information about MWD is summarized from the MWD 2020 UWMP, dated June 2021 (MWD 2021), unless noted otherwise. MWD is a public agency that was formed in 1928 for the purpose of developing, storing, and distributing water to the residents of Southern California. MWD's mission is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. The total area served by MWD is approximately 5,200 square miles, and it includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. MWD imports water from two sources: (1) Colorado River water via the Colorado River Aqueduct and (2) the State Water Project (SWP) via the California Aqueduct from the San Francisco Bay/Sacramento–San Joaquin Delta area (Bay/Delta) in Northern California. The Colorado River Aqueduct is more than 240 miles long, beginning at Lake Havasu on the Arizona-California border and ending at Lake Mathews in Riverside County. The aqueduct has the capacity to deliver up to 1.25 million acre-feet (af) of water per year. The SWP is owned by the State of California and operated by the Department of Water Resources (DWR). The SWP stretches from Lake Oroville in the north to Lake Perris in the south and comprises 32 storage facilities, 662 miles of aqueduct, and 25 power and pumping plants. Water is stored at Lake Oroville and released when needed into the Feather River, which flows into the Sacramento River and to the Delta. The Delta is the largest estuary on the United States' west coast and is used for multiple purposes, including agriculture, recreation, and fishing, and provides the means by which to deliver water from Northern California to the south. Water from the Delta is either pumped to water users in the San Francisco Bay area or transported through the California Aqueduct to water users in Central and Southern California. SWP facilities provide drinking water to 27 million Californians and irrigation water for 750,000 acres of farmland (SDCWA 2021a).

MWD serves approximately 19 million residents and is composed of 26 voluntary member agencies, including 14 cities, 11 municipal water districts, and one county water authority, the SDCWA. MWD member agencies serve residents in 152 cities and 89 unincorporated communities. Average daily delivery (5-year average as of December 31, 2023) is 4,100 af (MWD 2024). An acre-foot is approximately 325,900 U.S. gallons, or roughly enough to supply 2.5 average families of four for a year (SDCWA 2020). MWD is a water wholesaler with no retail customers. To aid in planning future water needs, member agencies advise MWD of how much water they anticipate needing during the next 5 years. In addition, MWD works with its member agencies to forecast future water demand and develop emergency supply strategies to ensure a secure, long-term water supply.

SAN DIEGO COUNTY WATER AUTHORITY

The following information is summarized from the SDCWA 2020 UWMP, dated May 2021 (SDCWA 2021a), unless noted otherwise. SDCWA was formed in 1944. Because of a strong military presence in the region, the federal government arranged for supplemental supplies from the Colorado River in the 1940s. In 1947, water began to be

imported from the Colorado River via a single pipeline that connected to the MWD Colorado River Aqueduct in Riverside County. To meet the water demands of a growing population and economy, SDCWA constructed four additional pipelines between the 1950s and early 1980s that are all connected to the MWD distribution system and deliver water to San Diego County. SDCWA's mission is to provide a safe and reliable supply of water to its member agencies serving the San Diego region. SDCWA has 22 member agencies: six cities, five water districts, three irrigation districts, seven municipal water districts and one federal military agency. SDCWA member agencies include Carlsbad, Helix, Lakeside, Olivenhain, Otay, Padre Dam, Ramona, Rincon del Diablo, San Dieguito, Santa Fe, South Bay, Vallecitos, Valley Center, Vista, and Yuima water districts; Camp Pendleton Marine Corps Base; and the cities of Del Mar, Escondido, National City, Oceanside, Poway, and San Diego. Although the cities of Coronado and Imperial Beach are not within the SDCWA service area, they obtain their water from the City of San Diego, and their water consumption is included in regional water use (SDCWA 2021a). The supply of these two cities originates primarily from water imported by SDCWA and provided to the City of San Diego, and secondarily from water captured in City of San Diego reservoirs.

SDCWA classifies water demand within its service area into two categories: municipal and industrial (M&I), and agricultural. The M&I demand classification includes residential demand and water used for commercial, industrial, and institutional purposes. M&I use amounts to 92% of water demand (SDCWA 2021a). SDCWA utilizes an econometric model to develop its long-range M&I demand forecasts, which is based on the U.S. Army Corps of Engineers Municipal and Industrial Needs model and the SANDAG official growth forecasts. Agricultural demand projections are based on coordination between SDCWA, its member agencies, SANDAG, County of San Diego Agricultural Weights and Measures, and the California Avocado Commission.

As an urban water supplier, SDCWA is required to submit a complete version of its UWMP to DWR every 5 years. SDCWA prepared the most recent UWMP, the 2020 UWMP, in accordance with the Urban Water Management Planning Act (UWMPA). In addition to the 2020 UWMP, SDCWA also prepares annual water supply reports that provide updated information on the development of local and imported water supplies. The 2024 Water Facilities Master Plan (2024 Master Plan) serves as a comprehensive evaluation of infrastructure requirements needed to ensure water supply for the SDCWA service area (SDCWA 2025a). The capital improvement projects included in the Master Plan are designed to meet the projected water supply and delivery needs of the member agencies through 2035. These supporting documents provide the most relevant source of baseline information for understanding existing SDCWA water supply conditions. Table 4.18-1 shows annual regional water use (excluding recycled water) in the SDCWA service area from 2014 through 2023. Total potable water use for 2023 decreased approximately 10% compared to the prior year.

Table 4.18-1 SDCWA Service Area Regional Water Use Trends (acre-feet)

Year	Total Potable Water Use	Potable M&I Water Use
2014	574,343	526,218
2015	512,344	471,144
2016	432,145	440,455
2017	453,345	422,475
2018	491,280	455,708
2019	440,681	415,984
2020	440,346	416,975
2021	475,619	446,814
2022	467,310	442,794
2023	420,118	402,804

Notes: SDCWA = San Diego County Water Authority; M&I = municipal and industrial.

[1] Data reflects a snapshot in time and is subject to changes.

[2] Total potable water use excludes reclaimed water.

Source: SDCWA 2024a.

SDCWA Water Supply Sources

SDCWA supplies imported water to the San Diego region for wholesale distribution to its member agencies and is now the predominant water provider in the county, supplying 75–95% of the San Diego region's water. Historically, SDCWA has relied predominantly on imported water supplies purchased from MWD to meet the needs of its member agencies. SDCWA is MWD's largest member agency, purchasing up to 30% of MWD's supplies annually. Overall, imported water supplies consist of water purchases from MWD, core water transfers from the Imperial Irrigation District (IID), the All-American Canal and Coachella Canal Lining Projects, and as-needed spot water transfers to offset reduced supplies (shortages) from MWD. These imported water supplies are delivered to SDCWA member agencies through a system of large-diameter pipelines, pumping stations, and reservoirs. In addition to imported water supplies, SDCWA began delivering regional water supplies consisting of desalinated seawater from the Carlsbad Desalination Plant in December 2015. Each of the primary sources of the SDCWA water supply is detailed further below.

Metropolitan Water District of Southern California Purchases

As noted, SDCWA has relied predominantly on imported water supplies purchased from MWD. MWD legally entitles each member agency to a preferential right to purchase a certain percentage of MWD's supplies. The percentage is based on the member's past payments toward MWD's capital and operating costs, excluding payments for water purchases. Preferential rights are updated annually. As of June 30, 2020, SDCWA has preferential right to 25.83% of MWD's water supplies (SDCWA 2021a). In fiscal year 2023, SDCWA purchased about 7.3% of the water MWD sold (SDCWA 2024b).

SDCWA-IID Water Conservation and Transfer Agreement

On April 29, 1998, SDCWA entered into a water conservation and transfer agreement with IID for the long-term transfer of conserved Colorado River water to the San Diego region. The Water Authority–IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in U.S. history. Colorado River water is conserved by Imperial Valley farmers who voluntarily participate in the program by fallowing (leaving land unseeded) and implementing on-farm conservation projects that conserve water, which is then transferred to SDCWA for use in the San Diego region. In addition, the IID is developing distribution system efficiency improvements to conserve water, which are planned to increase over time as the transfer volume also increases. In October 2003, SDCWA and IID executed an amendment to the original 1998 Transfer Agreement, which modified, among other things, certain aspects of the agreement to lessen the environmental impacts of transferring conserved water. Water deliveries via the transfer began in 2003 with an initial transfer of 10,000 af. In 2019, SDCWA received 192,500 af. The quantities were scheduled to be 205,000 af in 2021 and 202,500 af in 2022; the quantities would then remain fixed at 200,000 af for the duration of the Transfer Agreement. The initial term of the Transfer Agreement is 45 years, with a provision that allows either agency to extend it for an additional 30 years. Table 4.18-2 summarizes the existing and projected water supplies based on the current Transfer Agreement (SDCWA 2021a).

Table 4.18-2 Existing and Projected SDCWA-IID Transfer Supplies – Normal Year (acre-feet/year)

2020	2025	2030	2035	2040	2045
192,500	200,000	200,000	200,000	200,000	200,000

Note: SDCWA-IID = San Diego County Water Authority–Imperial Irrigation District.

Source: SDCWA 2021a: Table 4-1.

All-American and Coachella Canals Projects

SDCWA also has a separate, 110-year agreement to receive water conserved by lining parts of the Coachella and All-American Canals in Imperial Valley. As part of the Quantification Settlement Agreement and related contracts, SDCWA receives the rights to 77,700 acre-feet per year (afy) of conserved water from these two canal lining projects. SDCWA helped fund the construction of a 35-mile lining project along the Coachella Canal and a 23-mile lining project along the All-American Canal. The concrete-lined sections replaced earthen sections and conserve water previously lost to seepage (SDCWA 2021a). The Coachella Canal Lining Project involved construction of the concrete-

lined canal parallel and adjacent to the existing earthen Coachella Canal. Construction of the Coachella Canal Lining Project was completed in 2006, and deliveries of conserved water to SDCWA began in 2007. The All-American Canal Lining Project, involving construction of a 23-mile concrete-lined canal parallel to the existing earthen All-American Canal, was completed in 2010 when the deliveries of conserved water to SDCWA began (SDCWA 2021a).

The All-American Canal Lining Project makes 67,700 af of Colorado River water per year available for allocation to SDCWA and San Luis Rey Indian water rights settlement parties. The Coachella Canal Lining Project makes 26,000 af of Colorado River water available each year for allocation. The 2003 Allocation Agreement provides for 16,000 afy of conserved canal lining water to be allocated to the San Luis Rey Indian water rights settlement parties. The remaining amount (i.e.,77,700 afy) is to be available to SDCWA each year. SDCWA will also receive any remaining portion of an available 4,850 afy that is not needed for designated environmental purposes associated with the Coachella Canal Lining Project. Under the existing agreements, annual canal lining supplies are delivered in equal monthly installments (SDCWA 2021a).

These two canal lining projects help SDCWA achieve its goals of water supply diversification and improved water supply reliability. Over the 110-year term of the agreement, 8.5 million af of conserved water are anticipated to flow to the San Diego region. Table 4.18-3 summarizes the projected supply from the two lining projects from 2020 to 2045.

Table 4.18-3 Projected Supply from Canal Lining Projects – Normal Year (acre-feet/year)

	2020	2025	2030	2035	2040	2045
Coachella Canal Lining Project	21,500	22,500	22,500	22,500	22,500	22,500
All-American Canal Lining Project	56,200	56,200	56,200	56,200	56,200	56,200
Total	**77,700**	**78,700**	**78,700**	**78,700**	**78,700**	**78,700**

Source: SDCWA 2021a: Table 4-2.

Carlsbad Desalination Plant

Desalinated seawater is a new source of water supply in the San Diego region. Development of seawater desalination in the San Diego region creates a reliable source of water by diversifying the region's water resources, which in turn reduces the region's dependence on imported water supplies. In addition, desalinated seawater is a drought-proof, locally treated water supply. In 2012, SDCWA entered into a formal water purchase agreement with Poseidon Water for the purchase of desalinated ocean water produced at the Claude "Bud" Lewis Carlsbad Desalination Plant (Carlsbad Desalination Plant) and delivered to the SDCWA regional aqueduct system. The Carlsbad Desalination Plant, located at the Encina Power Station in Carlsbad, became operational in December 2015 and provides an average of 50 million gallons per day (mgd) and up to 56,000 afy of high-quality drinking water for the region. Of this total, 6,000 af is considered water supply directly for SDCWA member agencies (SDCWA 2021a). A 10-mile-long pipeline delivers water from the plant to the SDCWA Second Aqueduct. The Second Aqueduct conveys desalinated water to the SDCWA Twin Oaks Valley Water Treatment Plant (WTP), where it is integrated with existing drinking water supplies for regional distribution. Table 4.18-4 details the projected water supply deliveries to SDCWA from the Carlsbad Desalination Plant.

Table 4.18-4 Projected Supply from Carlsbad Desalination Plant – Normal Year (acre-feet/year)

2025	2030	2035	2040	2045
50,000	50,000	50,000	50,000	50,000

Source: SDCWA 2021a: Table 4-4.

Dry Year Water Supplies and Carryover Storage

In addition to normal year water supplies, SDCWA has a carryover storage supply program to maintain water supply reliability during dry and multiple dry years. This program includes both in-region surface water storage at San Vicente Reservoir, secured as part of the San Vicente Dam project, and out-of-region groundwater storage in California's Central Valley. Because of these storage capabilities, SDCWA can store water during wet periods for use during water supply shortages.

The San Vicente Dam Raise Carryover Storage project, located in the San Vicente Reservoir, was completed in 2014 and provides approximately 100,000 af of local storage capacity that can be made available during water supply shortages. In addition, SDCWA's out-of-region groundwater program consists of 70,000 af of permanent groundwater storage allocation in the Semitropic-Rosamond Water Bank Authority and the Semitropic Water Bank (40,000 af and 30,000 af, respectively) in Kern County (SDCWA 2021a).

In accordance with the SDCWA Water Shortage Contingency Plan (WSCP), which guides SDCWA's water supply shortage management, use of carryover storage supplies can occur in level 1 (voluntary cutbacks) and levels 2–6 (mandatory cutbacks) (SDCWA 2021b). The WSCP is discussed below.

SDCWA Member Agency Supplies

Local resources developed and managed by the 22 SDCWA member agencies are critical to securing a diverse and reliable water supply for the region. Water projects implemented at the local level help reduce the demand for imported water and ensure a drought-resilient supply for member agencies. Member agency water supplies consist predominantly of surface water stored in reservoirs, whereas a small but increasing amount comes from recycled water, groundwater recovery projects, potable reuse, and desalinated seawater. A description of each of these supplies follows.

Surface Water Supply

Surface water refers to water accumulated in local streams, rivers, and lakes from precipitation in various watersheds throughout the San Diego region. Collection and storage of local water supplies are supported by the 24 surface reservoirs located in seven of the nine coastal watersheds in the San Diego region (see Figure 4.18-1). The surface reservoirs have a combined capacity of 722,793 af (SDCWA 2021a). The water is placed into storage in the winter months when demand is low and pipeline capacity is available and withdrawn by the member agencies in the summer months when demand increases and pipeline capacity is restricted due to increased demand.

Surface water supplies can represent the largest single local resource for SDCWA member agencies. However, annual surface water yields can vary substantially due to fluctuating hydrologic cycles. Annual surface water yields have ranged from a low of 4,100 af in fiscal year 2015 to a high of 140,300 af in fiscal year 1984. SDCWA member agencies project average annual surface water use to increase slightly, from 43,957 af in 2025 to 44,659 af in 2045 (SDCWA 2021a). Table 4.18-5 shows the estimated average surface water supply of SDCWA member agencies from 2020 to 2045.

Table 4.18-5 SDCWA Member Agency Projected Surface Water Supply – Normal Year

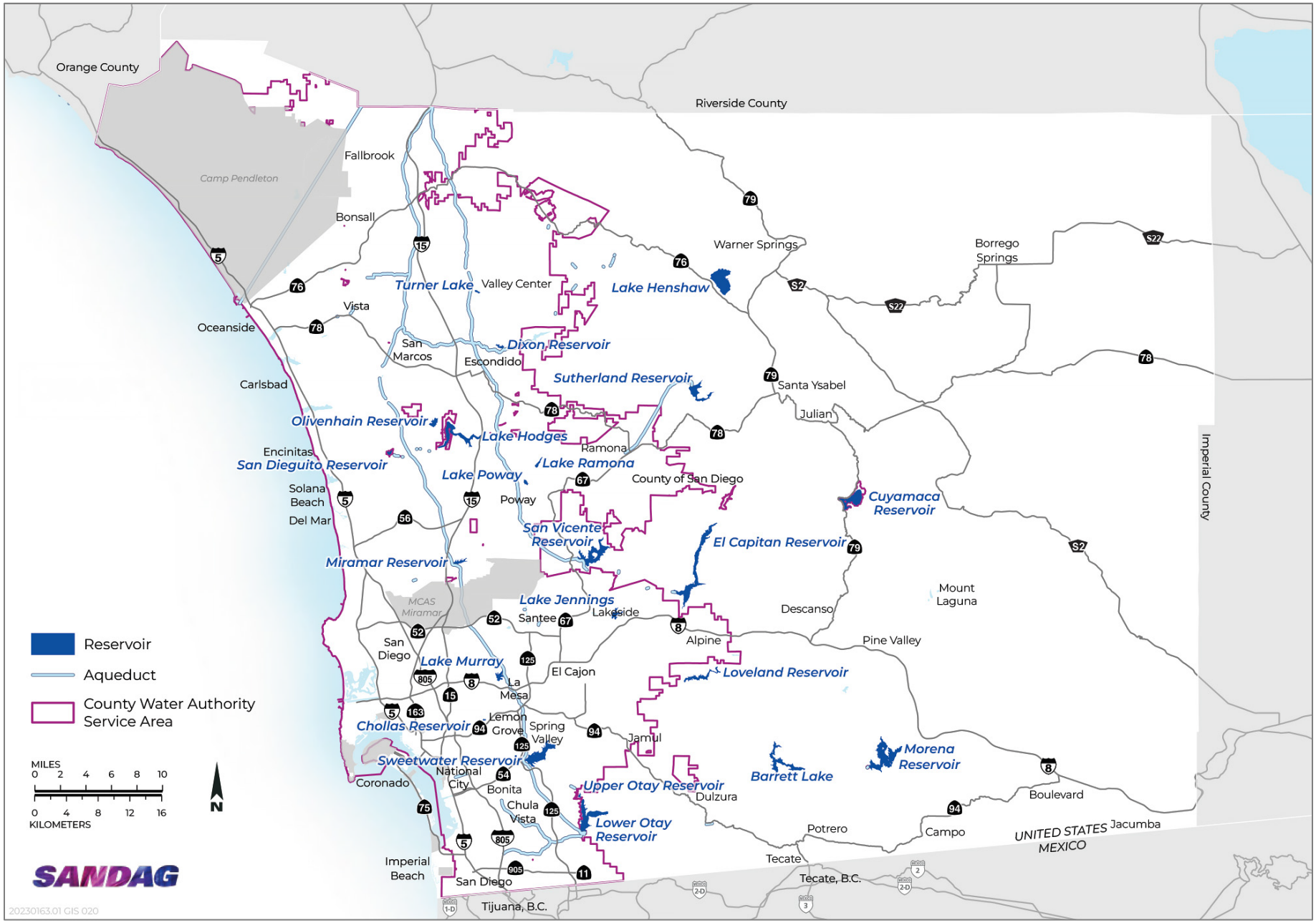
Year	Water Supply (acre-feet/year)
2020	44,237
2025	43,957
2030	43,957
2035	44,659
2040	44,659
2045	44,659

Note: SDCWA = San Diego County Water Authority.

Source: SDCWA 2021a: Table 5-2.

Water Conservation

Conservation is an important resource strategy for ensuring a cost-effective reliable supply of water for the San Diego region. For the 2020 SDCWA UWMP, future water conservation savings were developed for each member agency using the Alliance for Water Efficiency Water Conservation Tracking Tool, which was included in the DWR 2020 UWMP Guidebook (DWR 2021), as an application to assist water purveyors in developing savings estimates (SDCWA 2021a). Future active conservation savings are set at the 2020 level of conservation program activity moving forward, absent the recent large-scale turf replacement program and state-mandated water-use reduction (SDCWA 2021a).



Source: Data downloaded from SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.18-1 Regional Water Supply Infrastructure

Potable Reuse Water Supply

Recycled water can be further treated for potable reuse through the use of multibarrier advanced purification treatment processes, which may include technologies such as reverse osmosis and advanced oxidation. The advanced-treated water may be passed through a natural barrier, such as a groundwater basin or surface water reservoir, and provided with additional treatment to render wastewater suitable for potable purposes. Projects that include a natural barrier are considered indirect potable reuse. Projects that deliver advanced treated water directly to a raw or treated water pipeline are considered direct potable reuse. SDCWA worked closely with its member agencies to determine the projected yield from existing and planned potable water reuse projects. Table 4.18-6 shows the estimated verifiable annual yield from the projects in 5-year increments based on the implementation schedules provided by the member agencies and the likelihood of development.

Table 4.18-6 Projected Potable Reuse Water Use – Normal Year (acre-feet/year)

2025	2030	2035	2040	2045
33,042	53,202	112,562	112,562	112,562

Source: SDCWA 2021a: Table 5-8.

Several SDCWA member agencies are completing studies pertaining to potable reuse in the San Diego region through groundwater recharge or reservoir augmentation. Two agencies, the City of San Diego and the Padre Dam Municipal Water District, have implemented pilot projects to determine potable reuse project viability. The City is currently developing the Pure Water Program, which is a phased, multiyear program that would provide nearly half of San Diego's water supply (approximately 83 million gallons of purified water per day) locally by the end of 2035 (City of San Diego 2025, n.d.). Phase 1 of the Pure Water Program is currently under construction. The Pure Water Program will use proven water purification technology to produce safe, high-quality drinking water from treated recycled water.

Recycled Water Supply

Recycled water has been a growing water resource in San Diego County for decades, providing a local, drought-resilient supply that reduces the region's dependence on imported water. Every gallon of recycled water used within the region reduces the need to import or develop other water supplies. Sixteen of the member agencies have developed recycled water supplies for their retail customers. Member agencies are continuing to expand their recycled water treatment and distribution systems, and it is predicted that member agencies will produce approximately 45,900 afy recycled water by 2045 (SDCWA 2021a). Table 4.18-7 shows the estimated annual yield from the projects in 5-year increments (from 2020 to 2045) based on the implementation schedules provided by the member agencies and the likelihood of development.

Table 4.18-7 Projected Recycled Water Use – Normal Year (acre-feet/year)

2020	2025	2030	2035	2040	2045
35,753	41,963	45,513	45,628	45,749	45,854

Source: SDCWA 2021a: Table 5-7.

The increase in projected recycled water use in 2020 and beyond is primarily from the expansion of existing water recycling facilities throughout the San Diego region. Recycled water development helps relieve pressure on the region's potable water supplies by providing a drought-proof, locally controlled water supply source.

The California Department of Transportation (Caltrans) is one of the largest users of recycled water in the San Diego region. Caltrans set a goal of 50% reduction of potable water consumption by using recycled water and reducing water use to meet the water conservation requirements of an Executive Order issued by Governor Brown in 2015. Caltrans explored alternative means of connecting to and serving recycled water to existing landscaped freeways throughout San Diego County. Parallel encroachment restrictions have prevented many segments of Caltrans freeways from accessing recycled water. Caltrans has eased these restrictions by allowing recycled water purveyors longitudinal encroachment within their right-of-way. Caltrans uses recycled water from the City of San

Diego's North City Water Reclamation Plant along Interstate 5 (I-5) north to Sorrento Valley; along State Route (SR) 52; and along SR 56, I-805, and SR 163 between Black Mountain Road (except for a gap on the north side between Del Sur and Carmel Mountain Road overpass) and Friars Road. Caltrans anticipates the extension of recycled water use east along I-8 between SR 163 and I-15 (City of San Diego 2020).

Groundwater Supplies

The San Diego region overlies three general categories of aquifers: alluvial and sedimentary aquifers, fractured-rock aquifers, and desert basin aquifers (County of San Diego 2010a). The distribution and hydrology of groundwater basins in San Diego County is discussed in detail in Section 4.10, "Hydrology and Water Quality."

SDCWA does not currently hold groundwater basin rights, nor does it own or operate groundwater facilities in the San Diego region. However, groundwater provides an additional source of water supplies for SDCWA member agencies. Although opportunities are limited, groundwater is currently used to meet a portion of the municipal water demands throughout the SDCWA service area from Marine Corps Base Camp Pendleton in the north to National City in the south. There are several factors that limit the amount of groundwater production in the SDCWA service area, including the limited distribution of sand and gravel (alluvial) aquifers and their relatively shallow nature, lack of rainfall and associated groundwater recharge, and degraded water quality from human activities. Shallow and narrow river valleys filled with alluvial sand and gravel deposits are characteristic of the more productive groundwater basins in the San Diego region. Outside of these more productive aquifers, groundwater is developed from fractured crystalline bedrock and semi-consolidated sedimentary deposits that occur throughout the region. However, these aquifers have limited yield and storage and are best suited for meeting domestic water needs that do not require higher flow rates (SDCWA 2021a).

From 2015 to 2020 (the timeframe between UWMP updates), water supply agencies in the SDCWA service area produced an annual average of approximately 22,300 afy of potable water supplies from groundwater (SDCWA 2021a). This total includes production from both brackish groundwater desalination facilities and municipal groundwater wells. However, it does not include groundwater production from privately owned water wells used for irrigation and domestic purposes or groundwater produced annually from the Warner Basin by the Vista Irrigation District. Rather, this groundwater is discharged into Lake Henshaw and reported as local surface water supply by the City of Escondido and Vista Irrigation District.

In addition to providing a local supply to water agencies, groundwater is also both a primary and a supplemental source of water supply for numerous private well owners, who draw on groundwater to help meet their domestic and agricultural water needs. These domestic supplies help offset demand for imported water from SDCWA and its member agencies. However, it is difficult to accurately quantify and estimate the amount of groundwater pumped by private wells within the entire SDCWA service area (SDCWA 2021a).

While groundwater is less abundant in the San Diego region compared to other parts of the state, several water supply agencies in the SDCWA service area have identified potential projects that may provide several thousand acre-feet of additional future groundwater production. SDCWA works closely with its member agencies to develop groundwater yield projections. To be conservative, projections account for existing (verifiable) groundwater projects, which include any planned expansions to existing projects. Table 4.18-8 shows the projected annual groundwater yield from verifiable groundwater projects in 5-year increments from 2020 to 2045.

Table 4.18-8 Projected Groundwater Supply – Normal Year (acre-feet/year)

2020	2025	2030	2035	2040	2045
25,950	30,300	31,500	31,500	28,800	28,000

Source: SDCWA 2021a: Table 5-3.

As discussed below, the Sustainable Groundwater Management Act (SGMA) requires basins to be sustainably managed by local public agencies (e.g., counties, cities, and water agencies) that become groundwater sustainability agencies (GSAs). The main goals of the SGMA are to (1) achieve sustainable groundwater basins, (2) enhance local management of the groundwater, and (3) establish standards for effective and continuous

management of groundwater. The primary purpose of the GSAs is to develop and implement groundwater sustainability plans (GSPs) to achieve long-term groundwater sustainability.

In the San Diego region, the state has designated three of the region's basins as medium or high priority and subject to SGMA, requiring preparation of a GSP: Borrego Valley (Borrego Springs Subbasin), San Luis Rey Valley (Upper San Luis Rey Valley Subbasin), and San Pasqual Valley (County of San Diego n.d.-a). The San Luis Rey Valley Basin extends from the confluence of the San Luis Rey River and Paradise Creek, continuing downstream through four valleys (Pauma, Pala, Bonsall, and Mission) and ending at the Pacific Ocean in the City of Oceanside. Only Pala and Pauma Valleys, known as Upper San Luis Rey Valley Groundwater Subbasin, are subject to the requirements of SGMA (County of San Diego n.d.-b). The San Pasqual Valley Basin underlies San Pasqual Valley and Cloverdale, Rockwood, and Bandy Canyons in central San Diego County. Santa Ysabel, Guejito, and Santa Maria Creeks drain the valley and converge to form the San Dieguito River, which flows into Lake Hodges (County of San Diego n.d.-c). The Borrego Springs Groundwater Subbasin of the Borrego Valley Groundwater Basin was designated as high priority by the state due to a "critical overdraft" condition (BVGSA 2019) and is discussed in additional detail below under "Water Supplies Outside of the SDCWA Service Area."

The Pauma Valley GSA (composed of Pauma Municipal Water District, Pauma Valley Community Services District, San Luis Rey Municipal Water District, Yuima Municipal Water District, and Upper San Luis Rey Resource Conservation District) developed the Upper San Luis Rey GSP, which was approved by DWR in 2024 (DWR 2024). The San Pasqual Valley GSA (composed of City of San Diego and County of San Diego) prepared a San Pasqual Valley Groundwater Basin GSP, which was approved by DWR in 2023 (DWR 2023a).

SDCWA Water Supply Infrastructure and Delivery System

There are 24 surface reservoirs within the SDCWA service area, located in seven of the nine coastal watersheds in the San Diego region. Runoff in these watersheds occurs at the crest of the region's Peninsular Range and drains into the Pacific Ocean. Table 4.18-9 lists the 24 reservoirs, their operating agency, and their storage capacity. Olivenhain Reservoir, completed in 2003, is the region's newest reservoir. It is part of the SDCWA Emergency Storage Project (ESP) and has a storage capacity of 24,774 af. The ESP adds 90,100 af of storage capacity and is designed to protect the region from disruptions in the water delivery system (SDCWA 2021a).

In addition, the 2002 Regional Water Facilities Master Plan identified an opportunity to augment the ESP with a carryover storage component (CSP) at San Vicente. SDCWA completed the ESP and CSP portion of the San Vicente Dam Raise in mid-2014, which provides an additional 157,100 af of water storage capacity (SDCWA 2021a).

Table 4.18-9 Reservoirs in the San Diego Region

Agency (Owner)	Reservoir	Capacity (acre-feet)
Carlsbad Municipal Water District	Maerkle	600
City of Escondido	Dixon	2,606
City of Escondido	Wohlford[1]	2,783
Fallbrook Public Utility District[2]	Red Mountain	1,335
Helix Water District	Cuyamaca	8,195
Helix Water District	Jennings	9,790
City of Poway	Poway	3,432
Rainbow Municipal Water District[2]	Morro Hill	465
Rainbow Municipal Water District[2]	Ramona	12,000
City of San Diego	Barrett	34,806
City of San Diego	El Capitan	112,807
City of San Diego	Hodges[3]	13,401
City of San Diego	Lower Otay	47,067
City of San Diego	Miramar	6,682

Agency (Owner)	Reservoir	Capacity (acre-feet)
City of San Diego	Morena	50,694
City of San Diego	Murray	4,684
City of San Diego	San Vicente[4]	249,358
City of San Diego	Sutherland	29,508
San Dieguito Water District/Santa Fe Irrigation District	San Dieguito	883
San Diego County Water Authority	Olivenhain	24,774
Sweetwater Authority	Loveland	25,400
Sweetwater Authority	Sweetwater	28,079
Valley Center Municipal Water District	Turner	1,612
Vista Irrigation District	Henshaw	51,832
	Total Capacity	**722,793**

[1] The capacity volume accounts for the lowered reservoir level at Lake Wohlford due to DWR Division of Safety of Dams safety issues.

[2] Since approval of the 2020 UWMP, Fallbrook Public Utility District and Rainbow Municipal Water District have detached from SDCWA and annexed into Eastern Municipal Water District.

[3] The capacity volume accounts for lowered reservoir level at Lake Hodges due to DWR Division of Safety of Dams safety issues and is in accordance with the 1998 Emergency Storage Project Agreement for the Joint Use of Lake Hodges Dam and Reservoir.

[4] SDCWA has storage rights to 157,100 af of capacity in San Vicente Reservoir (105,000 af is designated as carryover storage; 52,100 af is designated as emergency storage).

Source: SDCWA 2021a: Table 5-1.

SDCWA Water Treatment Facilities

SDCWA receives both treated and untreated water from MWD. Treated water provided by MWD is filtered at the Robert A. Skinner Treatment Plant in Hemet (Riverside County) and transported to the San Diego region for use via the First and Second San Diego Aqueducts operated by SDCWA. Untreated water received by SDCWA is treated prior to use by the public at one of the 12 water treatment facilities owned and operated by SDCWA or one of its member agencies. SDCWA owns the 100 mgd Twin Oaks Valley WTP and has agreements with the Helix Water District securing 36 mgd of treatment capacity from the R.M. Levy WTP (SDCWA 2021a). Water from the Levy WTP supplements treated water service to the eastern portion of the San Diego region. The balance of treated water supplies comes from WTPs owned and operated by member agencies. These water treatment facilities are listed in Table 4.18-10.

Table 4.18-10 Water Treatment Facilities in the SDCWA Service Area

Water Treatment Plant (WTP)	Operator	Capacity (million gallons per day)
Escondido/Vista WTP	City of Escondido/Vista Irrigation District	75
R.M. Levy WTP	Helix Water District	106
David C. McCollom WTP	Olivenhain Municipal Water District	34
Robert A. Weese Filtration Plant	City of Oceanside	25
Lester J. Berglund WTP	City of Poway	24
Alvarado WTP	City of San Diego	150
Miramar WTP	City of San Diego	140
Otay WTP	City of San Diego	34
Twin Oaks Valley WTP	SDCWA	100
R.E. Badger Filtration Plants	San Dieguito Water District/Santa Fe Irrigation District	40
Robert A. Perdue WTP	Sweetwater Authority	30

Note: SDCWA = San Diego Water Authority.

Source: SDCWA 2021a: Table 1-3.

WATER SUPPLIES OUTSIDE THE SDCWA SERVICE AREA

The SDCWA service area encompasses the western third of San Diego County while the proposed Plan area is coterminous with the County. The rural, eastern portion of the San Diego region is outside the SDCWA service area and completely dependent on local groundwater for water supply. Geographically, the majority of the unincorporated area (65%) located roughly within and east of the Palomar and Cuyamaca mountains is reliant upon either separate groundwater-dependent districts or private wells that are unaffiliated with SDCWA. Groundwater is derived from onsite private wells, small community water systems, or private water companies. According to GIS overlay analysis of SANDAG's Master Geographic Reference Area 15 (MGRA 15) and SDCWA service area boundaries, as of 2022, there were approximately 111,770 residents outside of the SDCWA service area (SANDAG 2025; County of San Diego 2024). Regardless of the responsible provider, all of these areas are entirely reliant on groundwater and, as such, the water supply in these areas is subject to groundwater availability. Table 4.18-11 provides a list of water supply providers outside the SDCWA service area.

Several of these districts are not required to prepare UWMPs because they either do not serve more than 3,000 customers or do not distribute more than 3,000 af of water annually (County of San Diego 2011).

The County of San Diego conducted a groundwater study as part of the 2011 General Plan Update (County of San Diego 2010a). The study area encompassed approximately 1,885 square miles of land, which is entirely groundwater dependent. The study area is bounded by Riverside County to the north, the international boundary with Mexico to the south, San Diego County unincorporated and incorporated land served by the SDCWA member agencies to the west, and desert basin aquifers and Imperial County to the east. It consists of nine hydrologic units within the San Diego Hydrologic Region and three hydrologic units within the Colorado Hydrologic Region.

The study identified the following areas as having the potential for localized groundwater problems (especially at the height of extended drought periods) from pumping large amounts of groundwater: (1) Ballena Valley, located east of Ramona; (2) Guatay, located in the Cuyamaca Mountains; (3) Julian Town Center; and (4) Morena Village, located northwest of Campo. Thirteen basins were identified as having a potentially significant impact on groundwater resources at maximum build-out of the 2011 General Plan Update. The study also determined that the Borrego Springs Park Community Services District and Borrego Water District would have inadequate water supply to serve their service area (County of San Diego 2010a).

Table 4.18-11 Water Supply Agencies Outside the SDCWA Service Area

Water Supply Provider	Community Served	Source
Borrego Water District	Anza Borrego and Borrego Springs	Local groundwater supply and sole source aquifer[1]
Borrego Springs Park Community Service District*	Borrego Springs	Local groundwater supply
Campo Water Maintenance District*	Campo	Local groundwater supply
Canebrake County Water District	Anza Borrego, seasonal visitors and part-time residents	Local groundwater supply
Cuyamaca Water District*	Cuyamaca	Local groundwater supply
Descanso Community Service District*	Descanso	Local groundwater supply
Jacumba Community Services District*	Jacumba	Local groundwater supply
Julian Community Service District *	Julian	Local groundwater supply
Live Oak Springs Water Company	Boulevard	Local groundwater supply
Majestic Pines Community Service District*	Julian	Local groundwater supply
Mootamai Municipal Water District*	Pala-Pauma	Local groundwater supply
Pauma Municipal Water District*	Pala-Pauma	Local groundwater supply
Pine Hills Mutual Water Company*	Julian/Pine Hills	Local groundwater supply

Water Supply Provider	Community Served	Source
Pine Valley Mutual Water Company*	Pine Valley	Local groundwater supply
Questhaven Municipal Water District*	San Dieguito	Local groundwater supply
Rancho Pauma Mutual Water Company*	Pala-Pauma	Local groundwater supply
San Luis Rey Municipal Water District*	Fallbrook, Valley Center, Pala-Pauma	Local groundwater supply
Wynola Water District*	Julian/Wynola	Local groundwater supply

Note: SDCWA = San Diego County Water Authority.

[1] A sole source aquifer is an underground water supply designated by the U.S. Environmental Protection Agency as the "sole" or "principal" source of drinking water for an area.

* Denotes water supply providers that either do not serve more than 3,000 customers or do not distribute more than 3,000 af of water annually and are therefore not required to have a UWMP.

Sources: County of San Diego 2011, n.d.-d; PHMWC n.d.; PVMWC n.d.; RPMWC n.d.

Borrego Valley Groundwater Subbasin

Desert basins account for approximately 14% of the unincorporated area of the San Diego region and are located in its easternmost portions. These basins are characterized by extremely limited groundwater recharge but large storage capacity. When groundwater extraction exceeds recharge, the result is an overdraft condition that is not sustainable (County of San Diego 2010a). The Borrego Valley Groundwater Basin has a well-documented groundwater overdraft condition. The Borrego Valley Groundwater Basin is divided into two separate subbasins, the Borrego Springs Groundwater Subbasin and the Ocotillo Wells Groundwater Subbasin (DWR 2016). The Borrego Springs Groundwater Subbasin covers an area of approximately 98 square miles, and the Ocotillo Wells Groundwater Subbasin covers an area of approximately 141 square miles (of which approximately 44% is located in San Diego County; the remainder of the Ocotillo Wells Groundwater Subbasin is located in Imperial County).

Current groundwater use in the Borrego Springs Groundwater Subbasin greatly exceeds groundwater recharge, and the Subbasin is designated by DWR as high priority and critically overdrafted (BVGSA 2019). The Coyote Creek, Upper San Felipe Creek, and the Borrego Valley–Borrego Sink Wash watersheds drain to the Borrego Springs Subbasin and provide the majority of recharge for the subbasin. Due to its arid climate, the Borrego Springs Subbasin receives limited precipitation and is remote for potential sources of imported water. The Borrego Springs Groundwater Subbasin holds a large amount of groundwater in storage, estimated in 2016 to be approximately 1.5 million af of usable groundwater (BVGSA 2019). Water levels have been declining for decades because of the overdraft condition, and groundwater production at current rates is not sustainable. Since the early 1950s, pumping for irrigated agriculture, golf courses, and residential and commercial uses has required more groundwater than is available through natural recharge. Groundwater-level declines during 1945–2010 were as much as 2 feet per year in wells in the northern part of the valley, where groundwater is intensively pumped for irrigated agriculture (USGS 2017). Over the past 65 years, groundwater levels have declined as much as 126 feet in the northern portion and by approximately 87 feet in the west-central portion of the subbasin. Less groundwater has been pumped in the southeastern part of the subbasin, and groundwater levels have remained relatively stable in this portion of the subbasin. While the majority of residences and commercial entities in Borrego Valley receive their water from the Borrego Water District (BWD), some private property owners within the BWD service area use private wells that rely on groundwater extracted from the Borrego Springs Groundwater Subbasin. The vast majority of the water supplied to agricultural users within Borrego Valley comes from privately owned wells within the BWD service area (County of San Diego 2010b).

In order to comply with the SGMA (see the "Regulatory Setting" section below), efforts began in 2017 to prepare a GSP for the Borrego Springs Groundwater Subbasin. A public input process was conducted, and a draft GSP prepared and circulated. The final draft GSP was completed in 2019. Ultimately, BWD filed a lawsuit seeking a comprehensive adjudication of groundwater rights in the subbasin in 2021. The adjudication of groundwater pumping rights in the Borrego Springs Groundwater Subbasin was approved by the Superior Court of California on April 8, 2021 (Case No. 37-2020-00005776) (2021 Judgment). The 2021 Judgment provided for holders of

groundwater rights in Borrego Springs to work together alongside the county and BWD to manage the Borrego Springs Groundwater Subbasin through a court-approved process. To accomplish this, the 2021 Judgment established the Borrego Springs Watermaster (Watermaster) as the entity responsible for managing groundwater resources in the Borrego Springs Groundwater Subbasin. On June 25, 2021, the Watermaster submitted the 2021 Judgment to DWR that included a groundwater management plan (GMP), constituting a "physical solution" for DWR review and approval to serve as an alternative to a GSP for the subbasin in compliance with the SGMA. The 2021 Judgment established an initial sustainable yield (i.e., the amount of water that may be produced), as well as Watermaster rules and regulations.

The Watermaster updated baseline pumping allocations on October 1, 2024. The pumping allocations provide specific quantities available to specific landowners (Borrego Springs Watermaster 2024). The most recent annual report for the Borrego Springs Groundwater Subbasin was published in March 2024 and addressed water year 2023. This report, prepared to satisfy requirements of the 2021 Judgment, described above, provides a summary of Watermaster activities, water right accounting, hydrologic conditions, and the status of the progress associated with the implementation of the groundwater monitoring plan (West Yost 2024). All users will be required to ratchet down the amount of water they take from the aquifer by 5% each year. By 2030, all will have halved their baseline amounts and will reach a sustainable yield by 2040. (See *Borrego Water District v. All Persons who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin No. 7.024-01 Whether Based on Appropriation, Overlying Right, or Other Basis Of Right, and/or Who Claim a Right to use of Storage Space in the Subbasin.*)

ANTICIPATED EFFECTS OF CLIMATE CHANGE

The San Diego region is likely to experience a variety of climate change impacts including longer and more intense droughts, sea-level rise of up to 1.3 feet by 2050 and up to 6.7 feet by 2100, fewer rainy days, more rainfall during the biggest rainstorms by 2050, and a decrease in runoff and streamflow due to less snowpack and more evaporation (CEP and SDF 2015; Kalansky et al. 2018; OPC 2024; Jennings et al. 2018). Climate change is likely to have an impact on both imported and local water supplies for the San Diego region. Imported supply could be reduced by changes in snowpack melt (affecting the timing of water availability), less precipitation, increased evaporation from higher temperatures, and saltwater intrusion due to sea-level rise. Meanwhile, demand for water could increase due to evapotranspiration and droughts. Reduced snowpack and precipitation, as well as more precipitation falling as rain rather than snow in the mountains, can decrease water supplies coming from the mountain ranges. These effects reduce the amount of runoff and streamflow from melted snow, decreasing this source of water. Such changes have already affected the Colorado River, which has seen a decline in streamflow by 19 percent since 2000 due to decreased precipitation (Hogan and Lunquist 2024).

A shift in the timing of melting snowpack can also affect streamflow timing and volumes, water storage, conveyance infrastructure, and ultimately availability of regional water supply. Snowpack usually melts in the spring and summer, releasing water when it is most needed; however, snow has melted earlier in recent years, reducing the amount of water available later in the year (Hale et al. 2023). Between 1981 and 2020, March snow water equivalent has declined by 10 to 20 percent per decade across southwestern USA (Gottlieb and Mankin 2024).

The City of San Diego imports up to 90 percent of its water from Northern California (Sierra Nevada meltwater) and the Colorado River (City of San Diego 2025). 72 percent of the region's water comes from the Colorado River (Elmer 2023). Other impacts of climate change, such as reduced precipitation, increased evaporation, and increased drought, can also make water sources drier. SDCWA anticipates an increase in regional demand of less than one percent per year through 2045 (SDCWA 2021c).

Sea-level rise could result in saltwater intrusion along coastline water sources. Saltwater intrusion degrades freshwater supply, decreasing the amount of drinking water available to the San Diego region. Saltwater intrusion would affect the Sacramento-San Joaquin Bay-Delta, which the San Diego region receives imported water from via the State Water Project (DWR 2025; SDCWA 2025c), as well as groundwater wells (County of San Diego 2023).

SDCWA has diversified its portfolio to include local sources of water such as seawater desalination, ground water, water recycling, water purification, and surface water (SDWCA 2025d) with a goal of recycled water being one-

third of the City's water supply by 2035 (EPA 2025). This new reliance on local sources of water may result in permanent reduction in the availability of groundwater supply (Reidmiller et al. 2018) and increased use of energy. Consumption of large amounts of energy to power desalination plants and import recycled water for purification process (which can be offset by transitioning to a renewable energy or a cleaner energy provider), a resource that may also be compromised by climate change (Kelley 2011).

Drought and evapotranspiration may increase agricultural water demand due to increased irrigation from imported water sources and groundwater to make up for lack of rainfall and to adjust to higher temperatures. Use of groundwater (regulated by the Sustainable Groundwater Management Act) to keep crops irrigated, especially in drought conditions, can lead to dry wells, infrastructure damage from land subsidence (i.e., sinking lands), increased rates of seawater intrusion, and reduced groundwater quality. (Cole et al. 2024).

As climate change and development in the region progress, demand for water is expected to increase while the water supply from traditional sources (e.g., snowpack and streamflow) is expected to decrease.

4.18.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

Safe Drinking Water Act

The Safe Drinking Water Act (42 U.S. Code Section 300[f] et seq.) gives the U.S. Environmental Protection Agency (EPA) the authority to set drinking water standards (40 Code of Federal Regulations [CFR] 141.1 et seq.). Drinking water standards apply to public water systems—systems that provide water for human consumption through at least 15 service connections or regularly serve at least 25 individuals. There are two categories of drinking water standards, the National Primary Drinking Water Regulations (NPDWR) and the National Secondary Drinking Water Regulations (NSDWR). The NPDWR are legally enforceable standards that apply to public water systems. NPDWR standards protect drinking water quality by establishing maximum contaminant levels for specific drinking water contaminants that present a risk to human health. The NSDWR set nonmandatory water quality standards for 15 contaminants that are not considered to present a human health risk.

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

California Water Plan Update 2023

The California Water Plan (CWP), updated every 5 years, is "the state's strategic plan for sustainably and equitably managing and developing water resources for current and future generations" (DWR 2023b). The California Water Plan Update 2023 (Update 2023) focuses on the innovation and investments in California's watersheds, water systems, and communities needed for a resilient and equitable future. The update builds on existing water policies, laws and regulations, and initiatives and investments in the Governor Newsom administration's *Water Resilience Portfolio* (CNRA 2020), Water Supply Strategy (CNRA 2022), and recent legislation. These state initiatives establish cornerstone policies, investments, targets, and actions as significant systemic and institutional challenges that are increasing risks to public safety, frontline communities, ecosystems, and the state's economy. The vision for the Update 2023 is for all Californians to benefit from water resources that are sustainable, resilient to climate change, and managed to achieve shared values and connections to our communities and the environment.

California Water Resilience Portfolio

The California Water Resilience Portfolio was developed in response to Governor Newsom's Executive Order N-10-19, which directed state agencies to develop recommendations to meet water needs throughout the 21st century and enable water security for all Californians (CNRA 2020). State agencies developed the California Water Resilience Portfolio to improve California's capacity to prepare for disruptions, withstand and recover from climate-related shocks, and adapt to the future. The portfolio embraces a broad, diversified approach, with four

categories of goals and actions: (1) maintaining and diversifying water supplies; (2) protecting and enhancing natural ecosystems; (3) improving physical infrastructure to store, move, and share water more flexibly and integrate water management; and (4) preparing for new threats. The portfolio recognizes that water resilience will be achieved with local, regional, and tribal leadership, on a region-by-region basis, considering the unique challenges and opportunities in each area. The portfolio includes more than 100 detailed actions to ensure California water systems work for the communities, economy, and environment, which will be implemented based on priority and availability of resources.

Executive Orders B-37-16 and B-40-17

On May 9, 2016, Governor Jerry Brown issued Executive Order B-37-16, calling for the State Water Resources Control Board (SWRCB) to adjust emergency water conservation regulations through the end of January 2017 in recognition of the differing water supply conditions across the state. Executive Order B-40-17 builds on actions taken in Executive Order B-37-16, which remains in effect, to continue making water conservation a way of life in California. The long-term conservation framework includes recommendations to establish permanent water conservation standards and improved agricultural and urban water management planning to better prepare for more frequent and severe droughts due to climate change.

Regulations Related to Recycled Water

Under California Code of Regulations Title 22, the State Department of Public Health established statewide effluent bacteriological and treatment reliability standards for recycled water uses. (On July 1, 2014, the state's Drinking Water Program was transferred to SWRCB.) The standards are based on the potential for human contact with recycled water. Each of California's nine regional water quality control boards (RWQCBs) has established and enforces requirements for the application and use of recycled water. Permits are required from the RWQCB for any recycling operation. Applicants for a permit are required to demonstrate that the proposed recycled water operation is in compliance with Title 22 and will not exceed the groundwater and surface water quality objectives in the regional basin plan. In the San Diego region, the basin plan is the Water Quality Control Plan for the San Diego Basin (9), prepared and administered by the Region 9 San Diego RWQCB (San Diego RWQCB 2021).

The Water Conservation Act of 2009

The Water Conservation Act of 2009 (Senate Bill [SB] x7-7 of 2009) sets water conservation targets and efficiency improvements for urban and agricultural water suppliers. The legislation established a statewide target to reduce urban per capita water use by 20% by 2020. Urban retail water suppliers were required, individually or on a regional basis, to develop an urban water use target by December 31, 2010, to meet their target by 2020, and to meet an interim target (half of their 2020 target) by 2015. Urban water suppliers cannot impose conservation requirements on process water (water used in production of a product) and are required to employ two critical efficient water management practices—water measurement and pricing. Urban retail water suppliers were required to include information, such as the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use in the water management plan. Urban retail water suppliers who did not meet the water conservation requirements established by this bill were not eligible for state water grants or loans as of 2016.

2018 Water Conservation and Drought Planning Legislation

SB 606 and AB 1668 of 2018 (Chapters 14 and 15, Statutes of 2018) modify several provisions of the Water Conservation Act of 2009. These bills call for the creation of new urban efficiency standards for indoor use, outdoor use, and water loss to leaks, as well as any appropriate variances for unique local conditions. SWRCB was required to adopt these standards by regulation no later than June 30, 2022. The indoor water use standard is required to be 55 gallons per capita per day through December 31, 2024, decreasing to 47 gallons per capita per day from January 1 2025 through December 31, 2029, and decreasing to 42 gallons per capita per day beginning January 1, 2030 (Chapter 679, Statutes of 2022). Each urban retail water agency is required annually, beginning November 2023, to calculate its own water use objective, using SWRCB standards and based on the water needed in its service area, for efficient indoor residential water use; outdoor residential water use; commercial, industrial,

and institutional irrigation; and other uses. In addition, AB 1668 creates additional requirements for agricultural water management plans originally required by the Water Conservation Act of 2009.

California Urban Water Management Planning Act

The California UWMPA (Water Code Part 2.6) states that each urban water supplier that provides water to 3,000 or more customers, or that provides more than 3,000 af of water annually, should make every effort to ensure the appropriate level of reliability in its water service is sufficient to meet the needs of its various categories of customers during a normal year, a dry year, and multiple dry years by preparing a UWMP and updating it every 5 years. The last required UWMP updates were completed in 2021. The UWMPA describes the contents of UWMPs and requires each agency's UWMP to assess the reliability of the agency's water resources over a 20-year planning horizon.

SB 606 of 2018 created additional requirements for UWMPs, including preparation of a drought risk assessment and a water shortage contingency plan. It also requires urban water suppliers conduct an annual water supply and demand assessment and submit an annual water shortage assessment report to DWR.

Water Supply Planning

SB 610 (Chapter 643, Statutes of 2001) and SB 221 (Chapter 642, Statutes of 2001) improve the link between information about water supply availability and certain land use decisions made by cities and counties. SB 610 requires local public water providers with more than 3,000 service connections to prepare a water supply assessment (WSA) for any project that is subject to the California Environmental Quality Act (CEQA) and meets specified minimum size criteria.

For qualified projects, the WSA must document sources of water supply, quantify water demands, and compare future water supply and demand to show that sufficient water will be available to serve the project. Water supply must be assessed for a normal year, a single dry year, and multiple dry years during a 20-year forecast. If supplies are found to be insufficient to serve the project, the WSA must include plans for acquiring sufficient supplies. The WSA must be included in the CEQA document for the project.

SB 221 (Chapter 642, Statutes of 2001) applies to subdivisions of more than 500 dwelling units. Like SB 610, it is intended to ensure an adequate water supply for new development is available. The SB 221 tentative map approval process requires verification of adequate water supply for the subdivision. Government Code Section 66473.7(k) contains special provisions for SB 221 compliance in the San Diego region.

California Groundwater Management Act

The Groundwater Management Act (Water Code Section 10750 et seq.) provides guidance for applicable local agencies to develop voluntary GMPs in state-designated groundwater basins. GMPs can allow agencies to raise revenue to pay for measures influencing the management of the basin, including extraction, recharge, conveyance, facility maintenance, and water quality. SGMA (see below) requires preparation of GSPs for the high- and medium-priority basins instead of GMPs. New GMPs shall not be adopted, and an existing GMP shall not be renewed for high- and medium-priority basins pursuant to SGMA as of January 1, 2015.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (Chapters 346, 347, and 348, Statutes of 2014) encompasses three bills: Assembly Bill (AB) 1739, SB 1168, and SB 1319 of 2014. The act focuses on the importance of local action in order to achieve groundwater sustainability and allow local agencies to tailor sustainable groundwater plans to their own economic and environmental needs. The act created a timeline for its implementation: by 2017, local groundwater management agencies were identified; by January 31, 2020, groundwater sustainability plans must be adopted for basins designated as high or medium priority currently being overdrafted; by January 31, 2022, groundwater sustainability plans must be adopted for all other high- and medium-priority basins; and by 2040, all high- and medium-priority groundwater basins must achieve sustainability. SWRCB has the authority to intervene in sustainability plan preparation if deadlines are not met by local agencies.

The formation of groundwater management agencies results in the monitoring of well water pumping from the managed aquifer along with the calculation of a sustainable yield. Once a sustainable yield has been determined, a basis exists for a groundwater trading program that allows users to purchase or lease the rights of other users while staying within the overall withdrawal limits set by the groundwater sustainability plan.

SGMA is meant to stop the overdrafting of groundwater supplies and to reduce the potential for groundwater contamination by saltwater infiltration. It aims to supply California with a reliable water source for the future. Making Conservation a California Way of Life Regulation

The Making Conservation a California Way of Life regulation was approved by SWRCB in 2024 and became effective on January 1, 2025. The intention of the regulation is to achieve long-term water use efficiency with the purpose of adapting to climate changes and more intense droughts in California. Under the regulation, each urban retail water supplier in California is required to establish individualized and quantifiable urban water use objectives. Each supplier is required to calculate their objective annually, which is the sum of efficiency budgets for a subset of urban water uses, including residential indoor and outdoor water uses, real water loss and commercial, industrial and institutional landscapes with dedicated irrigation meters. Urban retail water suppliers are also required to comply with performance measures established for CII (commercial, industrial, and institutional) water users. Each urban retail water supplier is required to submit an annual report that includes their urban water use objective and a description of progress made towards meeting their urban water use objective to SWQCB and DWR by January 1 every year.

Assembly Bill 1572

AB 1572 was signed into law by Governor Newsom in October 2023. The bill restricts the use of potable water for irrigating non-functional turf on commercial, industrial, institutional, and multifamily residential properties, other than a cemetery, and on properties of homeowners' associations, common interest developments, and community service organizations or similar entities.

Caltrans' Statewide Stormwater Management Plan

In the state of California, methods of accommodating storm water in new transportation improvements financed entirely or in part with state or federal funds are governed by Caltrans design standards outlined in the Caltrans' Statewide Stormwater Management Plan. Caltrans standards also typically serve as the basis for municipal designs because the municipalities operate under similar NPDES permit requirements. Caltrans transportation improvements related to storm water management include the following design principles (Caltrans 2016):

- Conserve natural areas to the extent feasible, including existing trees, stream buffer areas, vegetation, and soils.
- Minimize the impervious footprint of the project.
- Minimize disturbances to natural drainages.
- Design pervious areas to effectively receive runoff from impervious areas, taking into consideration the pervious areas' soil conditions, slope, and other pertinent factors.
- Incorporate landscape and soil-based BMPs [best management practices].
- Use climate appropriate landscaping that minimizes irrigation and runoff, promotes surface infiltration, and minimizes the use of pesticides and fertilizers.
- Design landscapes to comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance.[1] This includes any new (or rehabilitated) planting area provided with permanent irrigation (greater than 2,500 square feet) except for mitigation planting and erosion control projects with temporary irrigation systems.

[1] Any landscape design that consists of new or rehabilitated landscape irrigation in the project limits (greater than 2,500 square feet per AB 1881) will comply with the California Department of Water Resources Model Water Ordinance by estimating water needs using the following guidance resources: WULCOLS III (Water Use Classifications of Landscape Species), MAWA (Maximum Allowable Water Allowance), and ETWU (Estimated Total Water Use).

- Where the California Department of Water Resources Model Water Efficient Landscape Ordinance conflicts with a local water conservation ordinance, Caltrans will comply with the local ordinance.

REGIONAL AND LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

Both MWD and SDCWA have developed plans that address long-term water supply and demand, as well as catastrophic supply interruption and emergency storage. These plans, as they relate to the issues in this Environmental Impact Report (EIR), are described below.

MWD Integrated Water Resources Plan

The MWD 2020 Integrated Water Resources Plan (IRP) was organized into a regional needs assessment (phase 1) and an implementation plan (phase 2). The needs assessment was adopted by the MWD Board of Directors in 2022, established a tool for ensuring regional water reliability through 2045, and incorporated scenario planning to address wide-ranging uncertainties (MWD 2023). Building upon the foundation of the IRP needs assessment, phase 2 of the IRP will be coordinated through the Climate Adaptation Master Plan for Water that was approved in April 2025 and considers climate scenarios for water resource development and management (MWD 2025).

MWD Urban Water Management Plan

MWD prepared the 2020 UWMP in compliance with Water Code Sections 10608.36 and 10610–10656 of the UWMPA. Information in MWD's 2020 UWMP may be used by local water suppliers in preparation of their own UWMP and represents current planning projections of supply capability and demand. The UWMP describes MWD's planning activities and explains how the agency will manage the region's water resources to ensure a reliable water supply for the region. The UWMP also addresses the issue of water quality and steps taken to deliver high-quality water to the MWD service area (MWD 2021).

SDCWA Urban Water Management Plan and Water Use Efficiency Programs

The SDCWA 2020 UWMP presents strategies designed to enhance water supply reliability through diversification of water sources, compliance with the Water Conservation Act of 2009 conservation targets, and improvement of supply and delivery infrastructure, including improvements identified in the SDCWA 2015 UWMP (SDCWA 2016). Some of the more prominent strategies are the All-American Canal and Coachella Canal Lining Projects, development of a regional seawater desalination plant located in Carlsbad, construction of the San Vicente Dam Raise and Carryover Storage Project, and support of the development of additional local supplies. The UWMP describes SDCWA's outreach efforts to raise public awareness of growing water supply and water rate challenges and increased long-term residential, commercial, and public sector water use efficiency. The 2020 UWMP is based on SANDAG's Series 14 Regional Growth Projections.

In addition, SDCWA's Water Use Efficiency Policy Principles include how SDCWA may implement and administer regional water use efficiency projects and programs where economies of scale, geography considerations, or other member agency circumstances make a regional program more efficient or cost-effective. The principles also provide additional direction to staff regarding efficiency projects or programs affecting SDCWA, its member agencies, and regional water management and use. The principles include policies pertaining to member agency support, funding and resources, program performance, outreach and education, and regulation and legislation.

SDCWA Water Shortage Contingency Plan

The 2020 Water Shortage Contingency Plan (WSCP) provides an overview of SDCWA's actions to increase the region's water supply reliability and to outline the response to drought or other water shortage emergencies (SDCWA 2021b). It builds upon previous planning documents, as well as the experience gained in two previously declared droughts in this century. The WSCP provides a review of historical drought periods along with SDCWA's actions and lessons learned during those periods. The WSCP summarizes the annual water supply and demand assessment. Six regional water shortage response actions and levels are presented, including actions required at each level and the water supply conditions that trigger the response levels. The WSCP identifies extraordinary demand reduction measures, which include a list of potential consumer water use restrictions and extraordinary

measures to reduce demand during shortage events. A detailed methodology for allocation of supplies to member agencies in a water supply shortage is presented. A description of how SDCWA would manage catastrophic water shortages caused by an event such as an earthquake is outlined.

San Diego Integrated Regional Water Management Plan

The 2019 San Diego Integrated Regional Water Management Plan (IRWMP) presents an integrated approach for addressing water management issues in the San Diego region. The 2019 San Diego IRWMP focuses on five goals (IRWM 2018):

- Improve the reliability and sustainability of regional water supplies.
- Protect and enhance water quality.
- Protect and enhance our watersheds and natural resources.
- Enhance the resiliency to climate change for local water resources.
- Promote and support sustainable integrated water resource management.

ISDCWA Water Facilities Master Plan

The SDCWA 2024 Water Facilities Master Plan (2024 Master Plan) is a comprehensive evaluation of infrastructure requirements needed to meet SDCWA's mission of providing a safe and reliable water supply to its member agencies. It is based on projections for future water demands and water supplies from the 2020 UWMP (SDCWA 2025a). The 2024 Master Plan identifies infrastructure improvement projects needed to ensure reliability and ability to serve projected water demands to 2045. Projects include water facilities seismic improvements, upgraded pump stations, and pipeline relining.

Local Urban Water Management Plans and Water Use Efficiency Programs

The California UWMPA (Water Code Part 2.6) requires each of the 22 SDCWA member agencies to prepare a UWMP to support long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. SDCWA member agencies' UWMPs reflect and are coordinated with the SDCWA UWMP. Local agencies with a UWMP include the City of Carlsbad, the City of Escondido, the Fallbrook Public Utility District, Helix Water District, Lakeside Water District, the City of Oceanside, Otay Water District, Rainbow Municipal Water District, Rincon Del Diablo Municipal Water District, Ramona Municipal Water District, the City of San Diego, San Dieguito Water District, Santa Fe Irrigation District, Sweetwater Authority, Valley Center Municipal Water District, Vallecitos Water District, Vista Irrigation District, the City of Poway, Olivenhain Municipal Water District, and Padre Dam Municipal Water District.[2]

SDCWA also runs a water conservation program known as WaterSmart, which is implemented by SDCWA member agencies. The program offers various water conservation resources, programs, and incentives for residences, businesses, homeowner associations, and agricultural use management programs (SDCWA n.d.).

San Diego County Groundwater Ordinance

The San Diego County Groundwater Ordinance is contained in Section 67.701 et seq. of the Regulatory Code. This ordinance contains regulations for the protection, preservation, and maintenance of groundwater resources. It provides standards for implementation and review of groundwater studies, as well as countywide studies, assessments, and monitoring of groundwater resources in the county. The purpose of this ordinance is not to limit or restrict agricultural activities but to ensure that development will not occur in groundwater-dependent areas of the county unless adequate groundwater supplies are available to serve both the existing uses and the proposed uses in the affected groundwater basin. The economic, social, and environmental benefits of maintaining viable agriculture in San Diego County are expressly recognized in the adoption of this ordinance. Also, the Groundwater Ordinance does not apply to by-right agricultural uses or operations. This ordinance does not limit the number of

[2] Since approval of the 2020 UWMP, Fallbrook Public Utility District and Rainbow Municipal Water District have detached from SDCWA and annexed into Eastern Municipal Water District.

wells or the amount of groundwater extraction from existing landowners. However, the ordinance does identify specific measures to mitigate potential groundwater impacts of projects requiring specified discretionary permits.

Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin

The final draft GSP for the Borrego Springs Groundwater Subbasin was completed in 2019. The GSP establishes criteria that will maintain or achieve sustainable groundwater management of the Borrego Springs Groundwater Subbasin. The GSP contains a summary of the Borrego Springs Groundwater Subbasin setting and overdraft conditions; establishes sustainability indicators, minimum thresholds, and measurable objectives for the subbasin; and establishes project and management actions to reduce water demand within the subbasin and maintain water quality suitable for current and future beneficial uses. The Borrego Springs Groundwater Subbasin GSP establishes a sustainability goal to halt the overdraft condition in the subbasin by bringing the groundwater demand in line with a sustainable yield of 5,700 afy by 2040, while stabilizing or improving groundwater levels (BVGSA 2019).

As discussed above in the "Borrego Valley Groundwater Subbasin" section, a settlement agreement to adjudicate groundwater rights was approved on April 8, 2021, and established the Borrego Springs Watermaster as the entity responsible for managing groundwater use in the Borrego Springs Groundwater Subbasin. Under the terms of the settlement agreement, all parcels within the BWD service area will be metered to measure water use. All users will be required to ratchet down by 5% each year the amounts of water they take from the aquifer. By 2030, all users will have halved their baseline amounts and will reach a sustainable yield by 2040. (See *Borrego Water District v. All Persons Who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin No. 7.024-01 Whether Based on Appropriation, Overlying Right, or Other Basis Of Right, and/or Who Claim a Right to use of Storage Space in the Subbasin*.)

Recycled Water Regulations

The County Department of Environmental Health and Quality regulates the use of recycled water through a delegation agreement with the State of California. The purpose is to protect the public from health risks associated with cross-connections of recycled water and drinking water supplies, as well as to prevent health risks from body contact with recycled water. The department's Land and Water Quality Division reviews recycled water use plans and conducts site inspections to ensure drinking water supplies are not contaminated with recycled water. Spray irrigation sites are monitored to ensure the recycled water irrigation does not present a risk to the public. Recycled water sites must also pass a cross-connection control shutdown test when installed and every 4 years after installation (County of San Diego n.d.-e).

The City of San Diego maintains the policy that recycled water be used for any purpose approved for recycled water use when it is economically, financially, and technically feasible, as mandated by Ordinance 0-17327. The policies regarding recycled water use are documented in the Rules and Regulations for Recycled Water Systems, which lists the following goals (City of San Diego 2022):

- Prevent direct human contact of recycled water through adherence to all applicable rules and regulations and laws.
- Prevent cross-connection between recycled and potable water systems, which include a strict cross-connection/backflow prevention program.

In addition to the county regulations, the City of Escondido's Recycled Water Master Plan summarizes the City's recycled water service rules and regulations for recycled water use (City of Escondido 2011). The San Dieguito Water District Administrative Code Article 21, Section 21.6, "Rules and Regulations," govern the requirements for recycled and nonpotable water use within the district's jurisdiction (City of Encinitas 2024). Olivenhain Municipal Water District's Rules and Regulations Governing the Use of Recycled Water describes the facility requirements, recycled water services, and operational requirements in the jurisdiction (OMWD 2015). Recycled water use in the Rincon del Diablo Municipal Water District is governed by Rincon Administrative Code Section 4500, "Recycled Water Service" (RDDMWD 2017).

4.18.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for evaluating the significance of a project's environmental impacts on water supply, in the form of initial study checklist questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions in CEQA Guidelines Appendix G. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique nature of the proposed Plan.

Checklist questions for water supply are included in Sections X (b and e) and XIX (a and b) of Appendix G. Because of the importance of water supply issues in the San Diego region and throughout California, this EIR addresses the water supply impacts of the proposed Plan in a stand-alone section. For the purposes of this EIR, the Appendix G questions have been combined and modified. Specifically, Appendix G Section XIX (b), regarding sufficient water supplies, is addressed in criterion WS-1. Section X questions (b) and (e), regarding groundwater supplies and sustainable groundwater management plans, are addressed in criterion WS-2. Section XIX question (a), regarding the relocation or construction of new or expanded water facilities, is addressed in criterion WS-3. For the purposes of this EIR, the proposed Plan would have a significant water supply impact if it would:

WS-1 Not have sufficient water supplies available to serve the projected regional demand during normal, dry, and multiple dry years.

WS-2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the proposed Plan would impede sustainable management of groundwater basins or obstruct implementation of a sustainable groundwater management plan.

WS-3 Require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects.

4.18.4 Environmental Impacts and Mitigation Measures

WS-1 NOT HAVE SUFFICIENT WATER SUPPLIES AVAILABLE TO SERVE THE PROJECTED REGIONAL DEMAND DURING NORMAL, DRY, AND MULTIPLE DRY YEARS.

Analysis Methodology

The analysis of the 2035 and 2050 impacts of forecasted regional growth and land use change in the SDCWA service area estimates the water demand resulting from forecasted growth under the proposed Plan and compares it to the projected water demand and projected available supplies through 2035, as identified in the SDCWA 2020 UWMP. The UWMPA requires all urban water suppliers in California to prepare UWMPs that present the water suppliers' water reliability assessments. The assessments must compare projected water supply and demands over the ensuing 20 years. The SDCWA 2020 UWMP's water reliability assessment covers 20 years, from 2025 to 2045. The assessment must include projected water supply and demand in 5-year increments under normal, single dry, and multiple dry years. The regional growth projections used in the SDCWA 2020 UWMP were based on the SANDAG Series 14 Regional Growth Forecast. As explained in Chapter 2, "Project Description," the proposed Plan's growth projections were based on the Series 15 Regional Growth Forecast, which projects a slower population growth rate compared to the previous forecasts based on the Series 14 model. As such, the forecasted regional growth under the proposed Plan would be more conservative than the forecasted growth used in the SDCWA 2020 UWMP for water reliability assessments. The water demand resulting from the proposed Plan would be within the demand forecasted in the SDCWA 2020 UWMP. Therefore, the UWMP is suitable for answering Impact WS-1. Information in this section is derived from the SDCWA 2020 UWMP unless otherwise indicated.

The analysis of regional water demands below is based on projections of both normal year and dry-year annual demands from the 2020 UWMP. Normal-, dry-, and multiple-dry-years annual demands were consistent with those in the 2020 UWMP for each member agency. Projected water supply for a normal water year is based on forecasts provided by the 2020 UWMP in the SDCWA service area in a normal water year and single dry water year through 2045.

For the 2050 analysis of regional growth and land use change, the water demand was estimated by multiplying the projected per capita usage in gallons per day by forecasted future population. Most urban areas in the region depend upon a combination of surface water, recycled water, and water conservation to provide sufficient water supplies for their existing and planned residents and businesses. Table 4.18-12 shows the 2020 UWMP normal water year assessment, summarizing the total water demands in the SDCWA service area through the year 2045.

A 2050 population of 3,400,250 is forecasted under the proposed Plan. Of this total, approximately 109,841 people are projected to reside outside the SDCWA service area based in GIS overlay analysis of SANDAG's MGRA 15 and SDCWA service area boundaries (SANDAG 2025; County of San Diego 2024). For a conservative approach, this analysis assumes that the forecasted 2050 population of 3,400,250 people would be served by SDCWA. Water demand in 2050 was estimated using the 2020 UWMP assumptions for population and water demand in 2045 for normal year conditions. These assumptions were used to develop per capita rates for each scenario (i.e., af per person during a normal year, a single dry year, multiple dry years). These per capita rates were then applied to the forecasted 2050 population to calculate the following 2050 water demands under the proposed Plan. The estimated water demand for 2050 is 578,043 af.

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and the operation and maintenance of new facilities could increase the demand for water for construction activities, such as concrete mixing and dust control, and for operations activities and services, such as restrooms and drinking fountains. These water demands are evaluated qualitatively to determine whether they could contribute to a situation where regional demand exceeds water supply.

Table 4.18-12 2020 UWMP Normal Water Year Supply and Demand Assessment (acre-feet/year)[1]

	2025	2030	2035	2040	2045
Water authority supplies					
Imperial Irrigation District water transfer	200,000	200,000	200,000	200,000	200,000
All-American Canal and Coachella Canal Lining Projects	78,700	78,700	78,700	78,700	78,700
Carlsbad Desalination Plant	50,000	50,000	50,000	50,000	50,000
Subtotal	*328,700*	*328,700*	*328,700*	*328,700*	*328,700*
Member agency supplies					
Surface water	43,957	43,957	44,659	44,659	44,659
Water recycling	41,963	45,513	45628	45,749	45,854
Seawater desalination	6,000	6,000	6,000	6,000	6,000
Potable reuse	33,042	53,202	112,562	112,562	112,562
Brackish groundwater recovery	8,400	8,400	8,400	8,400	8,400
Groundwater	21,900	23,100	23,100	19,600	19,600
San Luis Rey water transfers	15,800	15,800	15,800	15,800	15,800
Subtotal	*171,062*	*195,972*	*256,149*	*252,770*	*252,875*
Metropolitan Water District supplies	55,996	53,572	13,625	32,765	49,196
Total projected supplies	**555,758**	**578,244**	**598,474**	**614,235**	**630,771**
Total long-range demand forecast with conservation[2]	**555,758**	**578,244**	**598,474**	**614,235**	**630,771**

Notes: UWMP = urban water management plan; SDCWA = San Diego County Water Authority; MWD = Metropolitan Water District of Southern California.

[1] Normal water year demands are based on 1960–2018 hydrology.

[2] Supply and demand are identical because the residual shortfall after accounting for SDCWA and member agency supplies is offset by purchases from MWD.

Source: SDCWA 2021a: Table 9-1.

A significant impact would occur if the projected available regional water supplies and water delivery infrastructure are not able to meet regional demand during normal year, dry year, and multiple dry year scenarios. The analysis is done for 2035 and 2050.

Transportation network improvements have the potential to affect groundwater supplies through storm water runoff. Storm water is defined by EPA as the runoff generated when precipitation from rain and snowmelt events flows over land or impervious surfaces without percolating into the ground (SWRCB n.d.). Storm water is often considered a nuisance because it mobilizes pollutants, such as motor oil and trash. Storm water discharges in California are regulated through National Pollutant Discharge Elimination System (NPDES) permits. Transportation network improvements made in already urbanized areas, such as the Central County Subregion, create less impact because they do not represent a substantial increase in impervious surfaces. Water quality aspects of storm water originating from transportation network improvements are analyzed in Section 4.10, "Hydrology and Water Quality." At issue are the effects of storm water originating from network transportation improvements on the water supplies of underlying aquifers. As noted by SWRCB, storm water may act as a resource and recharge to groundwater when properly managed (SWRCB n.d.).

A qualitative analysis is included for water required for the production of concrete and dust suppression and for the operation and maintenance water demands (e.g., landscape irrigation) of transportation network improvements. A significant impact would occur if existing and future water supplies in the San Diego region would not be sufficient to meet regional water demands associated with transportation network improvements.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. Table 4.18-12 indicates that SDCWA projects adequate water supply to meet the 2035 demand of regional growth and land use change. Total water demand for 2035 is projected to be 598,474 af. Sources include the following SDCWA supplies, which total 328,700 af:

- Imperial Irrigation District water transfer
- All-American Canal and Coachella Canal Lining Projects
- Carlsbad Desalination Plant

The water derived from the Imperial Irrigation District and the canal lining projects is stored by MWD in Lake Mead and becomes part of the MWD water supply. Under an agreement between MWD and SDCWA, MWD agrees to provide a like amount of water from its overall supply (MWD 2021).

Member agency supplies that contribute to the regional water supply from the following sources total 256,149 af:

- surface water
- water recycling
- seawater desalination
- potable reuse
- brackish groundwater recovery
- San Luis Rey water transfers

In addition to the above supplies, SDCWA would purchase 13,625 af from MWD. MWD projects that the total retail water demand for San Diego County with conservation would be approximately 604,000 af in 2035 (MWD 2021).

Therefore, the estimated SDCWA water demand (13,625 af) from MWD in 2035 would be within the water demand projected (approximately 604,000 af) by MWD in its 2020 UWMP. MWD would have sufficient water supply to meet the water demand from SDCWA in 2035.

In the single dry year assessment for 2035, SDCWA assumed the continuation of long-term water efficiencies, but conservatively did not include additional potential savings derived from extraordinary conservation occurring during droughts. The groundwater and surface water yields assumed in the 2035 single dry year scenario are based on the very low yields of 2015. Other SDCWA supplies and member agency supplies were considered drought resilient. Dry year assessments in 5-year increments are presented in Table 4.18-13.

Table 4.18-13 Single Dry Year Supply and Demand Assessment in 5-Year Increments (acre-feet/year)

	2025	2030	2035	2040	2045
Water authority supplies					
Imperial Irrigation District water transfer	200,000	200,000	200,000	200,000	200,000
All-American Canal and Coachella Canal Lining Projects	78,700	78,700	78,700	78,700	78,700
Regional Seawater Desalination	50,000	50,000	50,000	50,000	50,000
Subtotal	***328,700***	***328,700***	***328,700***	***328,700***	***328,700***
Member agency supplies[1]					
Surface water	6,004	6,004	6,004	6,004	6,004
Water recycling	41,963	45,513	45,628	45,749	45,854
Seawater desalination	6,000	6,000	6,000	6,000	6,000
Potable reuse	33,042	53,202	112,562	112,562	112,562
Brackish groundwater recovery	8,400	8,400	8,400	8,400	8,400
Groundwater	15,821	15,821	15,821	15,821	15,821
San Luis Rey water transfers	15,800	15,800	15,800	15,800	15,800
Subtotal	***126,490***	***150,200***	***209,675***	***209,796***	***209,901***
Other supplies					
Metropolitan Water District supplies	336,232	336,674	337,116	337,558	338,000
Total supplies	**791,422**	**815,574**	**875,491**	**876,054**	**876,601**
Use of carryover supplies	0	0	0	0	0
Total projected core supplies with use of carryover storage supplies	**791,422**	**815,574**	**875,491**	**876,054**	**876,601**
Total demands with water efficiency savings	**596,965**	**618,879**	**639,310**	**655,054**	**671,320**
Potential supply (shortage) or surplus (difference between supplies and demands)	**194,457**	**196,695**	**236,181**	**221,000**	**205,281**

Source: SDCWA 2021a: Table 9-2.

[1] Member agency local supplies include production from verifiable reliable sources, as well as dry year totals for actual 2015 surface water and groundwater supplies.

The SCDWA 2035 dry year assessment assumes a major increase in water purchase from MWD. Purchases from MWD would increase from 13,625 af under the 2035 normal year scenario to 337,116 af under the 2035 dry year scenario. The SCDWA 2020 UWMP states (SDCWA 2021a):

> For this single dry-year assessment, it was assumed that Metropolitan supplies are limited to 1.3 million AF [acre-feet] due to dry conditions and additional reduction in Metropolitan's deliveries from State Water Project (i.e., no Delta improvements) and Colorado River, and that the Water Authority received its preferential right based on Metropolitan's current method of calculating such rights.

MWD member agencies' ability to exercise preferential water rights was confirmed in a lawsuit filed by SDCWA in 2001. The court decision affirmed the preferential right of each member agency to MWD water. The calculation of each member agency's preferential rights was clarified in a 2010 lawsuit filed by SDCWA regarding payments to transport its independent Colorado River supplies through the MWD conveyance system (SDCWA 2021a). As of June 30, 2020, SDCWA has preferential right to 25.83% of MWD's water supplies (SDCWA 2021a). In fiscal year 2023, SDCWA purchased about 7.3% of the water MWD sold (SDCWA 2024b). The MWD UWMP single dry year water supply is projected to be 2,760,000 af in 2035 (MWD 2021). The SDCWA 2035 single dry year water demand from MWD (337,116 af) would represent approximately 12.2% of the MWD 2035 single dry year water supply. Although preferential rights are updated annually, the approximately 12.2% of the MWD 2035 single dry year water supply is less than the SDCWA 2020 preferential right to MWD's water supplies (25.83%). The MWD 2035 single dry year water supply projection suggests that MWD would have adequate water supply to meet SDCWA demand assuming exercise of preferential water right.

In a multiple dry years scenario ending in 2035 (see Table 4.18-14), member agency supplies were reduced, reflecting the decline in surface water and groundwater availability. SDCWA supplies derived from water transfers would be maintained at a static level. SDCWA would continue to exercise its preferential right to the MWD supply of water available for wholesale. The MWD UWMP multiple dry year water supply is projected to be 2,241,000 af in 2035 (MWD 2021). The SDCWA 2035 multiple dry year water demand from MWD (311,021 af) would represent approximately 13.8% of the MWD 2035 multiple dry year water supply. The MWD 2035 multiple dry year water supply projection suggests that MWD would have adequate water supply to meet SDCWA demand assuming exercise of the 2020 preferential water right of 25.83%.

Table 4.18-14 2031–2035 Multiple Dry Year Supply and Demand Assessment (acre-feet/year)

	2031	2032	2033	2034	2035
Member agency supplies[1]	215,128	210,674	191,034	167,747	209,675
Water authority supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan allocation (preferential right)	336,762	310,939	311,021	311,102	311,184
Total estimated core supplies without storage takes	**880,590**	**850,313**	**830,755**	**807,549**	**849,559**
Total multiple dry year demands with water conservation savings	**625,067**	**631,318**	**637,631**	**644,008**	**650,448**
Potential supply (shortage) or surplus (difference between supplies and demands)	**255,523**	**218,995**	**193,124**	**163,541**	**199,111**
Use of carryover supplies	0	0	0	0	0
Total projected core supplies with use of carryover storage supplies	**880,590**	**850,313**	**830,755**	**807,549**	**849,559**
Remaining potential surplus supply, or (shortage) that will be addressed through management actions	255,523	218,995	193,124	163,541	199,111

Source: SDCWA 2021a: Table 9-5.

[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, potable reuse, San Luis Rey water transfer, seawater desalination, as well as dry year estimates for surface water and groundwater.

The SDCWA and MWD planning documents indicate that there would be sufficient water supplies to satisfy the requirements of regional growth and land development in 2035, including in the event of a single dry year or multiple dry years. Therefore, impacts regarding the availability of an adequate water supply to serve regional growth and land use change in 2035 would be less than significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities, such as concrete mixing and dust control, and for operational activities such as landscape irrigation or services such as restrooms and drinking fountains. These increases in demand are anticipated to be small on an individual project basis. For example, a minimal amount of water may be required for dust control during construction and grading activities. Depending on conditions, water use for dust control could be obtained via existing on-site supplies or trucked from an alternative source. This minor, short-term use would be arranged between the contractors and water suppliers and would not contribute to an exceedance of available water supplies. Operational water use would be limited to as needed basis and would not result in substantial increase in demand for portable water. Water use associated with restrooms would occur only when handwashing and flushing toilets are needed. In addition, reclaimed water, of which there is a regional surplus, can be used for restrooms. Similarly, drinking water foundations will only be used when someone needs water.

The construction of new transportation facilities would also increase demand for water use to irrigate new landscaping installed along roadways. Reclaimed water is used for roadway landscaping irrigation in most areas. Landscaping for new Caltrans improvements would be irrigated with recycled water. Any landscaping installed in outlying areas would be composed of native species with minimal water requirements. Water demand for landscaping irrigation is anticipated to be met by reclaimed water and recycled water. The impact would be less than significant.

2035 Conclusion

Water supplies are adequate to serve regional growth and land use change and transportation network improvements and programs until the year 2035. The water supply is adequate to serve these needs even in the event of a dry year or multiple dry years. Therefore, this impact (WS-1) in the year 2035 is less than significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

Water demand in 2050 was estimated using the 2020 UWMP assumptions for population and water demand in 2045 for normal year conditions. The per capita rate was then applied to the forecasted 2050 population under the proposed Plan to calculate the 2050 water demand under the proposed Plan. The estimated water demand for 2050 is 578,043 af.

SDCWA and member agency normal year supplies are mostly constant for the 2035–2045 period. Using the 2045 SCWA and member agency normal year supplies for 2050 results in a total local water supply of 582,514 af. The water demand of 578,043 af during a normal year would be within the local water supply.

As shown above in Table 4.18-13, the single dry year assessments prepared for the SDCWA 2020 UWMP do not extend beyond 2045. The single dry year demand estimate in 2050 for the SDCWA service area is 602,372 af, which was derived from using the same methodology employed to estimate 2050 normal year water demand. SDCWA and member agency supplies are mostly uniform across both the 2040 and 2045 single dry year estimates of 538,601 af. Use of these water supply calculations in a 2050 single dry year scenario would result in a shortfall of 63,876 af of water supply in 2050. This quantity would only be available with the exercising of SDCWA's preferential rights to MWD supplies. Because projections of MWD supplies are not available for wholesale in 2050, the availability of this supply cannot be confirmed.

Multiple dry year assessments for the years 2036–2040 and 2041–2045 are presented in Tables 4.18-15 and 4.18-16. In both scenarios, SDCWA member agency supplies, consisting of groundwater and surface water, decline over time. SDCWA supplies derived from water transfers are constant. In all instances, the shortfall between supply and overall demand would be bridged via SDCWA exercising its preferential right and acquiring additional wholesale supplies from MWD.

Table 4.18-15 2036–2040 Multiple Dry Year Supply and Demand Assessment (acre-feet/year)

	2036	2037	2038	2039	2040
Member agency supplies[1]	274,604	328,700	250,513	227,227	209,796
Water authority supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan allocation (preferential right)	337,204	311,347	311,429	311,510	311,592
Total estimated core supplies without storage takes	**940,508**	**910,199**	**890,642**	**867,437**	**850,088**
Total multiple dry year demands with water conservation savings	**645,703**	**652,160**	**658,681**	**665,268**	**671,921**
Potential supply (shortage) or surplus (difference between supplies and demands)	**294,805**	**258,039**	**231,961**	**231,961**	**178,167**
Use of carryover supplies	0	0	0	0	0
Total projected core supplies with use of carryover storage supplies	**940,508**	**910,199**	**890,642**	**867,437**	**850,088**
Remaining potential surplus supply, or (shortage) that will be addressed through management actions	294,805	258,039	231,961	202,169	178,167

Source: SDCWA 2021a: Table 9-6.

[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, potable reuse, San Luis Rey water transfer, seawater desalination, as well as dry year estimates for surface water and groundwater.

Table 4.18-16 2041–2045 Multiple Dry Year Supply and Demand Assessment (acre-feet/year)

	2041	2042	2043	2044	2045
Member agency supplies[1]	274,722	270,266	250,624	227,335	209,901
Water authority supplies	328,700	328,700	328,700	328,700	328,700
Metropolitan allocation (preferential right)	337,646	311,755	311,837	311,918	312,000
Total estimated core supplies without storage takes	**941,068**	**910,721**	**891,161**	**867,953**	**850,601**
Total multiple dry year demands with water conservation savings	**661,605**	**668,221**	**674,903**	**681,652**	**688,469**
Potential supply (shortage) or surplus (difference between supplies and demands)	**279,463**	**242,500**	**216,258**	**186,301**	**162,132**
Use of carryover supplies	0	0	0	0	0
Total projected core supplies with use of carryover storage supplies	**941,068**	**910,721**	**891,161**	**867,953**	**850,601**
Remaining potential surplus supply, or (shortage) that will be addressed through management actions	279,463	242,500	216,258	186,301	162,132

Source: SDCWA 2021a: Table 9-7.

[1] Member agency local supplies include verifiable recycling and brackish groundwater recovery, potable reuse, San Luis Rey water transfer, seawater desalination, as well as dry year estimates for surface water and groundwater.

As discussed above, there are no SDCWA dry year water demand projections after 2045. Because of the year-to-year variations in supply and demand factors in the 2036–2040 and 2041–2045 assessments, estimating for 2046–2050 is technologically infeasible without more detailed input from the water agencies. It is certain, however, that satisfying regional water demand in multiple dry years from 2046 to 2050 would require that SDCWA exercise its preferential rights and acquire well in excess of 300,000 afy. There is no MWD dry year water supply projection after 2045; therefore, it cannot be confirmed how much water SDCWA could acquire through preferential rights in 2050. Because the availability of this water supply cannot be confirmed the impact would be significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

The construction of new transportation network improvements, including roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities could increase the demand for water for construction activities, such as concrete mixing and dust control, and for operations activities and services, such as restrooms and drinking fountains. These increases in demand are anticipated to be small on a per-project basis. For example, a minimal amount of water may be required for dust control during construction and grading activities. Depending on conditions, water use for dust control could be obtained via existing on-site supplies or trucked from an alternative source. This minor, short-term use would be arranged between the contractors and water suppliers and would not contribute to an exceedance of available water supplies. Operational water use would be limited to as needed basis and would not result in substantial increase in demand for portable water. Water use associated with restrooms would occur only when handwashing and flushing toilets are needed. In addition, reclaimed water, of which there is a regional surplus, can be used for restrooms. Similarly, drinking water foundations will only be used when someone needs water.

The construction of new transportation facilities would also increase demand for water to irrigate new landscaping installed along roadways. This demand is anticipated to be met by using reclaimed water (also known as recycled water), of which there is a regional surplus and which is typically available for this purpose in most areas. Landscaping for new Caltrans improvements would be irrigated with recycled water. Any landscaping installed in outlying areas would be composed of native species with minimal water requirements. The impact would be less than significant.

2050 Conclusion

The impacts of regional growth and land use change in 2050 would be significant, the impacts of transportation network improvements would be less than significant, and the combined impacts of both would be significant. The UWMPs prepared by SDCWA and MWD indicate that there would be sufficient water supplies to provide for regional growth and land development through the year 2045. After this time, however, documentation regarding sufficient supplies is unavailable, creating uncertainty about regional water supplies in 2050. This uncertainty means that there may be insufficient regional water supplies to meet regional water demand in 2050 in the event of a dry year or multiple dry years. Therefore, this impact (WS-1) in the year 2050 is significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would result in reduced ability to have sufficient water supplies from traditional sources to serve projected regional demand beyond 2045. Climate change impacts multiple sources of water. Reduced precipitation and changes in timing of snowpack melt are likely to decrease the region's imported water supply, which comes from mountain ranges, such as the Sierra Nevada and the mountains that supply the Colorado River (Hogan and Lundquist 2024; Hale et al. 2023; Gottlieb and Mankin 2024; City of San Diego 2025). Increased evaporation and drought may also decrease surface water supplies and result in depletion of groundwater supply (CEP and SDF 2015; SDF 2008). Furthermore, sea-level rise could result in saltwater intrusion of coastal groundwater supplies, decreasing available drinking water (DWR 2025; SDCWA 2025c).

Climate change may also increase water demand. Increased drought and evapotranspiration may increase water demand for agriculture and landscaping irrigation due to lack of rainfall and higher temperatures (Cole et al. 2024). This can further strain water resources supporting the San Diego region.

The proposed Plan's impacts would be worsened by climate change. The proposed Plan's projected population growth would increase water demand, increasing the uncertainty whether the San Diego region will have sufficient water supplies beyond 2045 for projected demand during a normal dry year or multiple dry years.

MITIGATION MEASURES

WS-1 NOT HAVE SUFFICIENT WATER SUPPLIES AVAILABLE TO SERVE THE PROJECTED REGIONAL DEMAND DURING SINGLE DRY YEAR AND MULTIPLE DRY YEARS.

2050

WS-1a Implement Water Conservation Measures for Transportation Network Improvements.

SANDAG shall, and other transportation project sponsors can and should, implement feasible water conservation measures during planning, design, project-level CEQA review, construction, operations, and maintenance of transportation network improvements, consisting of, but not limited to, the following:

- Install drip or other water-conserving or weather-based irrigation systems for landscaping.
- Install native plant species and noninvasive drought-tolerant/low-water-use plants in landscaping, consistent with the most recent state, regional, and local government plans; laws; and policies.
- Incorporate the use of reclaimed water (also known as recycled water) during planning, design, project-level CEQA review, construction, operations, and maintenance of transportation network improvements to reduce the use of potable water.

WS-1b Implement Water Conservation Measures for Development Projects.
The County of San Diego, cities, and other local jurisdictions can and should implement feasible water conservation measures during planning, design, and project-level CEQA review of development projects, consisting of, but not limited to, the following:

- Install native plant species and noninvasive drought-tolerant/low-water-use plants in landscaping, consistent with the most recent state, regional, and local government plans; laws; and policies.
- Install low-flow plumbing fixtures.
- Install water-efficient appliances.
- Incorporate the use of reclaimed water. Measures to incorporate reclaimed water may consist of, but are not limited to, on site water recycling; the use of recycled water to fill lakes, ponds, and ornamental fountains; the use of recycled water for irrigation, to mix concrete, and to control dust at construction sites; the use of recycled water for certain industrial processes and for flushing toilets and urinals in nonresidential buildings; and the use of recycled water for street sweeping purposes.

WS-1c Ensure Adequate Water Supply for Development Projects.
During planning, design, and project-level CEQA review for development projects, the County of San Diego, cities, and other local jurisdictions can and should ensure that adequate water supply will be available to meet or satisfy projected water demands, consistent with applicable UWMPs, master plans, and general plan projections of water supply and demand. This can and should be documented in the form of an SB 610 Water Supply Assessment, an SB 221 Water Supply Verification, or other water supply analysis.

SIGNIFICANCE AFTER MITIGATION

2050

Adequate water supplies have not been identified beyond 2045. This uncertainty means that there may be insufficient regional water supplies to meet regional water demand, notwithstanding implementation of the above mitigation measures. Therefore, this impact (WS-1) is significant and unavoidable.

WS-2 SUBSTANTIALLY DECREASE GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THE PROPOSED PLAN WOULD IMPEDE SUSTAINABLE MANAGEMENT OF GROUNDWATER BASINS OR OBSTRUCT IMPLEMENTATION OF A SUSTAINABLE GROUNDWATER MANAGEMENT PLAN.

Analysis Methodology

The analysis addresses the impacts of forecasted regional growth and land use change and transportation network improvements on groundwater supplies both within and outside of the SDCWA service area and determines whether the proposed Plan would impede sustainable management of a groundwater basin or obstruct implementation of a GSP. As stated above, the Upper San Luis Rey Valley GSP was approved by DWR in 2024, and the San Pasqual Valley Groundwater Basin GSP was approved by DWR in 2023. The analysis focuses on whether the proposed Plan would impede sustainable management of a groundwater basin or impede or obstruct implementation of the Upper San Luis Rey Valley GSP and the San Pasqual Valley Groundwater Basin GSP. For the Borrego Springs Groundwater Subbasin GSP and adjudication, the analysis focuses on whether the proposed Plan would conflict with the project and management actions identified in the GSP to achieve the GSP's sustainability goal with Plan implementation.

In addition, the analysis addresses increased use of groundwater and changes to groundwater recharge under the proposed Plan relative to the existing conditions, as described in the GSPs. Groundwater use typically increases during dry years and decreases in wet years when surface water supplies are more available. Projected groundwater supply yield identified in the SDCWA 2020 UWMP ranges from a low of 25,950 af in 2020 to a high of 31,500 af in 2035. No groundwater availability projections are available for 2050. The analysis provides a

qualitative discussion on how forecasted regional growth and land use change could interfere with groundwater recharge by creating additional impervious surfaces. Forecasted regional growth and land use change would also create additional demands for water supplies from local water supply agencies, a portion of which may be provided by groundwater; the analysis addresses these impacts as well.

In the analysis below, general discussion is provided to describe the proximity of planned transportation network improvements to documented groundwater resources and to determine whether these improvements would impede sustainable groundwater management or conflict with or obstruct implementation of the Upper San Luis Rey Valley GSP, the San Pasqual Valley Groundwater Basin GSP, or the Borrego Springs Groundwater Subbasin GSP. Transportation may increase impervious surfaces but would have very limited demands for water supplies; therefore, their water demands would not substantially affect groundwater resources such that they would result create groundwater overdraft conditions. With regard to groundwater recharge, many of the proposed transportation network improvements are on or adjacent to existing highways, streets, and roads, in which most of the surfaces are already paved or impervious. The analysis nevertheless evaluates how the proposed Plan could result in the implementation of new r network improvements dispersed throughout the Plan area. These new impervious surfaces, while planned for by local implementing agencies, could contribute to limiting regional groundwater recharge if they would substantially decrease groundwater supplies or substantially limit recharge in the areas of new impervious surfaces.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Groundwater basins in San Diego County occur both within the SDCWA service area and in the eastern two-thirds of the county that is entirely dependent on groundwater for all water uses. The population of the portion of the county outside of the SDCWA service area was approximately 111,770 in 2022. This population is forecasted to be approximately 112,558 in 2035 and 109,841 in 2050. The County of San Diego 2011 General Plan Update EIR Appendix D (County of San Diego 2010a) presented the groundwater impacts of forecasted growth and land use change within groundwater-dependent areas overlying fractured-rock aquifers in the unincorporated county. All fractured-rock aquifers and groundwater basins outside of the SDCWA service area were evaluated. Groundwater-level data from a preceding 34-year period was analyzed. The analysis used County of San Diego significance criteria and determined that a significant impact existed if, for at least 1 month during the period of analysis, the groundwater levels in the aquifers were reduced to or below 50% of the overall storage capacity of the groundwater basin or aquifer. The analysis found that 10 groundwater basins or aquifers had minimum storage levels below 50% under preexisting or existing conditions. These groundwater basins or aquifers were also below the 50% storage threshold under 2011 General Plan buildout conditions. When the 2011 General Plan land use buildout conditions were modelled across the eastern two-thirds of the county, an additional 13 groundwater basins or aquifers were found to fall below the 50% storage threshold. The county groundwater study also concluded that in several areas under both existing and future conditions, groundwater supply issues were caused by a concentration of wells in a limited area. Any regional growth occurring between 2022 and 2035 within the boundaries of the 10 identified groundwater basins or aquifers with existing insufficient groundwater storage or within the boundaries of the additional 13 groundwater basins or aquifers identified as having insufficient storage under 2011 General Plan buildout conditions would create a significant groundwater impact.

After the passage of the SGMA, DWR assessed the groundwater basins in the state. DWR classified the groundwater basins as high, medium, or low priority based on groundwater storage and overdraft conditions. The SGMA requires medium- and high-priority basins to form GSAs, develop GSPs, and manage groundwater for long-term sustainability. Two groundwater basins are designated as medium priority consistent with the SGMA in the Plan area: the San Pasqual Valley Groundwater Basin and the Upper San Luis Rey Valley Groundwater Subbasin. The San Pasqual Valley Groundwater Basin GSP was approved by DWR in 2023 (DWR 2023a). The Upper San Luis Rey Valley GSP was approved by DWR in 2024 (DWR 2024). An additional groundwater subbasin, the Borrego Springs Groundwater Subbasin (discussed below), was determined to be high priority due to "critical overdraft" conditions.

The San Pasqual Valley Groundwater Basin GSP indicates that groundwater use in the basin is currently sustainable and no projects or management actions are needed to achieve sustainability (Woodard & Curran 2021). The GSP sustainability goal is "to maintain a locally managed, economically viable, sustainable groundwater resource for existing and future beneficial use in the San Pasqual Valley Groundwater Basin by managing groundwater to avoid the occurrence of undesirable results" (Woodard & Curran 2021). The GSP requires the GSA to continue ongoing existing monitoring programs to assess groundwater levels and identify projects and management actions to be implemented if undesirable results occur.[3]

The sustainability goal for the Upper San Luis Rey Valley Groundwater Subbasin is "to manage and preserve its groundwater resource as a sustainable water supply" (Geoscience 2022). The sustainable yield for the Upper San Luis Rey Valley Subbasin was estimated based on the amount of groundwater pumping and groundwater storage. The estimated current (from 2016 to 2020) sustainable yield of the subbasin is 20,300 afy. The sustainable yield is estimated to be 13,600 afy from 2022 to 2081 if water use and land use pattern continues into the future. The sustainable yield would be refined as additional information about groundwater pumping and groundwater storage is collected during GSP implementation (Geoscience 2022). As discussed in the Upper San Luis Rey Valley GSP, the subbasin is generally operating sustainably within current water demand and water supply conditions. The GSP identifies projects and management actions that support the efficient use of groundwater resources and increase groundwater recharge to help the subbasin remain sustainable through normal and drought hydrologic conditions (Geoscience 2022).

The Borrego Springs Groundwater Subbasin is designated by DWR as high priority and critically overdrafted (BVGSA 2019). Groundwater use within the subbasin would be subject to Watermaster approval. Under the terms of the Settlement Agreement, all parcels within BWD will henceforth be metered by BWD to measure water use. All users will be required to reduce groundwater withdrawals by 5% each year. By 2030, all users will have halved their baseline amounts, and by 2040, groundwater and withdrawal will be reduced by 75%. From that time forward groundwater withdrawal will match basin recharge (see *Borrego Water District v. All Persons who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin etc.* groundwater adjudication). The adjudication of the Borrego Springs Groundwater Subbasin provides a regulatory framework for allowing some new development within the BWD service area. New development, and the Borrego Springs Groundwater Subbasin's portion of forecasted regional growth, would occur only after the proposed new development has purchased preexisting water rights. These purchased preexisting rights would be in sufficient quantity to provide for the required future reductions in allowed groundwater withdrawal.

Any forecasted regional growth that occurs within the boundaries of the San Pasqual Valley and Upper San Luis Rey Valley basins would be subject to the approved San Pasqual Valley Groundwater Basin GSP and Upper San Luis Rey Valley GSP, respectively. Portions of the Upper San Luis Rey Valley Groundwater Subbasin are outside the management of a GSA and are not subject to an alternative to GSP or other exemption from SGMA requirements(SWRCB 2025a). Forecasted growth that occurs within the Borrego Springs Groundwater Subbasin would be subject to the terms of the adjudication. Therefore, water used by the forecasted regional growth would be required to comply with the terms of the GSPs and the adjudication and would therefore not interfere with the

[3] Undesirable results are conditions under which each applicable sustainable indicator (e.g., chronic lowering of groundwater levers, significant and unreasonable reduction of groundwater storage, and significant and unreasonable seawater intrusion) would become significant and unreasonably negative to beneficial uses in the basin.

sustainable management of San Pasqual Valley Groundwater Basin, the Upper San Luis Rey Valley Groundwater Subbasin, and the Borrego Springs Groundwater Subbasin, or the implementation of the San Pasqual Valley Groundwater Basin GSP, the Upper San Luis Rey Valley GSP, or the Borrego Springs Groundwater Subbasin GSP, the terms of which were implemented via the adjudication. To ensure groundwater resources are sustainably managed, SGMA gives SWRCB authority to protect groundwater resources through a process called "state intervention" when local agencies are unable or unwilling to sustainably manage their groundwater basins. Anyone who extracts groundwater within the unmanaged areas of the Upper San Luis Rey Valley Groundwater Subbasin, except de minimis extractors (who pump two afy or less for domestic purposes only), must file a groundwater extraction report and associated fees with SWRCB each year. To end the SWRCB management of the unmanaged areas of the Upper San Luis Rey Valley Groundwater Subbasin, the Upper San Luis Rey Valley GSP will have to demonstrate their ability and willingness to manage groundwater sustainably and address the issues that caused state intervention to occur (SWRCB 2025b). Although portions of the Upper San Luis Rey Valley Groundwater Subbasin are outside the management of a GSA, these unmanaged areas are under state intervention to monitor groundwater extraction status of the basin.

Dewatering could occur in areas with high water tables during construction activities associated with future development. However, dewatering would be short term and temporary and would not substantially decrease groundwater supplies. Regional growth and land development would occur on land overlying groundwater basins and rural aquifers outside of the SDCWA service area that were identified by the County of San Diego (2010b) as currently having an insufficient level of aquifer storage to ensure sustainability or were projected to have unsustainable storage levels with the 2011 General Plan buildout. As discussed above, 23 groundwater basins or aquifers were found to have insufficient level of aquifer storage under existing and 2011 General Plan buildout conditions. Although future growth would not interfere with implementation of a GSP, growth would exacerbate current unsustainable conditions of the 23 basins identified in the 2011 General Plan EIR and would cause a significant groundwater impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

As discussed above, in the state of California, methods of accommodating storm water in new transportation improvements financed all or in part with state or federal funds are governed by Caltrans design standards outlined in the Caltrans' Statewide Stormwater Management Plan. Caltrans standards also typically serve as the basis for municipal designs because the municipalities operate under similar NPDES permit requirements. Caltrans storm water management design principles related to transportation improvements are discussed in additional detail above (Caltrans 2016).Temporary BMPs are deployed to retain storm water during project construction. Permanent BMPs encompassing the Caltrans design principles would be incorporated into the permanent design of new transportation improvements. For 1 acre or greater new impervious area, permanent storm water detention and treatment facilities are required by Caltrans' Statewide Stormwater Management Plan to be sized to accommodate 85% of the runoff from a typical 24-hour storm event, which is referred to as a "design event" (Caltrans 2016). In the San Diego region, the design event is determined based on subregional rainfall contour mapping (County of San Diego 2020). Permanent BMPs are typically earthen basins or swales that allow detained runoff to infiltrate the soil and ultimately the underlying groundwater basin. Construction activities associated with transportation network improvements may require dewatering during construction activities. However, dewatering would be short term and temporary and would not substantially decrease groundwater supplies.

When new transportation improvements are constructed, the 85% detention requirement is applicable to the entire facility. When the transportation improvement is a redevelopment or an expansion of an existing facility, the impervious area detention requirements vary dependent upon the area of the new improvement. For highway projects of less than 1 acre and nonhighway transportation projects of less than 5,000 square feet, only the redeveloped area and the hydraulically inseparable flow must be detained. For projects larger than these thresholds, the entire impervious surface within the project limits must be detained and treated (Caltrans 2016). Comply with these requirements would ensure that storm water runoff resulting from transportation network improvements would be detained, which would allow runoff to infiltrate into the ground for groundwater recharge. Therefore, implementation of the transportation network improvements would not interfere substantially with groundwater recharge or groundwater sustainable management.

Transportation network improvements constructed between 2022 and 2035 on land overlying groundwater basins would consist primarily of active transportation network and Complete Corridor improvements. Active transportation network improvements would primarily focus on bikeway development, as shown in Figure 2-7 in Chapter 2, "Project Description." These improvements would cross land overlying the Coastal Plain of San Diego, Mission Valley, San Diego River Valley, San Dieguito Creek, and Santa Maria Vally Groundwater Basins. Complete Corridor improvements, shown in Figure 2-10, would cross land overlying Coastal Plain of San Diego, Mission Valley, San Diego River Valley, San Dieguito Creek, Upper San Luis Rey Valley, San Marcos Area, Santa Maria Vally, Upper San Luis Rey Valley, El Cajon Valley, and Escondido Valley Groundwater Basins. In addition, rail line improvements would occur through 2035, as summarized in Chapter 2, "Project Description," Table 2-7 in Central County Subregion. Rail line improvements would occur on land overlaying Coastal Plain of San Diego, El Cajon Valley, Escondido Valley, Mission Valley, San Diego River Valley, San Dieguito Creek, and San Marcos Area Groundwater Basins. None of these groundwater basins were determined to be of medium or high priority by DWR due to overdraft conditions except the Upper San Luis Rey Valley Groundwater Subbasin (a medium-priority basin). Transportation network improvements would be required to comply with the requirement of the Upper San Luis Rey Valley GSP to ensure sustainable management of groundwater. Although the Escondido Valley Groundwater Basin is not a medium or high priority basin determined by DWR, it was determined to have inadequate storage capacity under 2011 General Plan buildout conditions. Transportation network improvements occur on land overlying the Escondido Valley Groundwater Basin would be required to comply with the detention requirements discussed above to retain and infiltrate stormwater so that groundwater recharge would not be interfered.

All new or expanded transportation network improvements developed between 2022 and 2035 would be required by Caltrans design standards outlined in Caltrans' Statewide Stormwater Management Plan described above to detain storm water runoff from newly created impervious surfaces. Specifically, storm water runoff equivalent to 85% of that generated by a design storm event would be detained in storm water detention and treatment facilities and allowed to infiltrate the subsoil. This storm water detention and infiltration would allow runoff infiltration to groundwater and increase the potential for groundwater recharge. Complying with the exiting requirements would prevent any significant impacts on underlying groundwater basins or on groundwater sustainability. The groundwater impact would be less than significant.

2035 Conclusion

Transportation network improvements would have sufficient storm water detention facilities to prevent significant impacts on groundwater supplies or groundwater basin sustainability. The impact associated with transportation network improvements would be less than significant. However, regional growth and land use change between 2022 and 2035 could occur on land overlying basins that were identified by the county (County of San Diego 2010a) as currently having an insufficient level of aquifer storage to ensure sustainability or were projected to have unsustainable storage levels with 2011 General Plan buildout. Regional growth and land use change would, therefore, result in significant impacts on the groundwater supplies in basins and on groundwater basin sustainability in the year 2035. Therefore, this impact (WS-2) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. While there is a decrease in population forecasted, there would be an increase in housing units that may occur within the boundaries of the San Pasqual Valley and Upper San Luis Rey Valley basins, which have been designated as medium-priority groundwater basins by DWR. Dewatering could occur in areas with high water tables during construction activities associated with future development. However, dewatering would be short term and temporary and would not substantially decrease groundwater supplies. Future development that crosses land overlaying these groundwater basins would be subject to the approved San Pasqual Valley Groundwater Basin GSP and Upper San Luis Rey Valley GSP to ensure sustainable use of groundwater. Growth that crosses land overlaying the Upper San Luis Rey Valley Groundwater Subbasin unmanaged areas would be required to file groundwater extraction reports and associated fees with SWRCB each year for groundwater level monitoring. Forecasted growth that occurs in the Borrego Springs Groundwater Subbasin would be subject to the terms of the adjudication. Therefore, the potential water usage increase in these groundwater basins would not contribute to a significant impact through compliance with the approved GSPs and the adjudication.

Regional growth and land use change between 2036 and 2050 would continue to occur on land overlying groundwater basins. Outside the SDCWA service area, growth would occur on land overlying rural groundwater aquifers identified by the county as currently having an insufficient level of storage to ensure sustainability or were projected to have unsustainable storage levels with 2011 General Plan buildout. As discussed above, 23 groundwater basins or aquifers were found to have insufficient level of aquifer storage under existing and 2011 General Plan buildout conditions, such as the Escondido Valley and Poway Valley Groundwater Basins (County of San Diego 2010a). Because the underlying aquifers for these basins are being used at an unsustainable level, growth would exacerbate the current unsustainable condition characterizing these aquifers and would cause a significant groundwater impact.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Transportation network improvements constructed on land overlying groundwater basins between 2036 and 2050 would consist of active transportation, highway, and rail improvements. Active transportation improvements would consist of primarily bikeway development as shown in Figure 2-8 of Chapter 2, "Project Description," which would occur on land overlying the Coastal Plain of San Diego, Escondido Valley, Mission Valley, San Diego River Valley, San Dieguito Creek, Upper San Luis Rey Valley, San Mateo Valley, and San Onofre Valley Groundwater Basins. Complete Corridor improvements would occur along various highways (e.g., I-5, I-15, and SR 125), as shown in Figure 2-13. Complete Corridor improvements would occur on land overlaying Batiquitos Lagoon Valley, Coastal Plain of San Diego, El Cajon Valley, Escondido Valley, Mission Valley, San Diego River Valley, San Dieguito Creek, Upper San Luis Rey Valley, San Marcos Area, and Santa Maria Valley Groundwater Basins. Rail improvements would occur from 2035 to 2050, as summarized in Table 2-10 of Chapter 2, "Project Description." These improvements would occur on land overlying the Coastal Plain of San Diego, El Cajon Valley, Escondido Valley, Mission Valley, San Diego River Valley, San Dieguito Creek, Upper San Luis Rey Valley, and San Marcos Area Groundwater Basins. The Upper San Luis Rey River Groundwater Basin was determined to be of medium priority by DWR due to overdraft conditions. Implementation of transportation network improvements would be required

to comply with the requirement of the Upper San Luis Rey Valley GSP to ensure sustainable management of groundwater. Dewatering could occur in areas with high water tables during construction activities associated with transportation network improvements. However, dewatering would be short term and temporary and would not substantially decrease groundwater supplies. Although the Escondido Valley Groundwater Basin is not a medium or high priority basin determined by DWR, it was determined to have inadequate storage capacity under 2011 General Plan buildout conditions. Transportation network improvements occur on land overlying the Escondido Valley Groundwater Basin would be required to comply with the detention requirements discussed under the "2035" analysis to retain and infiltrate stormwater so that groundwater recharge would not be interfered.

All new or expanded transportation network improvements developed between 2036 and 2050 would be required to detain storm water runoff from newly created impervious services. Storm water runoff equivalent to 85% of that generated by a design storm event would be detained in earthen basins or swales and allowed to infiltrate the subsoil. This storm water detention and infiltration would be sufficient to prevent any significant impacts on underlying groundwater basins or on groundwater sustainability. The groundwater impact would be less than significant.

2050 Conclusion

Transportation network improvements would have sufficient storm water detention facilities to prevent significant impacts on groundwater supplies or groundwater basin sustainability. The impact associated with transportation network improvements would be less than significant. However, between 2036 and 2050, regional growth and land use change would have the potential to occur on land overlying 23 basins (e.g., the Escondido Valley and Poway Valley Groundwater Basins) that have been identified by the county as having inadequate storage and would have inadequate storage under the 2011 General Plan buildout conditions. Regional growth and land use change would therefore result in significant impacts on the groundwater supplies in basins and on groundwater basin sustainability in the year 2050. Therefore, this impact (WS-2) in the year 2050 is significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements could decrease groundwater supplies or interfere with groundwater recharge, impeding sustainable groundwater management. Climate change could directly affect groundwater supplies through saltwater intrusion, which contaminates potable groundwater along the coast (DWR 2025; SDCWA 2025c; Cole et al. 2024). Decreases in imported water and surface water from climate change could also affect groundwater, as decreases in other supplies result more groundwater withdrawals (Cole et al. 2024).

The proposed Plan's impacts would be worsened by climate change. The proposed Plan would increase population in the San Diego region, further increasing demand for groundwater, which is expected to be increasingly scarce with climate change. Furthermore, development for the proposed Plan would increase the extent of impervious surfaces, which could impede groundwater recharge (Bedsworth et al. 2018), decreasing the potential for more groundwater supplies in the future.

MITIGATION MEASURES

WS-2 SUBSTANTIALLY DECREASE GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THE PROPOSED PLAN WOULD IMPEDE SUSTAINABLE MANAGEMENT OF GROUNDWATER BASINS OR OBSTRUCT IMPLEMENTATION OF A SUSTAINABLE GROUNDWATER MANAGEMENT PLAN

2035 and 2050

Implement WS-1a and WS-1b described above.

WS-2 Implement Groundwater Measures to Ensure Sustainable Yield for Development Projects.
The County of San Diego, cities, and other local jurisdictions can and should ensure sustainable yield of groundwater basins during planning, design, and project-level CEQA review of development projects, by taking measures consisting of, but not limited to, the following:

- Participate in a groundwater-trading program to enable permanent transfer and potentially long-term and short-term lease of baseline-pumping allocations to allow groundwater users or new development to purchase needed groundwater allocation from others.
- Ensure that projects requiring continual dewatering facilities implement monitoring systems and long-term administrative procedures to ensure proper water management that prevents degrading of surface water and minimize, to the greatest extent possible, adverse impacts on groundwater for the life of the project. Comply with appropriate building codes and standard practices including the Uniform Building Code.
- Maximize, where practical and feasible, permeable surface area in existing urbanized areas to protect water quality, reduce flooding, allow for groundwater recharge, and preserve wildlife habitat. Minimize new impervious surfaces to the greatest extent possible, including the use of in-lieu fees and off site mitigation.
- Avoid designs that require continual dewatering where feasible. Where feasible, do not site transportation facilities in groundwater recharge areas to prevent conversion of those areas to impervious surface.

SIGNIFICANCE AFTER MITIGATION

2035 and 2050

Implementation of the proposed Plan would have the potential for increased population in areas overlying rural groundwater basins that have or are anticipated to have insufficient storage based on existing and projected groundwater withdrawals. The increase of population would impede groundwater basin sustainability. Forecasted growth and land use change would result in population increases in areas overlying the San Pasqual Valley, Upper San Luis Rey Valley, and Borrego Springs Groundwater Basins. These groundwater basins have been designated as medium or high priority by DWR due to overdraft conditions. Future development in these groundwater basins would be required to comply with the San Pasqual Valley Groundwater Basin GSP, the Upper San Luis Rey Valley GSP, and the Borrego Springs Groundwater Subbasin GSP, the terms of which were implemented via the adjudication. Compliance with the approved GSPs would ensure the sustainable use of groundwater in the San Pasqual Valley, Upper San Luis Rey Valley, and Borrego Springs Groundwater Basins.

However, regional growth and land development would occur on land overlying 23 groundwater basins and rural aquifers that were identified by the County of San Diego (2010b) as having an insufficient level of storage and would have insufficient storage under the 2011 General Plan buildout conditions. Future development in the boundaries of these groundwater basins would impede groundwater basin sustainability. Because it cannot be guaranteed that all future project-level groundwater impacts can be mitigated to a less-than-significant level, this impact (WS-2) would remain significant and unavoidable.

WS-3 REQUIRE OR RESULT IN THE RELOCATION OR CONSTRUCTION OF NEW OR EXPANDED WATER FACILITIES, THE CONSTRUCTION OR RELOCATION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL EFFECTS.

Analysis Methodology

This analysis provides information on the adequacy of existing water facilities to serve forecasted regional growth and land use change and proposed transportation network improvements. Water facilities are defined to include conveyance (of raw water), storage, treatment, and distribution facilities. Major water conveyance systems serving the region include the California Aqueduct and Colorado River Aqueduct, and the system includes other conveyance pipelines and associated infrastructure. A significant impact would occur if forecasted regional growth

and land use change or transportation network improvements and programs required construction, expansion, or relocation of water facilities that would result in significant physical impacts.

To evaluate potential impacts, areas where growth and land use change or transportation network improvements and programs are expected to occur are compared to the existing capacity of water supply facilities identified in Section 4.18.1, "Existing Conditions," to determine whether implementation of the proposed Plan would require the construction of new or expanded water supply facilities in order to maintain water supply. Impacts of construction activities for new or expanded facilities are analyzed as well. Because the timeframe analyzed extends to 2050, precise impact assessment is difficult due to uncertainty associated with the timing, location, and project-specific information. SDCWA's in-region storage includes the Olivenhain Reservoir, the San Vicente Reservoir, and Lake Hodges. Water treatment for almost all retail water service within the Project area is provided by an SDCWA member agency WTP, Twin Oaks Valley WTP, or MWD's Skinner WTP. This regionally treated water capacity provides flexible and robust local water treatment options and supports member agencies' constructed facilities.

Water demands associated with the proposed Plan's regional growth and land use change or transportation network improvements are discussed and then compared to the existing capacity of water facilities. A shortfall in capacity compared to future water demands would result in the need to construct additional facilities, resulting in new impacts.

The potential short- and long-term physical impacts of constructing and operating such facilities are described. Several existing water infrastructure projects and expansions are identified in the SDCWA 2024 Master Plan to meet current and projected regional water demand. Specific major infrastructure plans and projects proposed by the local water supply agencies are described, along with a general assessment of potential impacts that would occur.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Water usage within the SDCWA service area in 2020 was 463,128 af, and the forecasted demand for 2035 is 671,509 af (SDCWA 2021a). This represents an increase of 208,381 af. The SDCWA water supply infrastructure as identified in Table 4,18-9 would have sufficient capacity (722,793 af) to storage water to meet the forecasted water demand. However, the 2024 Master Plan indicates that delivery reliability is vulnerable during local seismic events (SDCWA 2025a). Infrastructure improvements and operational strategies associated with water delivery would be required to reduce risk and ensure system reliability 45.

The following projects have been identified in the 2024 Master Plan to be considered for implementation within the next 10 years through 2035 (SDCWA 2025a):

- **Pipeline 3/Pipeline 4 Conversion:** The project would involve relining of Pipeline 4 by enabling Pipeline 3 to operate as an alternative treated water transmission pipeline, allowing Pipeline 4 to be taken out of service during the rehabilitation process. The project would consist of the construction of interconnection facilities between Pipelines 3 and 4 that would allow either pipeline to convey treated or untreated water north of the Twin Oaks Valley WTP.

- **Additional Pump Drive and Transformer at the San Vicente Pump Station (SVPS):** The project would involve installation of an additional pump drive and transformer at SVPS to provide increased redundancy of pumps, eliminating the current vulnerability in the event of a mechanical failure of one or more station components.
- **Crossover Pipeline Rehabilitation Optimization:** The project would include rehabilitation of the Crossover Pipeline using structural lining technologies facilitated by the implementation of temporary provisions to provide alternative treated water supplies to member agencies impacted during the rehabilitation process, which would require extended shutdowns of the Crossover Pipeline. This project has been developed to mitigate risk and as a cost-saving alternative to the currently planned Crossover Pipeline Replacement project.
- **Aqueduct Isolation Facilities:** The project would consist of the construction of isolation facilities at pipeline locations at high risk of failure due to seismic or flooding events that would allow SDCWA to quickly reoperate the aqueduct system to provide continued deliveries during pipeline repair activities.
- **Rejection Tower Replacement:** The Second Aqueduct Rejection Tower serves as a critical hydraulic control facility, necessary to supply untreated water to the Twin Oaks Valley WTP and Crossover Pipelines. The aging facility is exhibiting corrosion that poses a risk of structural degradation. The project would replace the Rejection Tower with a new, seismically resistant structure.
- **Additional Power Source at SVPS:** The project would consist of installation of on-site backup power generation to provide redundancy at SVPS during commercial power outages.

Implementation of water facility improvements would result in short-term construction-related impacts. Construction-related impacts are typically controllable and can be mitigated below a level of significance through actions of the implementing agency, including adherence to existing regulations and BMPs. Additionally, the operation of new facilities may lead to long-term environmental impacts, such as those related to air quality and noise. Because details about the timing, location, and project-specific information for new water facilities are not known, there is no assurance the impacts from the construction or operation of new or expanded water facilities would be less than significant. Therefore, this impact is significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Transportation network improvements and programs are developed to accommodate the projected growth and increases in population, housing, and employment. New treatment and storage facilities would not be required to provide water for irrigated landscaping on proposed Plan transportation projects because the water demands of these projects are relatively minor.

New transportation network improvements with landscaping areas would require irrigation. For areas that existing irrigation infrastructure does not exist, new or extended distribution pipelines would be needed to extend the recycled water service for irrigation. The construction of new roadways, bicycle and pedestrian facilities, and transit facilities, and operation and maintenance of new facilities would require the use of water for construction activities, such as concrete mixing and dust control, and for operations activities and services, such as restrooms and drinking fountains. Implementation of these projects in rural areas (e.g., in the eastern part of San Diego County), where existing water transmission infrastructure is not available, could require construction or expanded water distribution facilities.

Construction and operation of recycled water distribution facilities and new or expanded water distribution facilities would result in short-term construction-related impacts. Construction-related impacts are typically controllable and can be mitigated below a level of significance through actions of the implementing agency, including adherence to existing regulations and BMPs. Additionally, the operation of new facilities may lead to long-term environmental impacts such as those related to air quality, noise, and traffic. Because details about the timing, location, and project-specific information for new water facilities are not known, there is no assurance the impacts from the construction or operation of new or expanded water facilities would be less than significant. Therefore, the impact would be significant.

2035 Conclusion

Regional growth and land use change and transportation network improvements under the proposed Plan would result in the construction of new or expanded water facilities. The impact of constructing some of these facilities would be significant. Therefore, this impact (WS-3) in the year 2035 is significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050. As noted above, the forecasted normal year water demand in 2035 is 598,474 af (Table 4.18-12). The estimated normal year demand for 2050 is 578,043 af, a decrease of 20,431 af. Therefore, it is not anticipated that new facilities or expansion of existing water facilities would be needed to serve the projected growth. However, some uncertainty exists for 2050 water supplies during a single dry year and multiple dry years in the region as discussed in Impact WS-1. This uncertainty exists because the SDCWA's and MWD's UWMPs (SDCWA 2021a; MWD 2021) have a planning horizon of 2045, and the most recent SDCWA 2024 Master Plan (SDCWA 2025a). Because there may be insufficient regional water supplies to meet regional water demand in 2050 in the event of a dry year or multiple dry years, there would be potential for the construction and operation of new facilities, such as water storage and recycled water facilities, to meet the 2050 water demand. Construction-related impacts are typically controllable and can be mitigated below a level of significance through actions of the implementing agency, including adherence to existing regulations and BMPs. Additionally, the operation of new facilities may lead to long-term environmental impacts, such as those related to air quality, noise, and traffic. Because details about the timing, location, and project-specific information for new water facilities are not known, there is no assurance the impacts from the construction or operation of new or expanded water facilities would be less than significant. Therefore, the impact would be significant.

Transportation Network Improvements and Programs

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

By 2050, most of the transportation network improvements and programs associated with the proposed Plan would be in place and operational. The availability of water facilities to serve the water demand in 2050 in the

event of a dry year or multiple dry years is uncertain. In some locations, new distribution pipelines would be needed to extend recycled water service to new projects where such service is not available, and their construction and operation would cause environmental impacts. Construction-related impacts are typically controllable and can be mitigated below a level of significance through actions of the implementing agency, including adherence to existing regulations and BMPs. Additionally, the operation of new facilities may lead to long-term environmental impacts such as those related to air quality and noise. Because details about the timing, location, and project-specific information for new water facilities are not known, there is no assurance the impacts from the construction or operation of new or expanded water facilities would always be less than significant. Therefore, the impact would be significant.

2050 Conclusion

Implementation of regional growth and land use change and transportation network improvements and programs would result in the construction of new or expanded water facilities. The impact of constructing some of these facilities would likely be significant. Therefore, this impact (WS-3) in the year 2050 is significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements would result in potential relocation or construction of new or expanded water facilities. Climate change impacts that decrease water supplies, such as reduced precipitation, increased drought and evapotranspiration, and changes in snowpack melt timing (CEP and SDF 2015), may require construction of new water facilities in the future, such as reservoirs or treatment plants. Additionally, climate change impacts such as increased occurrence and unpredictability of wildfire and flooding could damage water facilities, requiring upgrades or new facilities to replace them. The proposed Plan's impacts would be worsened by climate change.

MITIGATION MEASURES

WS-3 REQUIRE OR RESULT IN THE RELOCATION OR CONSTRUCTION OF NEW OR EXPANDED WATER FACILITIES, THE CONSTRUCTION OR RELOCATION OF WHICH COULD CAUSE SIGNIFICANT ENVIRONMENTAL EFFECTS.

2035 and 2050

Implement Mitigation Measures WS-1a, WS-1b, and WS-2, described above.

WS-3 Implement Measures for New or Expanded Water Facilities.

During planning, design, and project-level CEQA review of development projects and water projects, MWD, SDCWA, the County of San Diego, cities, and other local jurisdictions can and should apply necessary mitigation measures to avoid or reduce significant environmental impacts associated with the construction or expansion of new or expanded water facilities. Mitigation measures should be implemented by the water management agencies directly responsible for the construction of new or expanded water facilities. Significant environmental impacts requiring mitigation may consist of but are not limited to air quality, noise, traffic, biological resources, cultural resources, paleontological resources, tribal cultural resources, energy, greenhouse gas emissions, hydrology and water quality, and water supply.

SIGNIFICANCE AFTER MITIGATION

2035 and 2050

Implementation of the proposed Plan through 2035 would result in significant impacts associated with the construction or expansion of water facilities. Mitigation Measures WS-1a, WS-1b, WS-1c, and WS-2, would reduce the impacts of project-specific construction or expansion of water facilities through reducing water demands, and through project-level planning, design, and CEQA mitigation measures. Mitigation Measure WS-3 would require project-specific mitigation to be implemented for new or expanded water facilities. Because the details about the

timing, location, and project-specific information for new and expanded water facilities are not known, it cannot be guaranteed that future project-level impacts can be mitigated to a less-than-significant level by Mitigation Measure WS-3.

Implementation of the proposed Plan from 2036 through 2050 would result in decreased water demand during normal years. However, the availability of water facilities to serve the water demand in 2050 in the event of a dry year or multiple dry years is uncertain. Implement of the proposed Plan from 2036 through 2050 may require construction of water storage and recycled water facility to meet the 2050 water demand. Construction activities would result in significant impacts. Implementation of Mitigation Measures WS-1a, WS-1b, WS-1c, WS-2, and WS-3 would reduce the impacts of project-specific construction or expansion of water facilities through project-level planning, design, and CEQA mitigation measures. However, it cannot be guaranteed that future project-level impacts can be mitigated to less-than-significant level due to uncertainty related to the timing, location, and project-specific information of the new or expanded water facilities.

As discussed above, this impact (WS-3) would remain significant and unavoidable.

4.18.5 Cumulative Impacts Analysis

C-WS-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS TO WATER SUPPLY

The geographic scope for the water supply cumulative analysis is the state of California, the Lower Colorado River Basin, and Northern Baja California. The large geographic scope is appropriate because growth in these areas would have the potential to increase water demand in the region in a manner that exceeds existing entitlements and recourse, which would influence water supply to meet the demand of the proposed Plan.

The projection approach is used in the cumulative analysis of water supply. A projection approach uses growth projections contained in other adopted plans and/or environmental documents in the cumulative geographic scope to determine if existing water supplies and facilities are adequate to meet projected regional demand or if general patterns of regional urbanization, growth, and land use changes and infrastructure development would result in the need for new or expanded water treatment and distribution facilities.

The plans and studies relied on and considered for the cumulative analysis include the SCAG 2024-2050 RTP/SCS and EIR (SCAG 2024a, 2024b); the SDCWA 2024 Master Plan (SDCWA 2025a); Water Supply for Baja California: Economic – Engineering Analysis for Agricultural, Environmental, and Urban Demands (Medellin-Azuara et al. 2009); California Water Action Plan (CNRA 2014); California Water Plan 2023 Update (DWR 2023b); SDCWA's 2020 Urban Water Management Plan (SDCWA 2021a); MWD's 2020 Urban Water Management Plan (MWD 2021); Municipal Water District of Orange County's (MWDOC) 2020 Urban Water Management Plan (MWDOC 2021); Imperial Irrigation District's 2012 Integrated Regional Water Management Plan (IID 2012); 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan (IMPLAN 2013); Colorado River Basin Water Supply and Demand Study (Bureau of Reclamation 2012); and Lower Colorado River Interim Shortage Criteria and associated EIS (Bureau of Reclamation 2007). Although many of these documents do not have accompanying environmental analysis, they provide valuable information regarding the current and future status of water supply throughout the cumulative region.

Within the geographic scope of the analysis are two groundwater basins designated by DWR as medium priority and one basin designated as high priority consistent with the SGMA. The GSPs for the medium-priority basins to allow future maintenance of a sustainable yield from these basins and have been approved by DWR. A GSP has been prepared for the high-priority basin, the Borrego Springs Groundwater Subbasin, by BVGSA. The Borrego Springs Groundwater Subbasin GSP establishes a sustainability goal to halt the overdraft condition in the subbasin by bringing the groundwater demand in line with a sustainable yield of 5,700 afy by 2040 (BVGSA 2019). A settlement agreement to adjudicate groundwater rights in a manner consistent with the GSP was approved on April 8, 2021. (See *Borrego Water District v. All Persons who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin No. 7.024-01*) [Superior Court of the State of California, County of Orange 2021].)

In its most recent general plan update (County of San Diego 2011), the County of San Diego examined groundwater basins and fractured-rock aquifers across the county to determine which were being exploited in an unsustainable manner as evidenced by insufficient aquifer storage. The County of San Diego 2011 General Plan Update EIR Appendix D (County of San Diego 2010a) found that 23 groundwater basins or aquifers, had insufficient groundwater storage under preexisting or existing conditions and would have insufficient groundwater storage under 2011 General Plan buildout conditions.

Cumulative impacts on water supply are evaluated in two steps. First, the combined effects of the proposed Plan and adopted plans are considered to determine whether their impacts are collectively (i.e., cumulatively) significant. If the cumulative impact is significant, the proposed Plan's incremental contribution is then assessed to determine whether it is cumulatively considerable, which would be considered a significant cumulative impact associated with the Plan. Specifically, significant cumulative impacts related to water supply would occur if the Plan would result in a considerable contribution to a cumulatively significant.

Impacts of the Proposed Plan

Reasonably foreseeable existing and future regional water supplies would be adequate to meet regional water demands associated with growth and land use change and transportation network improvements in 2035. Beyond 2045, however, adequate water supplies to meet regional needs cannot be confirmed. This uncertainty means that there may be insufficient regional water supplies in 2050, resulting in a significant impact (Impact WS-1). Also, the Proposed Plan would result in localized significant impacts because of regional development and land use changes within the boundaries of groundwater basins that are currently being pumped at unsustainable levels. Impacts associated with groundwater supplies in 2035 and 2050 would be significant (Impact WS-2). Furthermore, forecasted growth and land use change and implementation of transportation network improvements in 2035 and 2050 would require construction of new water facilities or the expansion of existing facilities. The impacts associated with water facilities construction would be significant (Impact WS-3).

Impacts of Projections in Adopted Plans

Although a majority of the documents and plans available for cumulative analysis do not have an associated environmental analysis, they do provide anticipated water supply and demand for the region and consider the adequacy of existing supplies and plans for future supplies to meet future needs. These regional plans also offer resource management strategies and objectives for ensuring future water supply, such as reduce water demand, improve operational efficiencies, increase and diversify water supply, and provide resource stewardship. Due to recent drought conditions throughout the state of California, many water districts and other water suppliers have implemented a variety of drought responses that could influence the availability of water supplies and water deliveries as previously anticipated in local and regional plans.

The SCAG 2024-2050 RTP/SCS EIR (SCAG 2024b) found that the projected growth from the 2024-2050 RTP would contribute to increased water demand and associated water infrastructure. The EIR also identified the potential for the SCAG 2024-2050 RTP/SCS to contribute to cumulatively considerable demand on water resources and water infrastructure. Furthermore, the increased demand resulting from the 2024-2050 RTP's influence on growth could only be partially mitigated via measures beyond the purview of SCAG to implement, meaning that significant and unavoidable water supply impacts would result.

Agricultural operations and population growth in California and Northern Baja California have placed pressure on natural resources, particularly water supply. It is of significant concern to the California–Baja California border, where 50% of the entire United States–Mexico border population lives. The conditions of northern Baja region, consisting of an arid climate, prominent agriculture, fast-growing border cities, and water-sensitive ecosystems, indicate that future water supplies will be a problem (Medellin-Azuara et al. 2009).

The SDCWA 2020 UWMP reports that, for normal years through 2045, no water supply shortages would occur if supplies are developed as planned. Under the parameters assumed in the multiple dry year analysis, no shortages would be experienced. Diversified supplies, consisting of water transfer agreements, local surface water,

desalination, and entitlements to MWD supplies, assure adequate water even during drought cycles through 2045. After 2045, there are no projections (SDCWA 2021a).

The County of San Diego 2011 General Plan Update EIR determined that groundwater basins and fractured-rock aquifers in the county were currently being pumped at levels that resulted in insufficient water level recovery. Such use is unsustainable over time and would be a significant impact to the groundwater resources.

The 2024 SDCWA Master Plan identifies that the existing infrastructure and water supplies are anticipated to meet future demand and the Quantification Settlement storage is adequate. However, delivery reliability is vulnerable during local seismic events (SDCWA 2025a). The environmental document for the 2024 Master Plan (SDCWA 2025a) determined that the 2024 Master Plan projects may require small volumes of water to support construction-related activities, including dust suppression. Existing water supplies are adequate to support these limited project needs. Long-term operations of these facilities would maintain regional water supply and would not create any new water demands (SDCWA 2025b).

The MWD 2020 UWMP reports that MWD has supply capabilities that would be sufficient to meet projected demands from 2020 through 2045 under the single dry year and multiple dry year conditions (MWD 2021). There are no projections post-2045.

The MWDOC 2020 UWMP concludes that the MWDOC service area (the region served by MWDOC is in Orange County and includes 26 cities and water districts) will have sufficient existing and planned supplies to meet full service demands under every water year hydrologic scenario through 2045 by depending on MWD deliveries to compensate for any local shortfalls. The plan also discusses potential sources of water supply that are being investigated to diversify the region's water supply portfolio, such as water transfers and exchange and ocean water desalination (MWDOC 2021).

The Imperial Irrigation District 2012 Integrated Regional Water Management Plan states that the Imperial Region is faced with significant water resources challenges, most of which relate to the availability of imported water from the Colorado River. System and on-farm efficiency conservation measures have been formulated to enable IID to meet the reduction requirement of net annual consumptive use of Colorado River water of 408,000 af by 2026. These measures are designed to maintain historical levels of agricultural productivity and MCI water supplies; however, when forecasted renewable energy and other demands are added to the future demand, the historical amount would no longer be sufficient (IID 2012).

The 2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan lists the low water availability in the region as a critical environmental issue, which is a limiting factor for future development. The plan states that water demand in 2025 will be greater than 80% of the available water reserves. Strategies for improvements listed in the plan include promoting investment to ensure capacity of reuse and infiltration of treated water and installing sea water desalination plants (IMPLAN 2013).

The Colorado River Basin Water Supply and Demand Study found that the Colorado River Basin faces a range of potential future imbalances between supply and demand and states that addressing such imbalances will require diligent planning and cannot be resolved through any single approach or option. Instead, an approach that applies a wide variety of ideas at local, state, regional levels, and portfolio exploration demonstrated that implementation of a broad range of options can reduce the basin's resource vulnerability and improve the system's resiliency to dry hydrologic conditions while meeting increasing demands in the basin and adjacent areas receiving Colorado River water (Bureau of Reclamation 2012).

The Lower Colorado River Interim Shortage Criteria and associated EIS (Bureau of Reclamation 2007) represent a plan to share water supply shortages among Lower Colorado River water users, including SDCWA. The EIS prepared for the interim shortage criteria projects Lower Colorado River water supply and demand conditions through 2050. It also analyzes and considers trade-offs between the frequency and magnitude of shortages, and describes potential effects of water shortage in Lake Powell and Lake Mead, and on water supplies, power production, recreation, and other environmental resources. Ongoing drought conditions and the potential for water supply shortages prompted discussions and negotiations focused on how to conserve additional basin

water supplies. The federal government led multiple efforts to improve the basin's water supply outlook, resulting in collaborative agreements in 2003 and 2007 and in the 2019 drought contingency plans (DCPs) for the Upper and Lower Colorado River Basins. The Lower Basin DCP is designed to require Arizona, California, and Nevada to curtail deliveries and thereby contribute additional water to Lake Mead storage at predetermined "trigger" elevations. It is also designed to create additional flexibility to incentivize voluntary conservation of water to be stored in Lake Mead, thereby increasing lake levels (Congressional Research Service 2024).

As described in many of the plans above, often there is an expectation that future water supply could be met given certain parameters, such as proposed water supply projects being constructed and operational, entitlements being fully granted, and water use reduction measures being successful. These factors are highly uncertain and, in some cases, such as rainfall and drought conditions, are uncontrollable by the water agencies, districts, or suppliers.

Cumulative Impacts and Impact Conclusions

2035

A significant cumulative impact in the year 2035 would result if the proposed Plan's incremental effect would be cumulatively considerable when considered along with the effects from adopted plans within the state of California, the Lower Colorado River Basin, and Northern Baja California region.

As described above, significant water supply impacts were not identified for proposed Plan's growth and land use changes and transportation network improvements in 2035. However, the SCAG 2024-2050 RTP/SCS was found to contribute to cumulatively considerable demand on water resources. Although many of the regional water supply planning documents anticipate being able to adequately meet future water demand in the near term, their ability to do so is based on the planned water supply projects being constructed, implementation of conservation measures, and water entitlements being granted. Furthermore, a number of additional indeterminate factors could affect future water supply, including meteorological conditions, climate change, cost and use of energy, potential policy and permitting restrictions, endangered species protections, and demographic unknowns. The proposed plan, together with the regional and statewide plans, would have the potential to increase the demand for water in a manner that exceeds existing entitlements and resources. The combined impacts of these regional and statewide plans, and the proposed Plan's 2035 water supply impacts would be significant regarding increased demands on existing water supplies such that they could be inadequate to serve future demand, and new or expanded water supplies or entitlements would be needed by 2035.

Regional growth and land development would result in population increases on land overlying three groundwater basins (the San Pasqual Valley Groundwater Basin, the Upper San Luis Rey Valley Subbasin, and Borrego Springs Groundwater Subbasin), requiring preparation of GSPs due to their medium- or high-priority designation by DWR. Water agencies would be required to comply with the terms of the San Pasqual Valley Groundwater Basin GSP, the Upper San Luis Rey Valley GSP, and the Borrego Springs Groundwater Subbasin GSP, the terms of which were implemented via the adjudication. However, regional growth and land development would also occur on land overlying groundwater basins identified by the county as having insufficient storage (County of San Diego 2010b). Because groundwater impacts of regional growth and land use change would be significant in the year 2035, they would contribute to a significant cumulative groundwater impact.

Construction of new or expanded facilities would cause short-term construction impacts that are typically controllable through adherence to regulations and BMPs, as well as operations and maintenance impacts. There is no assurance the impact from new or expanded water facilities would be less than significant for all projects. The SCAG 2024-2050 RTP/SCS was also found to contribute to cumulatively considerable demand on associated water supply infrastructure. Thus, the cumulative impact related to construction of new or expanded water treatment or distribution facilities, when added to proposed Plan impacts, would be significant in 2035.

Because water supply impacts throughout the state of California, the Lower Colorado River Basin, and northern Baja region by 2035 would be significant, and because the proposed Plan's incremental water supply impacts are significant, cumulative water supply impacts are significant, and the proposed Plan's incremental water supply impacts are cumulatively considerable and therefore significant Impact C-WS-1).

2050

The cumulative analysis presented above for year 2035 would be applicable to year 2050. In addition, water planning documents prepared by water agencies in the region have no projections for water supplies after 2045. Significant water supply and facility impacts were identified for proposed Plan growth and land use changes, as well as for transportation network improvements in 2050. When considered along with the water supply impacts of regional and statewide plans, the incremental impacts from the proposed Plan would also result in significant cumulative impacts on water supplies in 2050.

Regional growth and land use change between 2036 and 2050 would continue to occur on land overlying three of the groundwater basins designated as medium and high priority by DWR and would be required to comply with the terms of the GSPs and adjudication, reducing potential impacts to groundwater supply. However, regional growth and land use change would also occur on land overlying groundwater basins and fractured-rock aquifers identified by the county as having an insufficient level of aquifer storage to ensure sustainability (County of San Diego 2010b). Forecasted regional growth between 2036 and 2050 would exacerbate the current unsustainable conditions characterizing these aquifers and would cause a significant cumulative groundwater impact.

Construction of new or expanded facilities would cause short-term construction impacts that are typically controllable through adherence to regulations and BMPs, as well as operations and maintenance impacts. There is no assurance the impact from new or expanded water facilities would be less than significant for all projects. The SCAG 2024-2050 RTP/SCS was also found to contribute to cumulatively considerable demand on associated water supply infrastructure. Thus, the cumulative impact related to construction of new or expanded water treatment or distribution facilities, when added to proposed Plan impacts, would be significant in 2050.

Because water supply impacts throughout the state of California, the Lower Colorado River Basin, and northern Baja region by 2050 would be significant, and because the proposed Plan's incremental water supply impacts are significant, cumulative water supply impacts are significant, and the proposed Plan's incremental water supply impacts are also cumulatively considerable and therefore significant. (Impact C-WS-1).

MITIGATION MEASURES

C-WS-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS TO WATER SUPPLY.

Mitigation Measure WS-1a requires implementation of water conservation measures for transportation projects. Mitigation Measure WS-1b requires implementation of water conservation measures as part of land development projects. Mitigation Measure WS-1c requires development projects to verify adequate water supply is available to satisfy projected water demands. Implementation of Mitigation Measures WS-1a, WS-1b, and WS-1c would not guarantee the reduction of proposed Plan impacts associated with the availability of water supplies to a less-than-significant level in year 2050. Therefore, the proposed Plan's incremental contributions to the cumulative water supply impacts in year 2050 would remain cumulatively considerable after mitigation is incorporated.

To reduce environmental impacts resulting from land use changes and transportation facility development on the sustainable yield of groundwater basins, Mitigation Measure WS-2 requires the County of San Diego, cities, and other local jurisdictions to ensure sustainable yield of groundwater basins during planning, design, and project-level CEQA review of development projects. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, the proposed Plan's incremental contributions to the cumulative impacts to groundwater resources in the years 2035 and 2050 would remain cumulatively considerable after mitigation is incorporated.

To reduce environmental impacts resulting from the construction of new or expanded water treatment of distribution facilities, Mitigation Measure WS-3 requires all jurisdictions and agencies with responsibility for the construction of new or expanded water treatment and conveyance facilities to apply mitigation measures to reduce significant environmental impacts associated with these facilities during the CEQA review process for individual facilities. However, it cannot be guaranteed that all future project-level impacts can be mitigated to a less-than-significant level. Therefore, the proposed Plan's incremental contributions to the cumulative impacts from new or expanded water facilities in the years 2035 and 2050 would remain cumulatively considerable after mitigation is incorporated.

4.19 WILDFIRE

This section evaluates the wildfire impacts of the proposed Plan.

4.19.1 Existing Conditions

Wildfire, as defined in California Public Resources Code (PRC) Sections 4103 and 4104, is any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property, or resources. Existing wildfire conditions in the San Diego region, including current land uses, understanding of wildfire behavior and controlling factors, wildfire conditions and history, fire hazard designations, and the anticipated effects of climate change as it relates to wildfire, are described below.

REGIONAL LAND USE CHARACTERISTICS

Historical Land Use and Regional Growth Patterns

The San Diego region is located in the southwestern corner of the United States and is bordered by Mexico to the south, the Pacific Ocean to the west, Orange and Riverside counties to the north, and Imperial County to the east. The San Diego region encompasses over 4,260 square miles and includes 18 incorporated cities, 17 tribal governments, and unincorporated San Diego County.

Existing Land Use

There are 2,725,648 acres in the San Diego region. Approximately 799,266 acres (30%) are developed with various land uses including residential, commercial/office, and industrial or generally support human activities, such as agriculture, military use, recreation, and infrastructure (transportation, communication, utilities) (SANDAG 2021a). Open space and parks account for the largest land area, with 1,374,188 acres, or about 50% of the region. Vacant land (524,010 acres) accounts for another 19%, and the remaining approximately 1% of the area is covered by water (28,184). See Section 4.11, "Land Use and Planning," of this EIR for additional information regarding the existing land uses in the region.

WILDFIRE BEHAVIOR AND CONTROLLING FACTORS

Natural Factors Affecting Wildfire Behavior

Wildfire behavior is a product of several variables—primarily weather, vegetation, topography, and human influences—that intermix to produce local and regional fire regimes that affect how, when, and where fires burn (NPS 2017). The continuity of fuels, expressed in both horizontal and vertical components, is also a determinant of wildfire potential and behavior. Topography is important because it affects the movement of air, which in turn affects the movement of fire, over the ground surface. The slope and shape of terrain can change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather affects the probability of wildfire and is a strong determinant of fire behavior. Temperature, humidity, and wind (both short and long term) affect the severity and duration of wildfires (County of San Diego 2023a). The fire regime in any area is defined by several factors, including fire frequency, intensity, severity, and area burned (USFS 2023). Each of these is important for understanding how the variables that affect fire behavior produce fire risks. Fire frequency refers to the number of fires that occur in a particular area over a given period of time, fire intensity refers to the speed at which fire travels and the heat that it produces, fire severity involves the extent to which ecosystems and existing conditions are affected or changed by a fire, and area burned is the size of the area burned by wildfire. Development patterns contribute to wildfire risk in California as well.

Human Influence on Wildfire

Human influence on wildfire is broad and can be substantial. It includes direct influences, such as the ignition and suppression of fires, and indirect influences through climate change and alterations in land use patterns (refer to "Anticipated Effects of Climate Change" below for further discussion of the indirect effect of climate change on wildfire).

Anthropogenic influence more directly corresponds to fire frequency (i.e., number of ignitions) than size of a burn because humans are responsible for most wildfire ignitions. Once started, fire spread and behavior become a function of fuel characteristics, terrain, and weather conditions (Syphard et al. 2008). Human-induced wildfire ignitions can change fire regime characteristics in two ways: (1) changing the distribution and density of ignitions, and (2) changing the seasonality of burning activity (Balch et al. 2017). A study of wildfires across the United States for the 20-year period between 1992 and 2012 showed that 82% of wildfires during that period were started by human causes (Balch et al. 2017), whereas in California specifically, humans accounted for starting approximately 95% of wildfires (Syphard et al. 2007; Syphard and Keeley 2015). In 2022, more than half of all fires in California were caused by humans, and when miscellaneous and undetermined causes are included, that figure increases to 97% (CAL FIRE 2022).

Human ignitions include a multitude of sources, including escapes from debris and brush-clearing fires, electrical equipment malfunctions, campfire escapes, smoking, fire play (e.g., fireworks), vehicles, and arson. Consequently, areas near human development, especially in the wildland urban interface (WUI) or in areas near campgrounds and roads, generate fires at a more frequent rate than very remote or urban areas (Syphard et al. 2007; Mann et al. 2016; Balch et al. 2017). Circumstances in California have made the environment particularly vulnerable to human-caused fires with expansion of the WUI, which are areas where development is located close to open space or to lands with native vegetation and habitat prone to brush fires, and introduction of more people in areas susceptible to wildfire at all times of the year. A 2018 study indicates that the number of houses in the WUI increased nationwide by 41% between 1990 and 2010 (Radeloff et al. 2018).

Human Health Effects of Wildfire

In addition to vegetation and structural loss, wildfires also affect public health. Fire-related injuries and deaths are likely to increase as wildfires occur more frequently. Wildfires can also be a significant contributor to air pollution. When communities are located in areas that burn frequently, wildfire smoke, which can travel for miles, has a negative effect on human health (Black et al. 2017). Wildfire smoke contains numerous toxic and hazardous pollutants that are dangerous to breathe and can worsen lung disease and other respiratory conditions (County of San Diego 2023a). Exposure to particulate matter generated by wildfire events can result in significant health problems, including aggravated asthma, increased susceptibility to respiratory infections, and heart attacks and arrhythmias in people with heart disease (Sacramento Metropolitan Air Quality Management District 2018).

WILDFIRE HISTORY AND CONDITIONS IN THE SAN DIEGO REGION

In the last two decades, wildfires in California have increased in number of fires ignited, number of acres burned, and number of structures destroyed. Since 2020, the average annual cost of fire suppression in California in areas under state jurisdiction has averaged more than $818 million per year (CAL FIRE 2024a). In January 2025, the Los Angeles area experienced several wildfires that, based on preliminary estimates, have resulted in somewhere between $95 billion and $164 billion in total property and capital losses, making them the most expensive wildfires in State history (UCLA 2025). Of the nine wildfires in Los Angeles, the three largest (Palisades, Eaton, and Hughes Fires) burned more than 48,000 acres and damaged and destroyed more than 18,200 structures (CAL FIRE 2025a).

Of the top 20 largest California wildfires, 2 have been in San Diego County (CAL FIRE 2024b). According to the San Diego County Multi-Jurisdictional Hazard Mitigation Plan, San Diego County's worst wildfire occurred in October 2007 (County of San Diego 2023a). The fire started on October 21, 2007, near the United States–Mexico border and burned throughout the county until the last fire was fully contained on November 9, 2007. At the height of the fire event, there were 7 fires burning in San Diego County. The fires destroyed 369,000 acres (13% of the county), 2,670 structures, 239 vehicles, and 2 commercial properties. There were 10 civilian deaths, 23 civilian

injuries, and 10 firefighter injuries. The cost of fire damage exceeded $1.5 billion. In October 2003, the second-worst wildfire in the history of San Diego County destroyed 332,766 acres of land and 3,239 structures, caused 17 deaths, and resulted in approximately $450 million in damage. San Diego County's third-worst wildfire in history, known as the Laguna Fire, resulted in the loss or destruction of 383 homes and 1,200 other structures in 1970 (County of San Diego 2023a). In 2023 (the most recent year reported), more than $4 million of wildfire-related damage occurred in San Diego County alone (CAL FIRE 2023).

In 2018, the West Fire burned 505 acres in the county, and in 2020, the Valley Fire burned 76,067 acres in the county and damaged or destroyed 75 structures. The Valley Fire was intensified by dry vegetation, rugged terrain, and high temperatures and winds. According to the California Department of Forestry and Fire Protection (CAL FIRE) Redbook, there have been 1,113 wildfires recorded in San Diego County between 2015 and 2021, which translates to an average of 159 wildfires per year in the county during this timeframe (County of San Diego 2023a). More recently, there were 239 recorded wildfires in 2022 and 220 recorded wildfires in 2023 in San Diego County, of which three were greater than 300 acres in size and are considered large wildfires by CAL FIRE (CAL FIRE 2022, 2023).

Several factors, including climate, native vegetation, topography, and development patterns, make the San Diego region susceptible to wildfires. The San Diego region's topography consists of a semiarid coastal plain and rolling highlands, which, when fueled by shrub overgrowth, occasional Santa Ana winds, and high temperatures, creates an ever-present threat of wildfire. In addition, extended droughts, characteristic of the region's Mediterranean climate and exacerbated by climate change, result in large areas of dry vegetation that provide fuel for wildland fires. Extreme weather conditions, such as high temperatures, low humidity, or winds of extraordinary force, may cause an ordinary fire to expand into one of massive proportions (County of San Diego 2023a). Wildfire risk tends to be high in locations with dense vegetation, dry conditions, and steep slopes. As such, there is a high wildfire risk in the hills and mountains in the eastern San Diego region where sparse development intermingles with fire-prone native vegetation. However, urban areas can also be at risk where the unique mesa-canyon topography of coastal San Diego puts development in proximity to steep slopes and dense vegetation. Typically, vegetation absorbs rainfall and reduces runoff. However, after wildfire burns the vegetation that anchors soil to the hillside, chances increase that a flash flood, mudflow, or landslide could occur in the event of heavy rains because the ground is no longer able to absorb water (FEMA 2020).

Common causes of fires in San Diego County include equipment use, vehicle fires spreading into wildlands, accidental starts from warming or debris fires, and arson. The predominant cause of wildfire changes from year to year in the State Responsibility Area (SRA) within both San Diego County and the State. When considered over the period of 2019 through 2023 and excluding miscellaneous and undetermined causes, most fires in the State SRA were caused by debris burning, followed by vehicles and equipment use, whereas the majority of fires within San Diego County SRA (approximately 59%) were caused by vehicles followed by equipment use and arson (Table 4.19-1).

Table 4.19-1 Causes of Fire in San Diego County and the State within the SRA (2019–2023)

Year	Area	Total	Arson	Campfire	Debris Burning	Electrical Power[1]	Equipment Use	Light-ning	Misc.	Playing with Fire	Rail-road	Smok-ing	Undetermined	Vehicle
2023	San Diego	220	26	1	16	14	24	4	63	3	0	1	43	25
2023	Statewide	3,236	359	47	591	176	348	197	819	32	2	27	321	310
2022	San Diego	239	22	11	12	6	25	6	73	7	0	1	51	25
2022	Statewide	3,333	358	86	488	228	370	89	824	55	6	44	435	350
2021	San Diego	208	22	9	13	16	20	16	26	3	0	3	49	31
2021	Statewide	3,054	386	104	476	284	329	152	269	54	6	60	515	419
2020	San Diego	179	11	2	19	8	28	1	20	7	0	0	56	27
2020	Statewide	3,501	320	110	579	335	381	264	326	80	6	47	604	449
2019	San Diego	128	2	2	17	5	14	9	14	2	0	2	48	13
2019	Statewide	3,086	284	122	468	304	354	195	280	52	3	41	607	376

Notes: [1] Identified as Power Generation/Transmission/Distribution in the 2023 Redbook.

Sources: CAL FIRE 2019a, 2020, 2021, 2022, 2023.

FIRE HAZARD DESIGNATIONS

Wildfire prevention is a shared responsibility among federal, state, and local agencies, including local city and county fire departments, as well as landowners and residents. Federal lands are classified as Federal Responsibility Areas. Most of the unincorporated areas of the San Diego region are classified as SRAs, which are areas where fire prevention is the responsibility of CAL FIRE. Incorporated areas, and some unincorporated lands, are classified as Local Responsibility Areas (LRAs). Fire prevention and response in these areas are typically addressed by city and county fire departments, occasionally with assistance from CAL FIRE. CAL FIRE identifies Fire Hazard Severity Zones (FHSZs) at the local, state, and federal level that cover all fire-prone areas in the state, regardless of land ownership or responsibility.

CAL FIRE defines and maps FHSZs to identify the potential fire hazard severity expected in different areas within the State, as required by PRC Sections 4201–4205. FHSZs are determined based on an area's vegetation, topography (slope), weather (including winds), crown fire potential, and ember production and movement potential. FHSZs include the classifications Very High, High, and Moderate in areas where the State is responsible for fire protection (i.e., SRAs) (CAL FIRE 2025b). CAL FIRE released updated maps of FHSZs within SRAs for public comment in 2022. These maps show an overall reduction in lands within High FHSZs and an increase in lands within the Very High FHSZ designation in the San Diego region. These designations have been adopted and became effective on April 1, 2024.

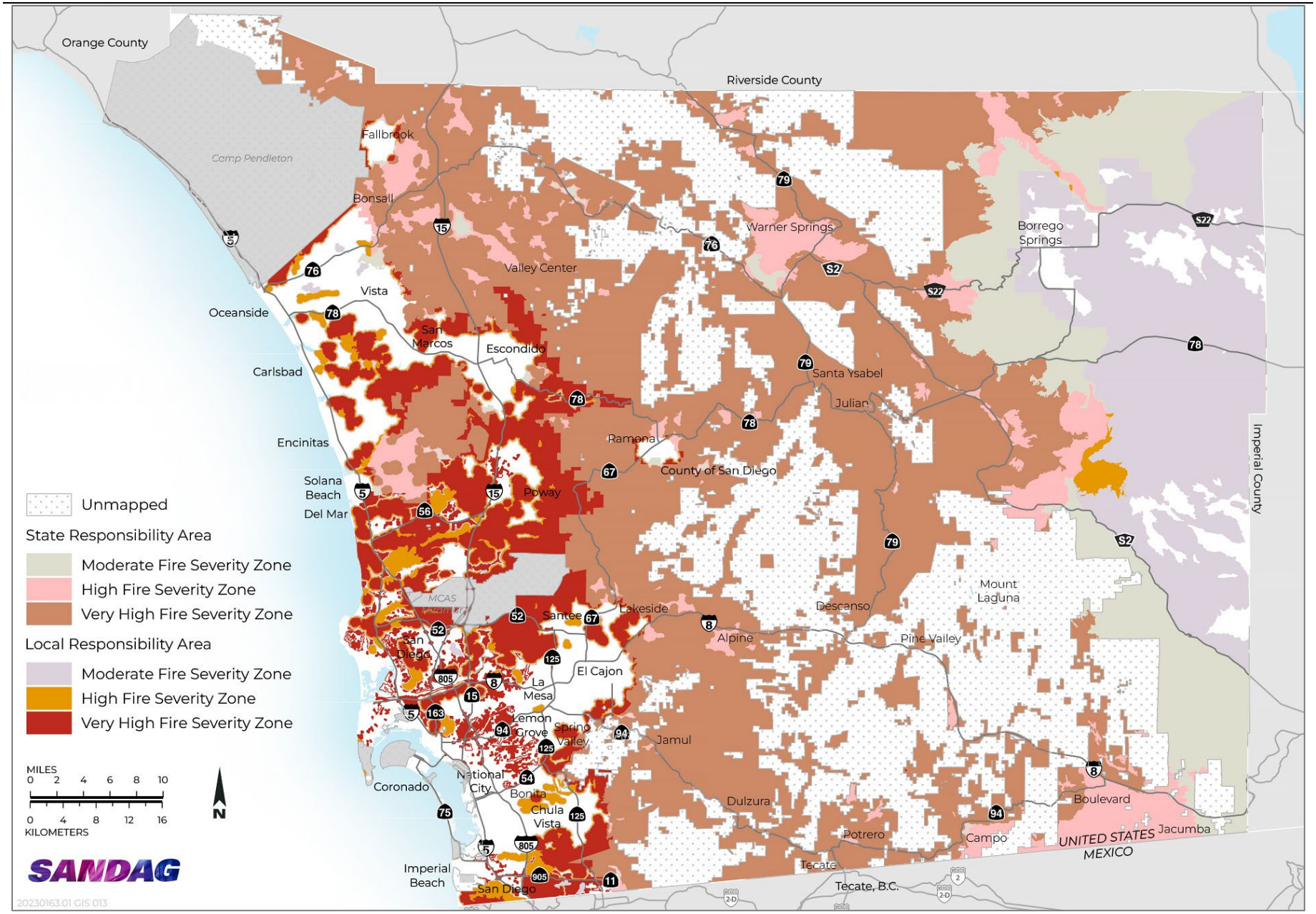
The majority of the San Diego region is within an SRA for fire prevention and suppression (Figure 4.19-1). FHSZ maps also identify Moderate, High, and Very High FHSZs in areas where local agencies are responsible for fire protection (i.e., LRAs) (CAL FIRE 2025c). In the San Diego region, local fire protection is provided by fire protection districts and county service areas in unincorporated parts of the county, and by city fire departments and joint powers agreements within city boundaries. Local fire protection is discussed in more detail in Section 4.15, "Public Services and Utilities," while existing emergency response and evacuation in the region is discussed in Section 4.9, "Hazards and Hazardous Materials," of this EIR. Approximately 45% of the San Diego region consists of areas that are designated as a Very High or High FHSZ (Table 4.19-2).

Table 4.19-2 Wildfire Risk in the San Diego Region

FHSZ Designation	Acres	Percent of San Diego Region
Very High	1,084,766	40
High	128,991	5
Moderate	184,568	7
Unmapped	1,328,813	49
Total	2,727,138	100

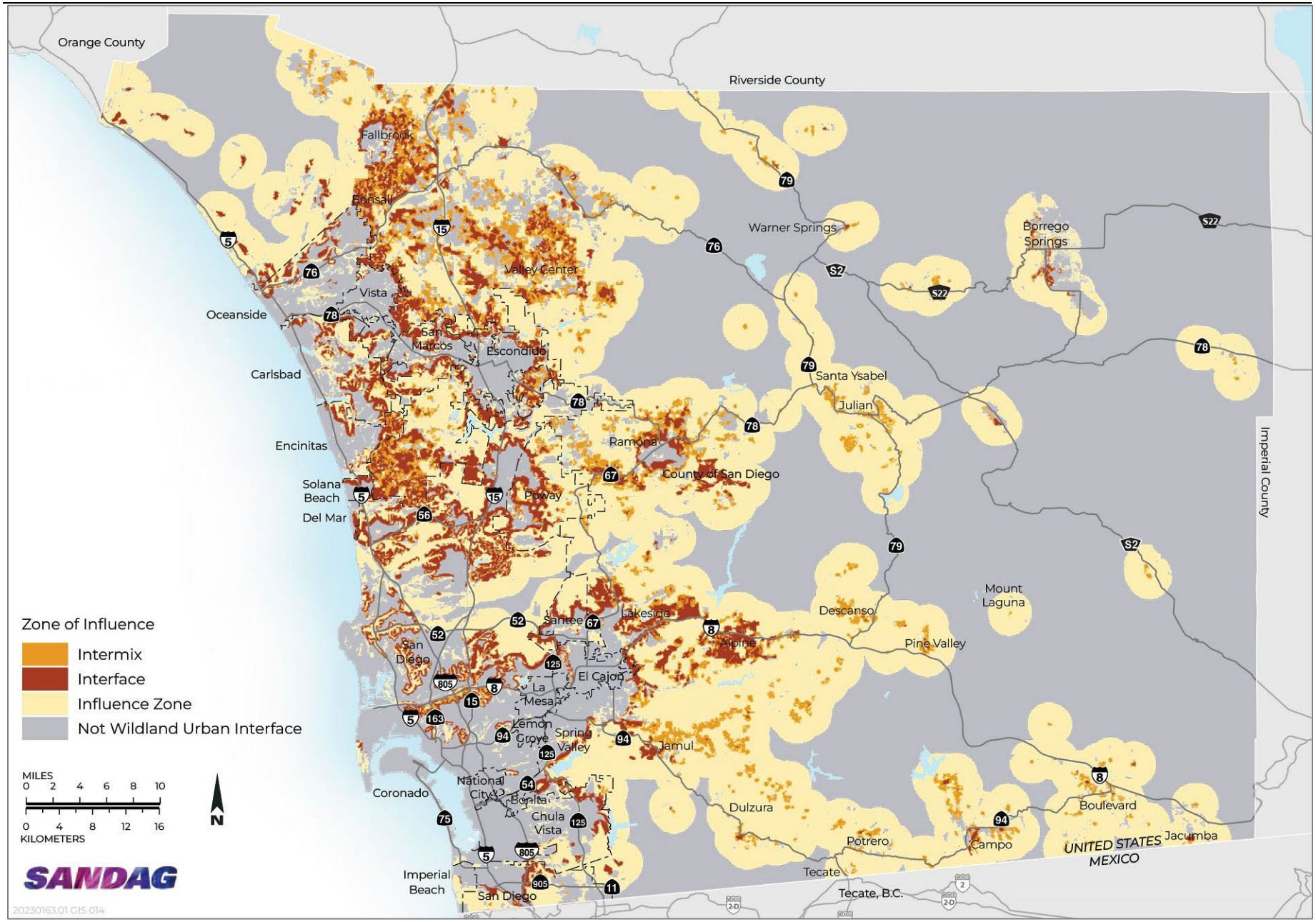
Source: CAL FIRE 2025b and 2025c, and SANGIS 2025

The San Diego region also includes several areas within the WUI. The WUI is defined as an area where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels (CAL FIRE 2018). These conditions create an environment in which fire can move readily between structural and vegetation fuels. The WUI consists of areas designated as either Wildland Urban Interface, Wildland Urban Intermix, or Wildfire Influence Zones (CAL FIRE 2018). Interface zones are areas where housing with a density greater than 0.05 dwelling units per acre is adjacent to vegetation that can burn in a wildfire. Intermix zones are areas of more sparsely populated development than Interface areas but are interspersed in areas dominated by wildland vegetation subject to wildfire. Both Interface and Intermix zones are in areas designated as Moderate, High, or Very High FHSZs. In addition, the Wildfire Influence Zone includes all areas with wildfire susceptible vegetation up to 1.5 miles from Interface or Intermix zones (CAL FIRE 2019b). Approximately 1,137,410 acres, or 42%, of the San Diego region is within the WUI (see Figure 4.19-2).



Source: Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.19-1 Fire Hazard Severity Zones within State and Local Responsibility Areas



Source: Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.19-2 Wildland Urban Interface, Wildland Urban Intermix, or Wildfire Influence Zones

Furthermore, the California Public Utilities Commission (CPUC) maintains a high fire threat district (HFTD) map. The CPUC HFTD Map includes three fire-threat areas (CPUC 2018):

- Tier 3 consists of areas on the CPUC Fire-Threat Map where there is an extreme risk from wildfires associated with overhead utility power lines or overhead utility power-line facilities also supporting communication facilities.
- Tier 2 consists of areas on the CPUC Fire-Threat Map where there is an elevated risk from wildfires associated with overhead utility power lines or overhead utility power-line facilities also supporting communication facilities.
- Zone 1 consists of Tier 1 High-Hazard Zones (HHZs) from the US Forest Service (USFS) and CAL FIRE joint map of tree mortality HHZs. Tier 1 HHZs are in direct proximity to communities, roads, and utility lines, and are a direct threat to public safety.

ANTICIPATED EFFECTS OF CLIMATE CHANGE

Wildfire risk is determined by several factors: wind speeds, drought conditions, available wildfire fuel (i.e., dry vegetation), past wildfire suppression activity, and expanding wildland-urban interface (Westerling 2018). In California, wildfires are a significant threat, particularly in recent years as the landscape responds to climate change and decades of fire suppression. It is estimated that since 1985, more than 50% of the increase in the area burned by wildfire in the western United States is attributable to anthropogenic climate change (Abatzoglou and Williams 2016). Climate change is expected to result in a longer and less predictable fire season and drive factors that may worsen wildfires, such as increased temperatures more frequent and intense dry Santa Ana winds, drier autumns, and increased development and presence of dead fuels (Kalansky et al. 2018). All wildfires (those initiated by both natural and human-made sources) tend to be larger under drier atmospheric conditions and when fed by drier fuel sources (Balch et al. 2017).

In addition, climate change has led to exacerbation of wildfire conditions during a longer period of the year as the spring season has warmed—driving an earlier spring snowmelt—and as winter precipitation has decreased. Furthermore, wildfire activity is closely related to temperature and drought conditions, and in recent decades, increasing drought frequency and warming temperatures have led to an increase in wildfire activity (Schoennagel et al. 2017). A significant change in the global character of wildland fire in recent decades is the increase in high-intensity wildfires described as 'megafires.' The rise of megafires – categorized as more than 100,000 acres (> 40,000 hectares) – on public lands in the western US and other regions have signaled widespread conflagrations caused by changes in climate, land use, and human fire habits (Christiansen et al. 2024). In particular, the western United States, including California, has seen increases in wildfire activity in terms of area burned, number of large fires, and fire season length (Abatzoglou and Williams 2016). These conditions have resulted in the largest, most destructive, and deadliest wildfires on record in California's history. Nineteen of the 20 largest wildfires in California have happened since 2000 - 10 of which took place in 2020 or later (CAL FIRE 2024b). Eight of the 20 most destructive California wildfires have taken place in 2020 or later, resulting in more than 25,000 structures burned (CAL FIRE 2025d), and 13 of the top 20 deadliest wildfires have occurred since 2000 (CAL FIRE 2025e). These megafires, exacerbated by climate change, have the potential to inflict major, long-lasting effects on highway transportation infrastructure systems. The 2020 Labor Day wildfires that occurred in Washington, Oregon, and California burned nearly 3.5 million acres (1.4 million hectares) over a period of 15 days, 117 days, and 112 days respectively, resulting in huge expenses for reopening vital roadway infrastructure and losses from reduced commerce and tourism. Total anticipated costs incurred from the 2020 Labor Day megafires for both temporary and permanent repairs included over $24 million for hazard trees, $17.5 million for slope-rock scaling, $43 million for structural damage, and over $3 million for traffic control (Christiansen et al. 2024).

Due to its semiarid climate, shrubland, and the nearby presence of the Santa Ana winds, the San Diego region is susceptible to and experiences wildfire. The high temperatures and droughts caused by climate change could increase wildfire intensity and frequency. With hotter temperatures and possibly fewer rainy days in the coming decades, vegetation could become drier. As a result, it is likely that the San Diego region will see an increase in the

frequency and intensity of fires and acreage burned, making the region more vulnerable to devastating fires, like the ones seen in 2003 and 2007. The fire season could also become longer and less predictable, with larger and more catastrophic fires that could make firefighting efforts more costly (County of San Diego 2023a).

Wildfires also result in secondary impacts. A major consequence of wildfires is post-fire flooding (which is also expected to increase in the San Diego region because of the increase in extreme precipitation events), mudslides, and debris flows. Flooding may result in mudslides and debris flows from vegetation loss and excess runoff that washes away soils destabilized from wildfire (Bedsworth et al. 2018). These flows could also pose a hazard to people and structures in high fire-risk areas, can occur with little warning, and can exert extreme force on objects in their path. Post-wildfire debris flows also represent a significant hazard for transportation infrastructure. The location and intensity of post-fire debris movements are difficult to predict, and threats can persist for several years until the watershed is restored to pre-fire conditions. This situation would likely worsen as climate change forecasts predict increasing numbers of wildfire burned areas and extreme precipitation intensity (Li and Chester 2023).

4.19.2 Regulatory Setting

FEDERAL LAWS, REGULATIONS, PLANS, AND POLICIES

International Fire Code

Published by the International Code Council, the International Fire Code (IFC) is a model upon which the current California Fire Code (24 CCR Section 9) is based (ICC 2023). The IFC is the nationally recognized code that sets standards and requirements to safeguard against the threat that fires may pose to public health, safety, and the environment. The IFC, when adopted by a jurisdiction, regulates the planning, construction, and maintenance of development in all areas.

National Fire Plan

The Department of the Interior's National Fire Plan is intended to guarantee an appropriate federal response to severe wildland fires, reduce fire impacts on rural communities, and ensure sufficient firefighting capacity in the future (USDOI 2000). The plan's Rural Fire Assistance program called for enhancing the fire protection capabilities of rural fire districts and safe and effective fire suppression in the "wildland-urban interface," which led to the further definition and identification of WUIs in the *Federal Register* (USDA 2001) and the use of the term in other federal and state plans. The program promotes close coordination among local, state, tribal, and federal firefighting resources by conducting training, purchasing equipment, and providing prevention activities on a cost-shared basis. CAL FIRE incorporates concepts from this plan into local fire planning efforts.

The Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA 2000) (Public Law 106-390) provides the legal basis for FEMA mitigation planning requirements for state, local, and tribal governments as a condition of receiving national post-disaster Hazard Mitigation Grant Program (HMGP) funding. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions and replacing them with a new set of requirements that emphasize the need for state, local, and tribal entities to closely coordinate mitigation planning and implementation efforts. Section 322 of DMA addresses mitigation planning at the state and local levels. It identifies requirements that allow HMGP funds to be used for planning activities and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. States and communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds.

US Geological Survey Landslide Hazard Program

The US Geological Survey created the Landslide Hazard Program (LHP) under the requirements of Public Law 106-113. The primary objective of the LHP is to reduce long-term losses from landslide hazards by improving the understanding of the causes of ground failure and suggesting mitigation strategies. The federal government takes

the lead role in funding and conducting this research, whereas the reduction of losses due to geologic hazards is primarily a state and local responsibility.

Executive Order 13855

On December 2018, Executive Order (EO) 13855 was issued, directing the US Department of Agriculture (USDA) and US Department of the Interior (DOI) to implement policies to improve forest management practices by reducing hazardous fuel loads, mitigating fire and postfire risks, and ensuring the safety of local communities. The departments were directed to collaborate with state, local, and tribal entities in creating a comprehensive wildfire strategy prioritizing the highest-risk lands. The EO contained acreage targets for fuel reduction and directives regarding the quantities of lumber to be thereby produced. Acreage targets were also provided for postfire treatments to maintain water quality and prevent erosion. The order also prioritizes proper maintenance of public roads vital to conducting management activities.

Infrastructure Investment and Jobs Act and Five-Year Wildfire Monitoring, Maintenance, and Treatment Plan

The Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law (BIL), was signed into law in November 2021 and authorized $1.2 trillion for repairing and modernizing the nation's transportation and infrastructure. Included in the BIL is more than $5 billion for DOI and USDA to reduce the risk of catastrophic wildfires. Specifically, Section 40803(j)(1) of the BIL directed DOI and USDA to establish a Five-Year Wildfire Monitoring, Maintenance, and Treatment Plan (Five-Year Plan) that:

- Reduces severe fire risk on 10 million acres of Federal land, Tribal forest lands, and rangeland that pose a high wildfire hazard.
- Develops a process for prioritizing treatments in areas and communities at the highest risk of catastrophic wildfire in direct partnership with state and local entities and affected stakeholders.
- Leverages public-private partnerships; prioritizes projects that have been evaluated under the National Environmental Policy Act (NEPA) and are ready for implementation; streamlines subsequent projects based on existing statutory or regulatory authorities; and develops interagency teams to increase coordination and efficiency under NEPA.

As required under the BIL, the DOI and USDA published the first iteration of the Five-Year Plan in April 2022. The Five-Year Plan complements USDA's 10-Year Strategy in emphasizing fire-prone DOI and Tribal lands comprising up to 30 million additional acres. These include rangelands and other vegetative ecosystems that pose serious fire risks. Together, USDA's 10-Year Strategy and DOI's Five-Year Plan will inform the development of a joint USDA and DOI long-term, outcome-based monitoring, maintenance, and treatment strategy that is required by Section 40803(j)(2) of the BIL by 2026 (DOI and USDA 2022).

STATE LAWS, REGULATIONS, PLANS, AND POLICIES

CAL FIRE Strategic Plan

CAL FIRE's Strategic Plan is intended to provide CAL FIRE with appropriate guidance for adequate statewide fire protection of SRAs, in accordance with PRC Section 4130 (CAL FIRE 2024c). The plan addresses both wildfire prevention and suppression activities, and management of the State's forests to help meet California's climate change goals. The goals of the plan include improving CAL FIRE's core capabilities, enhancing internal operations, ensuring employee health and safety, and building an engaged, motivated, innovative workforce.

California Public Resources Code Sections 4125–4137 (Responsibility for Fire Protection)

This statute requires the State Board of Forestry and Fire Protection to classify all state lands in which the financial responsibility of preventing and suppressing fires is primarily the responsibility of the State, or SRAs, and therefore under the jurisdiction of CAL FIRE. All state lands that are not classified as an SRA are considered to be the

responsibility of local or federal agencies. SRAs include lands capable of producing forest products; lands covered by timber, brush, undergrowth, or grass that protect the soil from erosion; and lands used for range or forage purposes.

SRA Minimum Fire Safe Regulations

CCR Title 14, Division 1.5, Section 1270 et seq. establishes CAL FIRE's basic wildland fire protection standards for new development and is applicable in all SRAs in California—areas where CAL FIRE is responsible for wildfire protection. Title 14 establishes the minimum standards required for fire protection for emergency access, fuel modification (including a defensible space of 100 feet around structures), setback to property line, signage, and water supply. To comply with the standards, proposed development must include road and street networks that provide safe access for emergency wildland fire equipment and civilian evacuation concurrently. Newly constructed buildings and roads must post clearly visible signs, including names and contact numbers visible from the roadway. Emergency water for wildfire protection must be available and accessible in specified quantities. Finally, to reduce the intensity of a wildfire, strategic siting of fuel modification and greenbelts must meet specific requirements.

California Fire Code

The California Fire Code is Part 9 of the California Building Code (CBC), which is set forth in CCR Title 24. The California Fire Code is created by the California Building Standards Commission, is based on the IFC created by the International Code Council, and is revised and republished every 3 years. Chapter 49 of the California Fire Code defines requirements for building construction and vegetation and fuel management within WUI areas. In the WUI, all new buildings must comply with California Fire Code standards, which define building construction requirements intended to reduce wildfire exposure. In addition, buildings within the WUI must comply with California laws and regulations that require maintenance of a "defensible space" of 100 feet from structures (PRC Section 4291, CCR Section 1299.03).

California Public Resources Code Sections 4201–4204 (Fire Hazard Severity Zones)

This statute directs CAL FIRE to map and periodically review FHSZs within SRAs based on determining factors, such as fuel loading, slope, and fire weather and winds. These FHSZs are the basis for identifying requirements for fire protection found in other regulations, such as the California Fire Code.

California Public Resources Code Section 4427 (Fire Hazard Area Equipment Restrictions)

PRC Section 4427 includes fire safety statutes that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with internal combustion engines; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on site for various types of work in fire-prone areas.

California Public Utilities Commission General Order 95: Rules for Overhead Transmission Line Construction

California Public Utilities Commission General Order 95 was initially adopted in 1941 and was most recently updated in 2009 for Southern California. General Order 95 governs the design, construction, and maintenance of overhead electrical lines. Rule 31.1 generally states that design, construction, and maintenance of overhead electrical lines should be done in accordance with accepted good practices for the given location conditions known at the time by the persons responsible for the design, construction, and maintenance of the overhead electrical lines and equipment. Rule 35 of General Order 95 (Tree Trimming) requires the following:

- four feet radial clearance for any conductor of a line operating at 2,400 volts or more, but less than 72,000 volts
- six feet radial clearance for any conductor of a line operating at 72,000 volts or more, but less than 110,000 volts
- 10 feet radial clearance for any conductors of a line operating at 110,000 volts or more, but less than 300,000 volts
- 15 feet radial clearances for any conductor of a line operating at 300,000 volts or more

Senate Bill 1241 (Kehoe) of 2012

Senate Bill (SB) 1241 (Chapter 311, Statutes of 2012) requires cities and counties to address fire risk in SRAs and Very High FHSZs in the safety element of their general plans. It also requires cities and counties to make certain findings available regarding fire protection and suppression services before approving a tentative subdivision map or parcel map designated as a Very High FHSZ or that are in an SRA. The bill also resulted in amendments to Appendix G of the CEQA Guidelines to include questions related to fire hazard impacts for projects located in or near lands classified as SRAs and Very High FHSZs.

Senate Bill 901 (Dodd) of 2018

Senate Bill 901 (Chapter 626, Statutes of 2018) mandates all electric utilities to prepare and submit wildfire mitigation plans that describe the utilities' plan to prevent, combat, and respond to wildfires affecting their service territories. CPUC reviews and refines the plans before implementing and enforcing them. SB 901 was enacted in response to the devastating 2017 wildfire season, in which wildfires caused by faulty Pacific Gas & Electric utility lines burned over 4,000 square miles of land across the state.

Senate Bill 190 (Dodd) of 2019

SB 190 (Chapter 404, Statutes of 2019) includes a specific requirement for the state fire marshal to develop best models for defensible space and additional standards for home hardening and construction materials to increase the resilience of communities. The bill also requires the state fire marshal to develop training programs for WUI fire safety building standards compliance for local building officials, builders, and fire service personnel.

Senate Bill 456 (Laird) of 2021

SB 456 (Chapter 387, Statutes of 2021) codified a statewide wildfire preparedness and response plan that includes prescribed burning, forest stewardship, and restoration in burned areas. Specifically, the bill renamed the Forest Management Task Force to the Wildfire and Forest Resilience Task Force and required the task force, including the agency and the department, on January 1, 2022, to develop a comprehensive implementation strategy to track and ensure the achievement of the goals and key actions identified in the action plan. The bill also requires the implementation strategy to address specified actions, including increasing the pace and scale of wildfire and forest resilience activities. Finally, the bill requires the task force, on or before January 1, 2026, and every 5 years thereafter, to update the action plan.

Assembly Bill (Wood) 2551 of 2018

Assembly Bill (AB) 2551 (Chapter 638, Statutes of 2018) authorizes CAL FIRE to collaborate with private landowners on controlled burns to reduce wildfire fuel. Specifically, the bill would authorize CAL FIRE to enter into an agreement with the owner or any other person who has legal control of any property, any public agency with regulatory or natural resource management authority over any property that is included within any wildland, or any nonprofit organization to conduct joint prescribed burning operations that serve the public interest and are beneficial to the state.

Assembly Bill 38 (Wood) of 2019

AB 38 (Chapter 391, Statutes of 2019) requires the Office of Emergency Services and CAL FIRE to develop best practices for community-wide resilience against wildfires through home hardening, defensible space, and other measures. In addition, sellers of real property located in a High or Very High FHSZ will be required to provide specified documentation to the buyer that the property is in compliance with the wildfire protection measures.

Assembly Bill 836 (Wicks) of 2019

AB 836 (Chapter 393, Statutes of 2019) establishes the Wildfire Smoke Clean Air Centers for Vulnerable Populations Incentive Pilot Program, which provides retrofits of air ventilation systems to create community clean air centers in order to mitigate the adverse public health impacts of wildfires and other smoke events. The program will prioritize areas with a high cumulative smoke exposure burden.

Assembly Bill 3074 (Friedman) of 2020

AB 3074 (Chapter 259, Statutes of 2020) imposes additional fuel reduction requirements on a person who owns, leases, controls, operates, maintains, or builds an occupied dwelling or structure in, upon, or adjoining wild lands within a Very High FHSZ. This bill requires additional fuel clearance between 5 and 30 feet around the structure, and an ember-resistant zone within 5 feet of the structure based on regulations promulgated by the State Board of Forestry and Fire Protection. Application of these regulations would be the responsibility of the local agency that has jurisdiction over the property and CAL FIRE.

Assembly Bill 642 (Friedman) of 2021

AB 642 (Chapter 375, Statues of 2021) requires the Director of CAL FIRE to identify areas in the State as moderate and High FHSZs, in addition to Very High FHSZs. This bill also further expands the use of prescribed burning, particularly by growing and incorporating cultural burning by tribal communities. The bill streamlines the permitting system for burning permits and creates a prescribed burning training center to increase the number of skilled practitioners. It would require the CAL FIRE to work more closely with Native American tribes, tribal organizations, and cultural practitioners, in part by creating a Cultural Burning Liaison within the department.

General Plan Safety Element Wildfire Requirements

California Government Code Section 65302(g) requires general plans to include a safety element that addresses risks from natural hazards, including wildland and urban fires. As of January 1, 2014, safety elements are required to be reviewed and updated as necessary to address the risk of fire for land classified as state responsibility areas, as defined in PRC Section 4102, and land classified as very high fire hazard severity zones, as defined in PRC Section 51177 (Government Code Section 65302[g][3]). Government Code Section 65302(g)(3) specifies several requirements for inclusion in the review and update of the safety element, including the consideration of the LCI's most recent publication of "Fire Hazard Planning, General Plan Technical Advice Series". At least 90 days prior to the adoption or amendment of their safety element, counties that contain SRAs and cities or counties that contain Very High FHSZs must submit their safety element to the board of Forestry and Fire Protection (Government Code Section 65302.5[b]). The board reviews the safety element and responds to the city or county with its findings and recommended changes regarding the uses of land and policies in SRAs or Very High FHSZs that will protect life, property, and natural resources from unreasonable risks associated with wildfires, and the methods and strategies for wildfire risk reduction and prevention within SRAs or Very High FHSZs (Government Code Section 65302.5[b][3]). The county board of supervisors or city council must consider the Board of Forestry and Fire Protection's recommendations and respond to the board in writing if any of the recommendations are not accepted.

Office of Land Use and Climate Innovation Fire Hazard Planning Technical Advisory

The Governor's Office of Planning and Research (OPR) (now the Office of Land Use and Climate Innovation [LCI]) first published the *Fire Hazard Planning Technical Advisory* in 2015 to provide a robust planning framework for addressing fire hazards, reducing risk, and increasing resilience across California's diverse communities and landscapes. The *Fire Hazard Planning Technical Advisory* provides guidance on wildfire-related policies and programs that local agencies should include in their general plans and is also intended to assist city and county planners in discussions with professionals from fire hazard prevention and mitigation, disaster preparedness, and emergency response and recovery agencies as they work together to develop effective fire hazard policies for the general plan. Consistent with the requirements of SB 901 (Dodd 2018) and AB 2911 (Friedman 2018), as codified in Government Code Section 65040.21, LCI updated the technical advisory in 2022 to include specific land use strategies to reduce fire risk to buildings, infrastructure, and communities. LCI prepared the 2022 update in consultation with CAL FIRE, the State Board of Forestry and Fire Protection, and other fire and safety experts.

Office of Land Use and Climate Innovation Wildland-Urban Interface Planning Guide

In August 2022, OPR (now LCI) published the Wildland-Urban Interface Planning Guide (WUI Planning Guide) (OPR 2022). The WUI Planning Guide is intended to provide guidance to planners, wildfire mitigation practitioners, and other professionals and decision-makers regarding the variety of options available to support WUI planning in California. WUI planning tools are those that can be adopted and implemented as standalone tools or as integral

components of plans, local ordinances, agreements, programs, or other activities. The tools included in the guide are intended to provide short- and long-term options for addressing the WUI and associated wildfire hazard or risk at the home, parcel, neighborhood, and community (or district) level.

California's Wildfire and Forest Resilience Action Plan

The Governor's Forest Management Task Force (Task Force) was established in 2018 to introduce a holistic, integrated approach towards forest management. The Task Force's purpose is to develop a framework for establishing healthy and resilient forests that can withstand and adapt to wildfire, drought, and climate change. In January 2021, the Task Force published *California's Wildfire and Forest Resilience Action Plan* (Action Plan), which was the result of over two dozen interagency and stakeholder-led workgroups. The Action Plan includes recommendations addressing various aspects of the state's forest health and wildfire crisis and serves as a roadmap for implementing the Agreement for Shared Stewardship of California's Forest and Rangelands (Shared Stewardship Agreement) with USFS under USDA, and for aligning the state's efforts with other federal, local, tribal, regional and private organizations (California Forest Management Task Force 2021).

California Adaptation Planning Guide

In June 2020, the California Governor's Office of Emergency Services published the latest update to its Adaptation Planning Guide (OES 2020). The guide is intended to assist local governments, regional entities, and climate organizations with incorporating best practices and current science and research into their adaptation plans to address climate change, including wildfire.

LOCAL LAWS, REGULATIONS, PLANS, AND POLICIES

County of San Diego Code of Regulatory Ordinances Sections 96.1.004 and 96.1.4907

The San Diego County Fire Authority and Fire Districts, in partnership with CAL FIRE, the US Bureau of Land Management (BLM), and USFS, is responsible for the enforcement of defensible space inspections. Inspectors from CAL FIRE are responsible for the inspection of properties to ensure an adequate defensible space has been created around structures. If violations of the program requirements are noted, inspectors provide a list of required corrective measures and provide a reasonable timeframe to complete the task. If the violations still exist upon reinspection, the local fire inspector will forward a complaint to the County for further enforcement action. This is part of the County Consolidated Fire Code, which was last updated in 2023 (described in greater detail below).

County of San Diego Consolidated Fire Code

The County of San Diego Consolidated Fire Code (County of San Diego 2023b) adopts, by reference, the California Fire Code (24 CCR Title 9) every 3 years when it is revised and republished. The Consolidated Fire Code consists of local fire protection district ordinances that have modified the fire code portion of the State Building Standards Code and any County of San Diego modification to the fire districts' amendments. The purpose of the Consolidated Fire Code is to protect public health and safety, which includes permit and inspection requirements for the installation, alteration, and repair of new and existing fire protection systems, and penalties for violations of the Consolidated Fire Code. The Consolidated Fire Code provides the minimum requirements for access, water supply and distribution, construction type, fire protection systems, and vegetation management. The County Fire Code applies to all new construction and to any alterations, repairs, or reconstruction, except as otherwise provided for in Title 9, Division 6, Chapter 1 of the County Code. The current version of the Consolidated Fire Code became effective on April 13, 2023.

San Diego County Multi-Jurisdictional Hazard Mitigation Plan

The federal Disaster Mitigation Act of 2000 (Public Law 106-390) requires all local governments to create disaster plans in order to qualify for hazard mitigation funding. The Multi-Jurisdictional Hazard Mitigation Plan is a countywide plan that identifies risks and ways to minimize damage by natural and human-made disasters. The plan is a comprehensive resource document that serves many purposes, such as enhancing public awareness, creating a decision tool for management, promoting compliance with state and federal program requirements, enhancing local policies for hazard mitigation capability, and providing interjurisdictional coordination. The plan

evaluates risks associated with coastal storms, erosion, tsunamis, dam failures, earthquakes, floods, rain-induced landslides, liquefaction, structure/wildland fires, and human-caused hazards. It also provides goals, objectives, and actions to reduce impacts from these hazards (County of San Diego 2023a).

The San Diego County Multi-Jurisdictional Hazard Mitigation Plan contains annexes that provide specific details and actions related to hazard mitigation for the following local jurisdictions within San Diego County: San Diego County, City of Carlsbad, City of Chula Vista, City of Coronado, City of Del Mar, City of El Cajon, City of Encinitas, City of Escondido, City of Imperial Beach, City of La Mesa, City of Lemon Grove, City of National City, City of Oceanside, City of Poway, City of San Diego, City of San Marcos, City of Santee, City of Solana Beach, City of Vista, Alpine Fire Protection District, Otay Water District, Padre Dam Municipal Water District, Rainbow Municipal Water District, San Diego County Water Authority, San Diego Unified Port District, Sweetwater Authority, and Vista Irrigation District (County of San Diego 2023a).

Municipal Fire Codes

Each of the 18 cities in the San Diego region has a fire code included in its municipal code. Like the County of San Diego Consolidated Fire Code, these codes all adopt by reference the California Fire Code with amendments that specify details such as local authority and contact information. Although all municipalities require compliance with California Fire Code vegetation management requirements for creating defensible space around structures, some municipalities include additional specifications for vegetation management, such as a preference for using native vegetation and special requirements for sensitive habitat or water conservation.

San Diego County Fire Authority Strategic Plan 2020–2025

In 2013, CFA transitioned from a largely volunteer force to the professional staffing of 35 stations that have responsibility for 1.5 million acres in the unincorporated area of the county. In 2019, CFA finalized its first 5-year plan (County of San Diego Fire Authority 2019). The plan has four goals related to (1) employee health and professional development, (2) exceptional emergency services, (3) resilient communities, and (4) organizational excellence and fiscal responsibility. Each goal has multiple objectives. Most relevant are those in the resilient communities category:

- develop and implement a more cohesive pre-fire strategy to achieve resilient communities,
- reduce potential for loss in existing structures,
- strengthen fire safety measures in new construction,
- enhance prefire vegetation management, and
- improve prefire emergency planning.

CAL FIRE San Diego Unit 2024 Strategic Fire Plan

The San Diego Unit 2024 Strategic Fire Plan serves as the San Diego region's localized wildfire preparedness and response framework, developed in alignment with the broader California Strategic Fire Plan. Authorized under Public Resources Code Sections 4114–4130, the state-level plan was crafted through collaboration between CAL FIRE and the California Board of Forestry and Fire Protection. It establishes a statewide vision of fostering a fire-adapted natural landscape and more fire-resistant built environments by coordinating efforts among local, state, federal, and private entities. This vision is supported by seven overarching goals and 57 actionable objectives. Each CAL FIRE Administrative Unit and Contract County, including the San Diego Unit, is tasked with creating and executing its own implementation strategy (CAL FIRE 2024d). In this context, the San Diego Unit's Fire Plan outlines how it will operationalize the state plan's goals and objectives through targeted actions detailed in its Battalion-level Work Plans.

San Diego Gas & Electric Company's Wildfire Mitigation Plan

San Diego Gas & Electric Company (SDG&E), in accordance with California SB 901, developed a Wildfire Mitigation Plan to describe the preventive strategies and programs SDG&E plans to adopt to minimize the risk of its electrical lines and equipment causing catastrophic wildfires (SDG&E 2024). The plan includes a risk analysis; a description

of wildfire prevention strategies and programs undertaken by SDG&E; and details related to inspections, system hardening, and emergency preparedness.

Community Wildfire Protection Plans

The Healthy Forests Restoration Act was enacted in 2003 and included statutory incentives for USFS and BLM to consider prioritized fuel reduction projects identified by local communities. This legislation led to the development of community wildfire protection plans (CWPPs). A CWPP is developed at the community level in areas at-risk of wildfire and is created in collaboration with community members, fire agencies operating in the area, local government, and other interested parties. The Healthy Forests Restoration Act and CWPPs emphasize the need for federal, state, and local agencies to work collaboratively with communities in developing hazardous fuel reduction projects and place priority on treatment areas identified by the communities themselves in a CWPP.

A CWPP serves two primary purposes. First, CWPPs identify and prioritize fuel reduction treatment projects needed in the local area and outline methods for addressing them. Second, CWPPs identify recommended measures to reduce structural ignitability (e.g., fire hardening). The process of developing a CWPP can help a community identify and clarify priorities for the protection of life, property, and critical infrastructure in the WUI. These plans are intended to be living documents and are updated as the needs in a community change and evolve. Thirty-nine cities and communities around San Diego County have an approved CWPP in place.

City and County General Plans

Local planning policies related to wildfire are established in each jurisdiction's general plan. Safety elements are required to address fire hazards, evacuation routes, and emergency response. As of January 1, 2013, SB 1241 of 2012 required that jurisdictions review and update their safety elements as necessary within 2 years of implementation of the next regional transportation plan, upon the next revision of their housing element, to address the risk of fire in SRAs and Very High FHSZs. These revisions must consider the provisions outlined in the OPR (now LCI) Fire Hazard Planning Technical Advisory and must include a number of specified content areas, such as fire hazard mapping; historical data on wildfires; identification of agencies with responsibility for fire protection; and goals, policies, and objectives for the protection of the community from the unreasonable risk of wildfire. As of June 2025, nine of the jurisdictions in the San Diego region have updated their General Plans in accordance with SB 1241. Local General Plan policies related to wildfire are summarized in Table B-2 of Appendix B.

County Resilience Review Report 1-19: Wildland Fires

The Resilience Review Process, the core assessment tool of the County's Resilience Program, was developed to identify gaps in how the County addresses community risks from both sudden disasters and long-term stressors. In March 2019, the Chief Administrative Officer directed a Resilience Review Working Group to explore ways to enhance wildfire resilience in unincorporated areas (County of San Diego 2019). Through collaboration with stakeholders, experts, and regional leaders, the group conducted a comprehensive evaluation of the County's existing wildfire preparedness, response, recovery plans, programs, and outreach efforts. The review concluded that the County already has strong systems in place and has made significant strides in wildfire preparedness, with many of the report's recommendations either underway or under consideration. The Resilience Review Working Group recommends 16 principal objectives divided among three focus areas: pre-fire, response, and recovery. The objectives are broken down into 50 specific tasks.

County Operational Area Wildland Urban Interface Policy # 8-A

Policy # 8-A sets consistent procedures for safe and effective wildland firefighting operations in San Diego County. As development expands into wildland areas, fire agencies face increased challenges and risks, especially in the WUI. WUI fires often exceed local response capacity, requiring mutual and automatic aid from multiple agencies, making clear communication and shared terminology essential. To ensure coordinated response, Policy # 8-A requires all San Diego County fire agencies to adopt, train on, and use the Firescope WUI Structure Protection Guidelines (County of San Diego OES 2013).

4.19.3 Significance Criteria

Appendix G of the CEQA Guidelines provides criteria for determining the significance of a project's environmental impacts, in the form of initial study checklist threshold questions. Unless otherwise noted, the significance criteria specifically developed for this EIR are based on the checklist questions that address the environmental issue areas in Appendix G of the CEQA Guidelines. In some cases, SANDAG has combined checklist questions, edited their wording, or changed their location in the document in an effort to develop significance criteria that reflect the programmatic level of analysis in this EIR and the unique characteristics of the proposed Plan. Notably, Appendix G Section XX, question (a), regarding whether the proposed Plan would substantially impair an adopted emergency response plan or emergency evacuation plan is addressed in criterion HAZ-4 in Section 4.9, "Hazards and Hazardous Materials." Conversely, Appendix G Section IX, question (g), regarding whether the proposed Plan would expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires is addressed in this section in criterion WF-1.

Implementation of the proposed Plan, where located in or near SRAs or lands classified as High or Very High FHSZs or, where specified, in other areas of the San Diego region, would have a significant wildfire impact if it would:

WF-1 Increase risk of wildland fire ignition and directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires.

WF-2 Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

WF-3 Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

WF-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

4.19.4 Environmental Impacts and Mitigation Measures

WF-1 INCREASE RISK OF WILDLAND FIRE IGNITION AND DIRECTLY OR INDIRECTLY EXPOSE PEOPLE OR STRUCTURES TO SIGNIFICANT RISK OF LOSS, INJURY, OR DEATH INVOLVING WILDLAND FIRES.

Analysis Methodology

This section analyzes the types of conditions under which the forecasted regional growth and land use change and the planned transportation network improvements of the proposed Plan would increase the risk of wildland fire ignition and directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires. Geographic Information System analysis is used to forecast regional growth and land use changes and planned transportation network improvements in High and Very High FHSZs within SRAs and LRAs. CAL FIRE FHSZ mapping takes into consideration vegetation, topography, weather, crown fire potential, and ember production and movement (CAL FIRE 2025b); therefore, these data were used to identify areas where forecast regional growth and land use changes and planned transportation network improvements could increase the risk of wildland fire ignition. Impacts were calculated by overlaying the forecast regional growth and land use footprint, and the transportation network improvements footprint onto mapped CAL FIRE data for High and Very High FHSZs in the San Diego region (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025). The acreage of each footprint that would expand into the High and Very High FHSZs is quantified and identified as areas where wildfire ignition risk could be increased with implementation of the proposed Plan. In addition, while not quantified, the analysis also considers areas of the region that are currently unmapped (e.g., within an FRA or LRA), as shown on Figure 4.19-1, but are considered wildfire prone based on vegetation,

topography, and other factors that influence wildfire. Finally, the analysis qualitatively considers the potential for increased wildfire ignition risk from regional growth and transportation network improvements within the WUI.

A significant impact would occur if forecast regional growth and land use development or planned transportation network improvements would increase the risk of wildland fire ignition and directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires.

Impact Analysis

2035

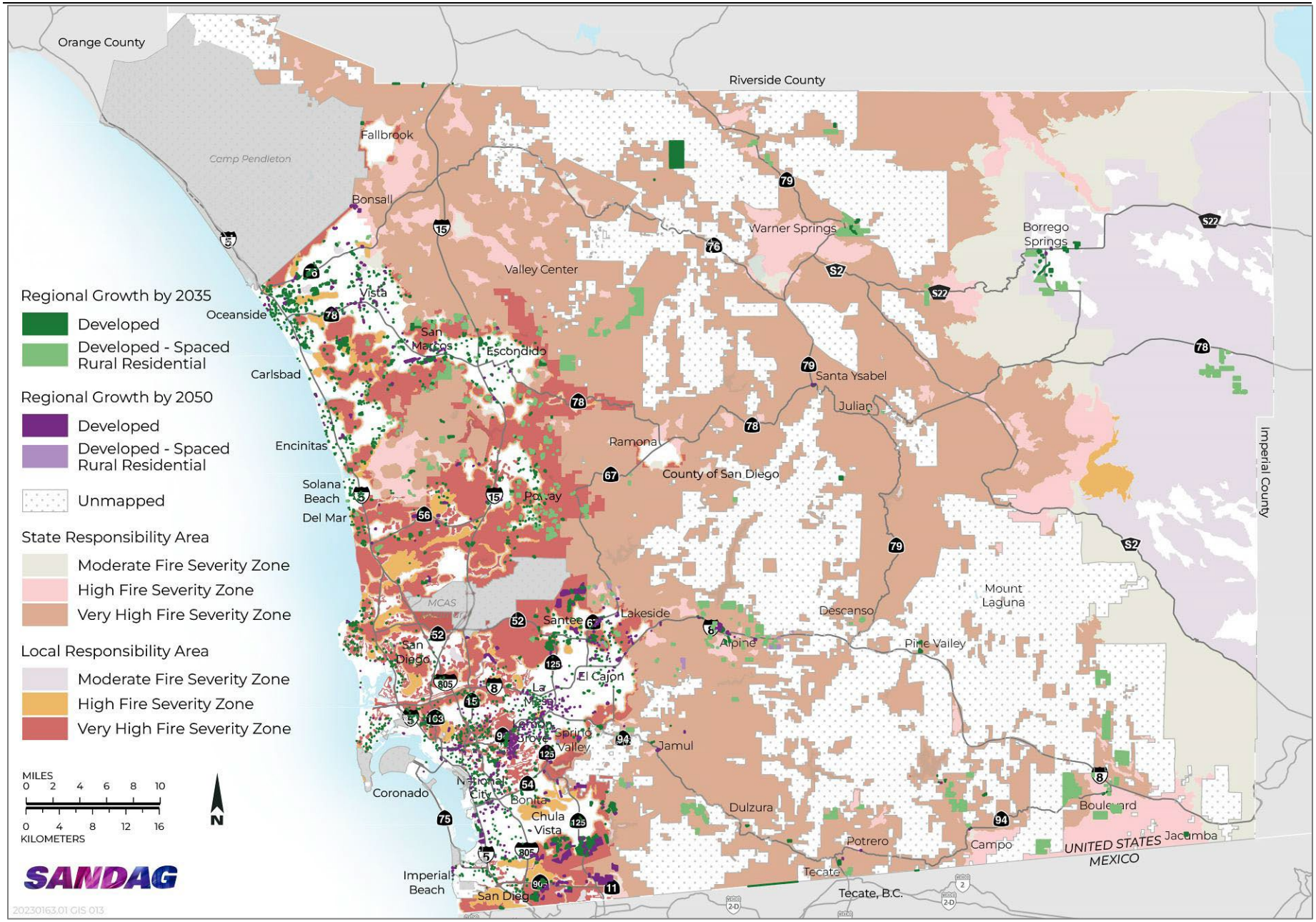
Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Wildfire prevention is a shared responsibility among federal, state, and local agencies, including local city and county fire departments, as well as landowners and residents. Federal lands are classified as Federal Responsibility Areas. The National Fire Plan provides the necessary coordination between agencies in areas of federal lands. As shown on Figure 4.19-1, most of the unincorporated areas of the San Diego region are classified as SRAs, which designate areas where fire prevention is the responsibility of CAL FIRE. Incorporated areas, and some unincorporated lands, are classified as LRAs. Fire prevention and response in these areas are typically addressed by city and county fire departments, occasionally with assistance from CAL FIRE. CAL FIRE identifies FHSZs at the local, state, and federal level that cover all fire-prone areas in the state, regardless of land ownership or responsibility.

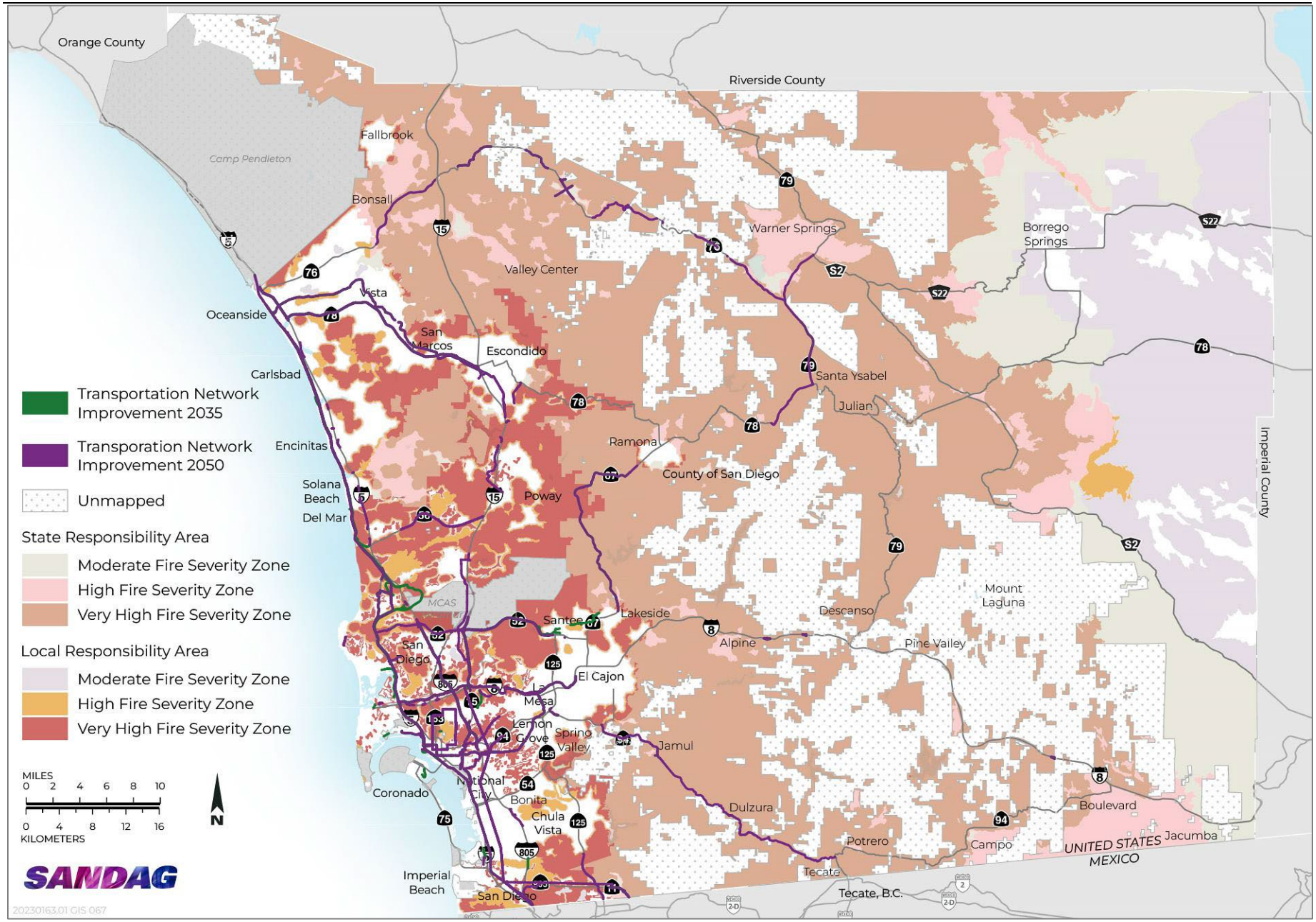
To accommodate regional growth and land uses by 2035, new development, including residential, mixed-use, commercial areas, and industrial centers, and civic facilities would be constructed. As shown on Figures 4.19-1 and 4.19-2, much of the San Diego region is subject to wildland fire hazards. While most regional growth and land use development would consist of infill, development on the edges of urban areas and in outlying could increase the threat of wildland fires on human populations and property, as development may be located closer to and within the WUIs and High and Very High FHSZs. In addition, increased development on the edges of urban areas and in outlying areas would expand the WUI by incrementally encroaching into less developed areas that may be prone to wildfire. Using the methodology described above in "Analysis Methodology," an estimated 20,635 acres of new development would occur within FHSZs by 2035. Of this total, approximately 16,400 acres would occur on land classified as a Very High FHSZ, while approximately 2,090 acres would occur in areas classified as a High FHSZ (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025).

The potential expansion of the WUI by new development would occur throughout the region; however, as noted above, the vast majority (i.e., approximately 93.3%) of the forecasted increase in regional growth and associated development between 2022 and 2035 would occur in the cities of San Diego, Chula Vista, and San Marcos (Figure 4.19-3). Based on a review of aerial imagery (i.e., Google Earth) and as indicated on Figure 4.19-3, portions of Chula Vista, particularly the eastern portion of the city, and San Marcos may have a higher degree of fire danger than other areas of the region, owing to expansive areas of native vegetation and steeper slopes that could fuel and accelerate a fire. Aside from the less developed areas in the eastern portion of the region, the western portion of the region is also at high risk for fire hazards as it contains hundreds of miles of WUI due to the multitude of canyons throughout the area. This high fire risk is also reflected in the High and Very High FHSZ designations for the area, as depicted in Figure 4.19-1. Development along the canyon rims places structures in proximity to natural vegetation. While the City of San Diego is the most urbanized of the three cities that would experience the majority of regional growth, there are several areas throughout the city that contain wildfire prone conditions, particularly in the city's various canyons and other suburban areas that abut natural vegetation.



Source: Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.19-3 Fire Responsibility Area and Wildfire Hazard Severity Zones



Source: Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025.

Figure 4.19-4 Transportation Network Improvement Fire Risk

Because of these existing land characteristics, around which many communities are formed, new growth and development in areas classified as High and Very High FHSZs and in the WUI may increase the risk of wildfire ignition, as humans are responsible for most wildfire ignitions. In 2022, more than half of all fires in California were caused by humans, and when miscellaneous and undetermined causes are included, that figure increases to 97 percent (CAL FIRE 2022). Human ignitions include a multitude of sources, including accidental escape from debris and brush-clearing fires, electrical equipment malfunctions, campfire escapes, smoking, fire play (e.g., fireworks), vehicles, and arson. Thus, areas near human development, especially in the WUI or in areas near campgrounds and roads, generate fires at a more frequent rate than very remote or urban areas (Syphard et al. 2007; Mann et al. 2016; Balch et al. 2017). Common causes of wildfire in the region include equipment use, vehicle fires spreading into wildlands, accidental starts from warming or debris fires, and arson. As shown in Table 4.19-1, the predominant cause of wildfire changes from year to year in the SRA within San Diego County. When considered over the period of 2019 through 2023 and excluding miscellaneous and undetermined causes, the majority of the fires within the region (approximately 59 percent) were caused by vehicles, followed by equipment use and arson. As such, the primary causes of wildfire in the region can be attributed to increased development and human access to wildfire-prone areas of the county. Consequently, regional growth and associated development of land uses between 2022 and 2035 would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. In addition, growth experienced between 2022 and 2035 may result in an increased demand for fire protection services and increased demand on the region's existing water supply. In the event of a major wildland fire, the lack of available fire response staff or adequate response times, or infrastructure constraints such as insufficient water supply, may also contribute to an increased risk of wildland fire ignition.

Wildland fires may result in immediate damage to infrastructure such as buildings and facilities, and long-term damage from loss of forests or vegetation that may lead to erosion and unstable surfaces. The provision of defensible space would create a separation zone between wildlands and structures. Any development or redevelopment constructed within areas classified as High and Very High FHSZs and adjacent to wildlands in the WUI would be subject to the federal, state, and local statutory and regulatory requirements discussed in Section 4.19.2, *Regulatory Setting*. Specifically, new construction would be subject to the CBC (Title 24 of the CCR), which includes safety measures to minimize the threat of fire. The provisions of the CFC (Title 24, Part 9 of the CCR) would apply to all construction, alteration, replacement, removal, and demolition. The CBC and CFC establish requirements that would be applicable during construction and demolition, including proper storage procedures for combustible materials and proper refueling protocol. In addition, the risk of accidental ignition of a wildland fire during construction in high risk areas (i.e., High and Very High FHSZs and WUI) would also be addressed through compliance with PRC Section 4427, which includes fire safety provisions that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with internal combustion engines; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on-site for various types of work in fire-prone areas. Moreover, Title 14 of the CCR sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply, which help prevent damage to structures or people by reducing wildfire hazards within SRAs. Requirements include ignition-resistant construction with exterior walls of noncombustible or ignition-resistant material from the surface of the ground to the roof system. Other fire-resistant measures would be applied to eaves, vents, windows, and doors to avoid any gaps that would allow intrusion by flame or embers.

Local jurisdictions' general plan policies and building codes enforce and expand on these requirements at the local level. In addition, local general plans contain policies and programs aimed at reducing the risk of wildland fires through land use compatibility, training, sustainable development, brush management, and public outreach. To effectively mitigate wildland fire hazards in the San Diego region, a multi-jurisdictional approach that involves federal, State, and local governments and fire agencies is necessary. Collectively, the local jurisdictions and fire agencies work together to prevent the loss of life in wildland fires, the ignition of structures by wildland fires, the encroachment of wildland fire into communities, and a wildfire-caused structural conflagration; as well as limit the size of wildland fires. Also, at the jurisdictional level, the continued monitoring and updating of existing

development regulations and plans reinforce the value of defensible space to further reduce the impact of wildfires on people and structures. Finally, public education and firefighter training, support, and emergency operations efforts help reduce the risks of impacts involving wildfires.

The existing laws, regulations, plans, and policies identified in Section 4.19.2, which are aimed at reducing the risk of wildland fires through land use compatibility, training, sustainable development, brush management, and public outreach, when coupled with the strategies above, would help reduce the risks posed to people and structures associated with wildland fires. However, due to the relatively large area within the San Diego region that is considered at high risk for wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands, regional growth and land use development associated with the proposed Plan would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. This impact would be significant.

Transportation Network Improvements

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

The transportation network improvements that would be implemented between 2022 and 2035 generally would be focused in the highly urbanized western portion of the region (Figure 4.19-4), and portions of this area remain susceptible to wildland fires due to climate, topography, and native vegetation. Using the methodology described above, an estimated 986 acres of new transportation network improvements would be developed within FHSZs by 2035. Of the 986 acres, new transportation network improvements would occupy approximately 217 and 702 acres of land classified as High and Very High FHSZs, respectively, between 2022 and 2035 (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025).

Construction-related fire hazards associated with transportation network improvements include welding and heavy equipment operation. However, the construction of transportation network improvements in High or Very High FHSZ or the WUI would be subject to the federal, State, and local statutory and regulatory requirements discussed in Section 4.19.2. This includes Title 24 of the CCR, which includes safety measures to minimize the threat of fire. In addition, PRC Section 4427 includes fire safety statutes that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with internal combustion engines; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on site for various types of work in fire-prone areas. The provisions of the fire code would apply to all construction, alteration, replacement, removal, and demolition. The risk of accidental ignition of a wildland fire during construction in high risk areas (i.e., High and Very High FHSZs and WUI) would be addressed through standard construction practices, which address the potential for sparks generated by construction equipment, the potential for spills of ignitable materials, and emergency procedures to immediately respond to these conditions. Compliance with these regulations would reduce the likelihood that construction-related impacts associated with transportation network improvements occur.

In general, transportation projects and facilities are not typically susceptible to substantial damage from wildfires (i.e., because they are constructed of concrete and other non-flammable materials) and would not contribute added fuel to wildfires. In the case of megafires, however, which are exceptionally large, intense, and driven by extreme weather, the level of destruction can be such that transportation infrastructure is affected by closure, structural damage to road surfaces, mudslides and debris flows from adjacent slopes, and damage to utilities that

support transportation infrastructure (e.g., power lines, communication systems) (see Section 4.19.1, "Anticipated Effects of Climate Change," for additional discussion). More typically, the most noticeable effect of wildland fires on transportation systems are temporary interruption of service with little expectation of damage to property or injury to people. In addition, improving the capacity of the existing transportation network would result in increased use of the existing corridors beyond the terminus of current conditions, indirectly enhancing potential evacuation routes and/or providing additional firebreaks. All future transportation network improvements would be subject to project-specific environmental review, at which time mitigation measures would be identified, as applicable, to address potential impacts associated with increased risk of wildland fire ignition.

Although the majority of transportation improvements between 2022 and 2035 would be focused in the highly urbanized western portion of the region, the proposed Plan also includes improvements to rural intersections and interchanges on SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. These improvements would be located in areas prone to wildfire. Areas near human development, especially in the WUI or in areas near campgrounds and roads, generate fires at a more frequent rate than very remote or urban areas (Syphard et al. 2007; Mann et al. 2016; Balch et al. 2017). Common causes of wildfire in the region include equipment use, vehicle fires spreading into wildlands, accidental starts from warming or debris fires, and arson. As shown in Table 4.19-1, when considered over the period of 2019 through 2023 and excluding miscellaneous and undetermined causes, the majority of the fires within the region (approximately 59 percent) were caused by vehicles. Thus, implementation and operation of the transportation network improvements associated with the proposed Plan would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. Impacts would be significant.

2035 Conclusion

Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. These wildfire ignition risks would be exacerbated in areas classified as High and Very High FHSZs and in the WUI, as humans are responsible for most wildfire ignitions. Therefore, this impact (WF-1) would be significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

Similar to the 2035 analysis, new development, including residential, mixed-use, commercial areas, and industrial centers, and civic facilities would be constructed to accommodate regional growth between 2036 and 2050. Using the methodology described above, an estimated 2,608 acres of new development would occur within FHSZs by 2050. Of this total, approximately 2,305 acres would occur on land classified as a Very High FHSZ, while approximately 200 acres would occur in areas classified as a High FHSZ (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025). Although the regional population is forecasted to slightly decrease by 2050, new housing would continue to be developed in the City of San Diego, City of Chula Vista, and the unincorporated jurisdictions. In some instances, this new housing development, particularly in the unincorporated parts of the county, may not be contiguous to existing developed areas and would represent an expansion of the WUI. Thus, new development in areas classified as High and Very High FHSZs and in the WUI could increase the risk of wildfires as humans are responsible for most wildfire ignitions. Consequently, development of land uses

between 2036 and 2050 would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. In addition, growth experienced between 2036 and 2050 may result in an increased demand for fire protection services and increased demand on the region's existing water supply. In the event of a major wildland fire, the potential lack of available fire response staff or adequate response times, or infrastructure constraints such as insufficient water supply, would also contribute to an increased risk of loss, injury and death from wildland fire ignition.

Local jurisdictions' general plan policies and building codes enforce and expand on these requirements at the local level. In addition, local general plans contain policies and programs aimed at reducing the risk of wildland fires through land use compatibility, training, sustainable development, brush management, and public outreach. To effectively mitigate wildland fire hazards in the San Diego region, a multi-jurisdictional approach that involves federal, State, and local governments and fire agencies is necessary. Collectively, the local jurisdictions and fire agencies work together to prevent the loss of life in wildland fires, the ignition of structures by wildland fires, the encroachment of wildland fire into communities, and a wildfire-caused structural conflagration; as well as limit the size of wildland fires. Also, at the jurisdictional level, the continued monitoring and updating of existing development regulations and plans reinforce the value of defensible space to further reduce the impact of wildfires on people and structures. Finally, public education and firefighter training, support, and emergency operations efforts help reduce the risks of impacts involving wildfires.

The existing laws, regulations, plans, and policies identified in Section 4.19.2, which are aimed at reducing the risk of wildland fires through land use compatibility, training, sustainable development, brush management, and public outreach, when coupled with the strategies above, would help reduce the risks posed to people and structures associated with wildland fires. However, due to the relatively large area within the San Diego region that is considered at high risk for wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands, regional growth and land use development associated with the proposed Plan would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. This impact would be significant.

Transportation Network Improvements

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, the majority of transportation network improvements that would be implemented between 2036 and 2050 would occur in the highly urbanized western portion of the region; however, portions of this area remain susceptible to wildland fires due to climate, topography, and native vegetation. Using the methodology described above, an estimated 1,287 acres of new transportation network improvements would be developed within FHSZs by 2050. Of the 1,287 acres, new transportation network improvements would occupy approximately 215 and 988 acres of land classified as High and Very High FHSZs, respectively, between 2036 and 2050 (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025).

Construction-related fire hazards associated with transportation network improvements include welding and heavy equipment operation. However, the construction of transportation network improvements in High or Very High FHSZ or the WUI would be subject to the federal, State, and local statutory and regulatory requirements discussed in Section 4.19.2. Compliance with these regulations would reduce the likelihood that construction-related impacts associated with transportation network improvements occur.

Although the majority of transportation improvements between 2036 and 2050 would be focused in the highly urbanized western portion of the region, the proposed Plan also includes new Managed Lanes and Managed Lane

Connectors on SR 52, SR 56, SR 94, SR 125, SR 163, I-15, and I-805, as well as upgrades at certain locations on the LOSSAN Rail Corridor, grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, and double-tracking on the SPRINTER. These improvements would be located in areas prone to wildfire. Areas near human development, especially in the WUI or in areas near campgrounds and roads, generate fires at a more frequent rate than very remote or urban areas (Syphard et al. 2007; Mann et al. 2016; Balch et al. 2017). Common causes of wildfire in the region include equipment use, vehicle fires spreading into wildlands, accidental starts from warming or debris fires, and arson. As shown in Table 4.19-1, when considered over the period of 2019 through 2023 and excluding miscellaneous and undetermined causes, the majority of the fires within the region (approximately 59 percent) were caused by vehicles. Thus, implementation and operation of the transportation network improvements associated with the proposed Plan would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. Impacts would be significant.

2050 Conclusion

Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2036 and 2050 would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. Wildfire ignition risks associated with land use development and transportation network improvements would be exacerbated in areas classified as High and Very High FHSZs and in the WUI, as humans are responsible for most wildfire ignitions. Therefore, the impact (WF-1) would be significant.

Impacts of the Proposed Plan with Future Climate Change

With continued climate change, growth and land use change and transportation network improvements in the region would result in increased risk of wildland fire ignition that would expose additional people and structures to significant risk of loss, injury, or death involving wildland fires. Climate change is expected to result in a longer and less predictable fire season and drive factors that may worsen wildfires, such as more frequent and intense dry Santa Ana winds, drier autumns, and increased development and presence of dead fuels (Kalansky et al. 2018). The proposed Plan would increase development and transportation network improvements in High and Very High FSHZs and the WUI, heightening the risk of ignitions from human sources that would threaten existing development, as well as exposing more people and structures to wildfires.

MITIGATION MEASURES

WF-1 INCREASE RISK OF WILDLAND FIRE IGNITION AND DIRECTLY OR INDIRECTLY EXPOSE PEOPLE OR STRUCTURES TO SIGNIFICANT RISK OF LOSS, INJURY, OR DEATH INVOLVING WILDLAND FIRES.

2035, 2050

WF-1 Reduce Wildfire Risk for Development and Transportation Projects.

During planning, design, and project-level CEQA review of future development and transportation projects located in State Responsibility Areas (SRAs) or Local Responsibility Areas (LRAs) classified by CAL FIRE as High and Very High Fire Hazard Severity Zones (FHSZs), as well as the Wildland-Urban Interface (WUI), SANDAG shall, to the degree allowed by its authority, and other agencies (the County of San Diego, cities, and other local jurisdictions such as fire protection agencies) can and should ensure that project applicants implement measures to reduce wildfire impacts. Such measures include, but are not limited to, the following:

- Reducing the area and density of allowable development, through general plan updates and other processes, within areas mapped by CAL FIRE as High and Very High FHSZs.
- Establishing site-specific safety measures for new development and transportation projects to protect local resources from wildfire. Such measures may include fire hazard identification (e.g., flammable and combustible materials, ignition sources), hazard controls and safeguards (e.g., setbacks, containment),

equipment maintenance, fire protection technology and equipment (e.g., fire alarm, suppression, and shut-off systems), employee/worker training, agency coordination and mutual aid, and other elements.

- Preparing project-specific fire protection plans for new development and transportation projects. Fire protection plans should be developed by the project applicant during project-level CEQA review and identify measures that reduce the risk of structural and human loss from wildfire, such as the use of ignition resistant materials, incorporation of fuel modification techniques and brush clearance, and providing for adequate fire-flow water supply in compliance with applicable fire safety regulations. Fire protection plans should be based on appropriate wildfire modeling that accounts for site-specific conditions related to wildfire.
- Educating residents and businesses regarding local emergency communications and notification systems (e.g., Firewise USA, Community Risk Reduction).
- Adhering to the most current building code requirements for new development and transportation projects, including ignition-resistant construction and inclusion of design features that prevent the intrusion of flames and embers. Fire-resistant features could include ember-resistant vents, fire-resistant roofs, and maintenance of defensible spaces around structures.
- Ensuring sufficient emergency water supply and pressure (local water providers) in accordance with the Emergency Water Standards of the SRA Minimum Fire Safe Regulations (CCR Title 14, Division 1.5, Section 1270 et seq) and most current version of the California Fire Code (CCR Title 24, Part 9) for new projects by working with water management agencies.
- Enforcing state and local defensible space regulations to keep overgrown and unmanaged vegetation, accumulations of trash, and other flammable material away from structures.
- Providing public education about wildfire risk and fire prevention measures, and safety procedures and practices to allow for safe evacuation and/or options to shelter-in-place.
- Planning for and promoting rapid revegetation of burned areas to help prevent erosion and protect bare soils.
- Developing a regulatory mechanism for permitting an aggressive hazardous fuels management program.
- Establishing standards for fuel breaks that can slow or stop a wildfire advancing into a community or into the wildlands. Fuel breaks shall be strategically located to protect a community, structures, or routes of access and egress. Strategic locations may include ridgelines, greenbelts, or other locations to manage embers or support community-level fire suppression tactics.
- SANDAG shall facilitate minimizing future impacts to fire protection services through information sharing regarding fire-wise land management (vegetation data, fire-resistant building materials, locations where development is vulnerable to wildfire, and best practices for safe land management) with county and city planning departments.
- SANDAG, in partnership with technical experts and stakeholders, shall launch or continue existing initiatives to help local cities and counties to protect communities and economies in the San Diego region from disruption as a result of wildfire occurrences. Initiatives could include, but would not be limited to, seminars that review the risk of wildfire and approaches for preparation, including strengthening of infrastructure, emergency services, emergency evacuation plans and reviewing building safety codes.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure WF-1 would reduce this impact by requiring measures to preclude or substantially reduce the risk of wildland fire ignition in High and Very High FHSZs and the WUI. For example, reducing the area and density of allowable development in areas mapped by CAL FIRE as High and Very High FHSZs would reduce the number of people and structures in these fire-prone zones, potentially reduce areas of WUI, and reduce potential sources

of ignition. These measures, in conjunction with the other measures described in mitigation measure WF-1, would reduce the potential for the proposed Plan to exacerbate wildland fire risks. In addition, wildfire ignition risk would be reduced by requiring specific design features for new development per mitigation measure WF-1. However, due to the relatively large area within the San Diego region that is considered at high risk for wildland fires, and because regional growth, land use development, and transportation network improvements could still occur in areas where wildlands are adjacent to urbanized areas and where residences are intermixed with wildlands, the proposed Plan would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, this impact (WF-1) would remain significant and unavoidable.

WF-2 DUE TO SLOPE, PREVAILING WINDS, AND OTHER FACTORS, EXACERBATE WILDFIRE RISKS, AND THEREBY EXPOSE PROJECT OCCUPANTS TO POLLUTANT CONCENTRATIONS FROM A WILDFIRE OR THE UNCONTROLLED SPREAD OF A WILDFIRE.

Analysis Methodology

This section analyzes the types of conditions under which the forecasted regional growth and land use change and the planned transportation network improvements of the proposed Plan would exacerbate wildfire risks (i.e., worsen an existing wildfire hazard) due to slope, prevailing winds, and other factors, and thereby expose people to pollution concentrations from a wildfire. Geographic Information System analysis is used to quantify the acreage of projected regional growth and land use change and planned transportation network improvements in High and Very High FHSZs within SRAs and LRAs. CAL FIRE FHSZ mapping considers vegetation, topography (slope), weather (including winds), crown fire potential, and ember production and movement (CAL FIRE 2025b); therefore, these data were used to identify areas likely to have slope, winds, and other factors that could exacerbate fire risks if developed. Acreages were calculated by overlaying the forecast regional growth and land use footprint and the transportation network improvements footprint onto mapped CAL FIRE data for High and Very High FHSZs in the San Diego region. Acres of each footprint that would expand into the High and Very High FHSZs are quantified and identified as areas where wildfire risk could be exacerbated due to slope, prevailing winds, and other factors. In addition, while not quantified, the analysis also considers areas of the region that are currently unclassified (e.g., within an FRA) but are considered wildfire prone based on vegetation, topography, and other factors that influence wildfire.

High and Very High FHSZs are areas in which slopes, prevailing winds, and other factors are conducive to wildfire risk. Where the analysis identifies exacerbated wildfire risks (i.e., instances where existing wildfire hazards are worsened), it then examines whether such exacerbated wildfire risks would expose project occupants to (1) pollutant concentrations from a wildfire or (2) the uncontrolled spread of a wildfire. A significant impact would occur if forecasted regional growth and land use development or planned transportation network improvements would exacerbate wildfire risk and either result in exposure of project occupants to pollutant concentrations from a wildfire or the uncontrolled spread thereof.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Wildfire behavior is a product of several variables—primarily weather, vegetation, topography, and human influences—that intermix to produce local and regional fire regimes that affect how, when, and where fires burn (NPS 2017). The continuity of fuels, expressed in both horizontal and vertical components, is also a determinant of wildfire potential and behavior. Topography is important because it affects the movement of air, which in turn affects the movement of fire, over the ground surface. The slope and shape of terrain can change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity, and wind (both short- and long-term) affect the severity and duration of wildfires (County of San Diego 2023a).

The San Diego region's topography consists of a semiarid coastal plain and rolling highlands, which, when fueled by shrub overgrowth, occasional Santa Ana winds, and high temperatures, creates an ever-present threat of wildfire. In addition, extended droughts, characteristic of the region's Mediterranean climate and exacerbated by climate change, result in large areas of dry vegetation that provide fuel for wildland fires. Extreme weather conditions, such as high temperatures, low humidity, and winds of extraordinary force, may cause an ordinary fire to expand into one of massive proportions. Wildfire risk tends to be high in locations with dense vegetation, dry conditions, and steep slopes. As such, there is a high wildfire risk in the hills and mountains in the eastern San Diego region where sparse development intermingles with fire-prone native vegetation. However, urban areas can also be at risk where the unique mesa-canyon topography of coastal San Diego puts development in proximity to steep slopes and dense vegetation.

As discussed under WF-1, regional growth and land use development between 2022 and 2035 in wildfire-prone areas of the unincorporated county (i.e., High and Very High FHSZs and WUI) would exacerbate existing wildfire hazards by increasing the risk of wildfire ignition. While most regional growth and land use development would consist of infill, development on the edges of urban areas and in outlying areas could increase the threat of wildland fires on human populations and property, as development may be located closer to and within the WUI and High and Very High FHSZs. In addition, increased development on the edges of urban areas and in outlying areas would expand the WUI by incrementally encroaching into less developed, more highly vegetated areas that may be prone to wildfire. These wildfire hazards would be increased where new development is constructed in areas of the San Diego region with steep topography (e.g., parts of Chula Vista and San Marcos, and canyons in western parts of the County) and strong winds because those conditions contribute to the uncontrolled spread of wildfires and make wildfires more difficult to contain.

In addition to vegetation and structural loss, wildfires also affect public health. Fire-related injuries and deaths are likely to increase as wildfires occur more frequently. Wildfires can also be a significant contributor to air pollution. When communities are located in areas that burn frequently, wildfire smoke, which can travel for miles, has a negative effect on human health (Black et al. 2017). Wildfire smoke contains numerous toxic and hazardous pollutants that are dangerous to breathe and can worsen lung disease and other respiratory conditions (County of San Diego 2023a). Exposure to particulate matter generated by wildfire events can result in significant health problems, including aggravated asthma, increased susceptibility to respiratory infections, and heart attacks and arrhythmias in people with heart disease (Sacramento Metropolitan Air Quality Management District 2018). Thus, the increased risk of wildfire as a result of the proposed Plan would also expose the region's population to harmful pollutant concentrations in the form of smoke from wildfire. Section 4.3, "Air Quality," evaluates human health air quality effects of exposure to particulate matter; the proposed Plan's particulate and related health impacts disclosed in that section would be increased by exposure to wildfire smoke.

The existing laws, regulations, plans, and policies identified in Section 4.19.2, which are aimed at reducing the risk of wildland fires through land use compatibility, training, sustainable development, brush management, and public outreach, when coupled with the strategies above, would help reduce the risks posed to people and structures associated with wildland fires. However, due to the relatively large area within the San Diego region that is considered at high risk for wildland fires, including areas of the region with steep topography or strong winds, regional growth and land use development associated with the proposed Plan would exacerbate wildfire risk, thereby exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. This impact would be significant.

Transportation Network Improvements

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the LOSSAN Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

As discussed under WF-1, although the majority of transportation improvements between 2022 and 2035 would be focused in the highly urbanized western portion of the region, the proposed Plan also includes improvements to rural intersections and interchanges on SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. These improvements would be located in areas prone to wildfire. Areas near human development, especially in the WUI or in areas near campgrounds and roads, generate fires at a more frequent rate than very remote or urban areas (Syphard et al. 2007; Mann et al. 2016; Balch et al. 2017). Common causes of wildfire in the region include equipment use, vehicle fires spreading into wildlands, accidental starts from warming or debris fires, and arson. These wildfire hazards would be increased if transportation network improvements implemented under the proposed Plan would be located in areas of the San Diego region with steep slopes and subject to high wind speeds because those conditions contribute to the uncontrolled spread of wildfires and make wildfires more difficult to contain. This would include many of the roadways that extend through the more rural parts of the region, which traverse through areas classified as High and Very High FHSZs and the WUI. In addition, as discussed above, wildfires also affect public health through fire-related injuries and deaths as well as increased air pollution from wildfire smoke. Thus, because implementation and operation of the transportation network improvements associated with the proposed Plan would exacerbate wildfire risk, including in areas where natural conditions make wildfires more difficult to contain, they can expose people to pollutant concentrations from a wildfire and to the uncontrolled spread of wildfire. This impact would be significant.

2035 Conclusion

Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would exacerbate wildfire risk due to development in areas with steep slopes, areas subject to strong winds, and other factors. The increased risk of wildfire as a result of the proposed Plan would also expose the region's population to harmful pollutant concentrations in the form of smoke from wildfire and the uncontrolled spread of wildfire. Therefore, impacts related to the exposure of project occupants to pollutant concentrations from wildfire and the uncontrolled spread of wildfire (WF-2) would be significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

As described in the 2035 analysis, new development under the proposed Plan would occur in areas classified as High and Very High FHSZs and the WUI, which would increase the risk of wildfires as humans are responsible for most wildfire ignitions. These wildfire hazards would be increased if new development would be located in areas of the San Diego region with steep topography or subject to strong winds because those conditions contribute to the uncontrolled spread of wildfires and make wildfires more difficult to contain. Consequently, development of land

uses between 2036 and 2050 would exacerbate wildfire risk due to slope, strong winds, and other factors. This exacerbated wildfire risk would also expose the region's population to harmful pollutant concentrations in the form of smoke from wildfire and to the uncontrolled spread of wildfire.

The existing laws, regulations, plans, and policies identified in Section 4.19.2, which are aimed at reducing the risk of wildland fires through land use compatibility, training, sustainable development, brush management, and public outreach would help reduce the risks posed to people and structures associated with wildland fires. However, due to the relatively large area within the San Diego region that is considered at high risk for wildland fires, including areas of the region with steep topography or strong winds, regional growth and land use development associated with the proposed Plan would exacerbate wildfire risk, thereby exposing project occupants to pollutant concentrations from wildfire and the uncontrolled spread of wildfire. This impact would be significant.

Transportation Network Improvements

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, the majority of transportation network improvements that would be implemented between 2036 and 2050 would occur in the highly urbanized western portion of the region; however, portions of this area remain susceptible to wildland fires due to climate, topography, and native vegetation. Although the majority of transportation improvements between 2036 and 2050 would be focused in the highly urbanized western portion of the region, the proposed Plan also includes new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 94, SR 125, SR 163, I-15, and I-805, as well as upgrades at certain locations on the LOSSAN Rail Corridor, grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, and double-tracking on the SPRINTER. These improvements would be located in areas prone to wildfire. These wildfire hazards would be increased if transportation network improvements implemented under the proposed Plan would be located in areas of the San Diego region with steep slopes and subject to high wind speeds because those conditions contribute to the uncontrolled spread of wildfires and make wildfires more difficult to contain. This would include many of the roadways that extend through the more rural parts of the region, which traverse through areas classified as High and Very High FHSZs and the WUI. In addition, as discussed above, wildfires also affect public health through fire-related injuries and deaths as well as increased air pollution from wildfire smoke.

Thus, because implementation and operation of the transportation network improvements associated with the proposed Plan would exacerbate wildfire risk, including in areas where natural conditions make wildfires more difficult to contain, they can expose people to pollutant concentrations from a wildfire and to the uncontrolled spread of wildfire. This impact would be significant.

2050 Conclusion

Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2036 and 2050 would exacerbate wildfire risk due to slope, strong winds, and other factors. The increased risk of wildfire as a result of regional growth, land use development, and transportation network improvements would also expose the region's population to harmful pollutant concentrations in the form of smoke from wildfire and to the uncontrolled spread of wildfire. High pollutant concentrations can exacerbate other health issues and can contribute to premature deaths. Therefore, impacts related to the exposure of people to pollutant concentrations from wildfire (WF-2) would be significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements in the region would result in increased exposure of people to significant risks of pollutant concentrations as a result of wildfire. Wildfire smoke contains gaseous pollutants (e.g., carbon monoxide), hazardous air pollutants (HAPs) (e.g., polycyclic aromatic hydrocarbons [PAHs]), water vapor, and particle pollution (US EPA 2025). Exposure to these pollutants and fine particulate matter ($PM_{2.5}$) can cause mortality and cardiovascular disease and is associated with onset and worsening of respiratory conditions (Law et al. 2025). As climate change exacerbates wildfire risk, $PM_{2.5}$ emissions from wildfires have increased, worsening air quality. The proposed Plan would expand and increase development in the High and Very High FHSZs and WUI, exposing more people to wildfires and resultant increased pollutant concentrations, adversely affecting air quality and public health.

MITIGATION MEASURES

WF-2 DUE TO SLOPE, PREVAILING WINDS, AND OTHER FACTORS, EXACERBATE WILDFIRE RISKS, AND THEREBY EXPOSE PROJECT OCCUPANTS TO POLLUTANT CONCENTRATIONS FROM A WILDFIRE OR THE UNCONTROLLED SPREAD OF A WILDFIRE.

2035, 2050

Implement Mitigation Measure WF-1: Reduce Wildfire Risk for Development and Transportation Projects, as described above.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure WF-1 would reduce this impact by requiring measures to preclude or substantially reduce the risk of wildland fire ignition in High and Very High FHSZs and the WUI. For example, reducing the area and density of allowable development in areas mapped by CAL FIRE as High and Very High FHSZs would reduce the number of people and structures in these fire-prone zones, potentially reduce areas of WUI, and reduce potential sources of ignition. These measures, in conjunction with the other measures described in mitigation measure WF-1, would reduce the potential for the proposed Plan to exacerbate wildland fire risks. In addition, wildfire ignition risk would be reduced by requiring specific design features for new development per mitigation measure WF-1. To the extent that these measures reduce impacts associated with exacerbating wildfire risk, they would also reduce the exposure of County residents to uncontrolled wildfire spread and to harmful pollutant concentrations in the form of wildfire smoke. However, given the relatively large area within the San Diego region considered at high risk for wildland fires and the level of uncertainty regarding the location, frequency, and severity of future wildfires, impacts of exacerbated wildfire risks and the risks associated with wildfire smoke pollution may not be reduced to less than significant. When wildfires occur, weather conditions (e.g., strong winds) usually are such that major portions of the regional population are exposed to dangerous pollution concentrations from wildfire smoke. For these reasons, this impact (WF-2) would remain significant and unavoidable.

WF-3 REQUIRE THE INSTALLATION OR MAINTENANCE OF ASSOCIATED INFRASTRUCTURE (SUCH AS ROADS, FUEL BREAKS, EMERGENCY WATER SOURCES, POWER LINES OR OTHER UTILITIES) THAT MAY EXACERBATE FIRE RISK OR THAT MAY RESULT IN TEMPORARY OR ONGOING IMPACTS TO THE ENVIRONMENT.

Analysis Methodology

This section incorporates the analysis methodology used for WF-1 to evaluate exacerbation of wildfire risks (i.e., worsening an existing wildfire hazard) but focuses on components of future projects under the proposed Plan that include development of public infrastructure and services, such as water sources, power lines, and access roads, required to support regional growth and transportation network projects. The potential to exacerbate wildfire risk or result in temporary impacts on the environment is qualitatively analyzed based on the expected need for

infrastructure, primarily in areas where new development would include expansion of these services. The need for expanded public services and utility infrastructure identified in PS-1 and U-1 in Section 4.15, "Public Services, Recreation, and Utilities" has been considered in the analysis below for WF-3.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, regional growth is forecast to result in an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035. In these cities, higher demand for new utility infrastructure, upgraded systems, and/or expansions would occur, while demand for utilities would also increase throughout the region in response to forecasted growth. In general, regional growth and land use development in urban areas, largely within the LRA as it relates to wildfire risk, would have less demands on utilities than more rural areas that are less comprehensively served by existing utility infrastructure.

The San Diego County Water Authority (SDCWA) has indicated that it has sufficient supply, storage capacity, and delivery capability to satisfy water demands through 2035 (SDCWA 2021). The SDCWA has completed a number of major capital projects in recent years, such as the additional storage capacity at San Vicente Reservoir completed in 2014. In addition, SDCWA's 2024 Master Plan identifies several additional water facility projects to be considered for implementation within the next 10 years through 2035 (see Section 4.18, "Water Supply," for more details). Connections for new water service within the LRA, and often within the SRA, would typically be accomplished via trenching within public rights-of-way (ROW) and installing new water pipelines. There is nothing inherent in the construction or maintenance of water infrastructure that would result in increased risk of wildfire. It is reasonable to assume that fire risks associated with construction activities for water service infrastructure would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific environmental review, as applicable, as well as adherence to existing regulations and best management practices (BMPs) for fire prevention described in Section 4.19.2, above. Specifically, construction activities associated with the installation of new water service infrastructure would be subject to PRC Section 4427, which includes fire safety statutes that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with internal combustion engines; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on site for various types of work in fire-prone areas.

Regional population growth would result in an increase in the amount of wastewater generated, especially in the cities of San Diego, San Marcos, and Chula Vista. As discussed in Section 4.15, forecasted growth in 2035 in accordance with the proposed Plan would trigger the need for the provision of new or expanded wastewater treatment facilities and collection systems. Smaller treatment plants throughout the region may reach capacity and may also need to be expanded. Development in existing communities would require expansion or upsizing of existing collection and treatment systems, while development in new areas would require installation of new collection and treatment systems. Development in rural residential areas would also require onsite wastewater treatment facilities, such as septic tanks. The pipelines associated with these new and expanded facilities would be installed underground, typically in the public ROW. As with water infrastructure, there is nothing inherent in the construction or maintenance of wastewater infrastructure that would result in increased risk of wildfire. It is reasonable to assume that fire risks associated with construction activities for wastewater infrastructure would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific

environmental review, as applicable, as well as adherence to the existing regulations and BMPs for fire prevention described in Section 4.19.2, above. This includes the construction-related fire safety requirements provided in PRC Section 4427, as described above for water infrastructure.

As discussed in Section 4.6, "Energy," the region's energy demands will increase along with the region's population. Projected growth would trigger the need for new or expanded energy facilities, including power plants, distributed generation, electrical transmission and distribution infrastructure, and natural gas facilities (e.g., storage, pipelines). The impacts of construction energy-generating facilities could have a range of impacts depending on the facility type, size, and location. The provision of new or expanded energy-generation facilities would result in construction-related impacts. Additional demand for natural gas may also require the construction of new supply, conveyance, storage, and distribution infrastructure. It is reasonable to assume that fire risks associated with construction activities for energy infrastructure would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific environmental review, as applicable, as well as adherence to existing fire prevention regulations and BMPs described in Section 4.19.2, above. This includes the construction-related fire safety requirements provided in PRC Section 4427, as described above for water infrastructure.

Relatedly, additional transmission lines would be needed to meet growing demand for electricity resulting from regional population, housing, and employment growth. Additional facilities would also be needed depending on the location and timing of regional growth and the location of new energy generation facilities. Forecast regional growth and land use development would primarily occur in or adjacent to areas that are already developed and have electricity and natural gas infrastructure in place. This would be particularly the case in the LRA, and to a lesser extent, in the SRA in areas where new development is contiguous to existing development. Although this would reduce the need for construction of new facilities in other areas, the increases in demand for electricity, and development in non-contiguous or topographically constrained areas within the SRA, would potentially create a need for new transmission lines routed across undeveloped land.

The construction and operation of new overhead transmission lines across natural habitat within High or Very High FHSZs or the WUI would exacerbate wildfire risk. Wildfires are often caused along transmission lines from downed lines, direct contact with vegetation, and line faults and equipment failures. Most common are downed lines or arcing between conductors that generates heat and sparks and ignite vegetation (WFCA 2024). Many hundreds of thousands of acres in California alone have been burned as a result of wildfires caused by power line failures in recent years. In the summer of 2018 alone, 17 large wildfires were caused in the state as a result of downed power lines, with the State's deadliest fire, the Camp Fire, occurring in November of that year. The Camp Fire claimed more than 80 lives and destroyed over 18,000 structures (Atkinson 2018, New York Times 2025). In 2019, downed power lines ignited Sonoma County's Kincade Fire, which burned approximately 77,700 acres and destroyed 374 structures (CAL FIRE 2025f). In 2021, the Dixie Fire, also caused by electrical equipment, became the second largest wildfire in California history, burning 963,000 acres north of Chico. The 2021 Dixie Fire, which claimed one life and destroyed 1,311 structures, was the last catastrophic wildfire in California confirmed to be caused by utility equipment (Cal Matters 2024). While still under investigation, radio communications and eyewitness accounts from firefighters responding to the 2025 Eaton Fire suggest that power lines may have sparked new fires after the Eaton Fire initially began (NPR 2025).

Because of the higher potential for fire risk from electrical infrastructure (e.g., power lines in contact with vegetation or hazard trees, sparks from equipment malfunction or failure), electrical utility companies place a high priority on safety during construction and operation (SDG&E 2025a). Common solutions to mitigate fire risk include rigorous vegetation management, use of fire-resistant utility poles, undergrounding distribution lines for resilience, deploying advanced technology for predictive maintenance, implementing strategic planned power outages, and other measures. In addition, new overhead transmission lines in high fire risk areas would be subject to CPUC General Order 95, which governs the design, construction, and maintenance of overhead electrical lines. Rule 31.1 of General Order 95 generally states that design, construction, and maintenance of overhead electrical lines should be done in accordance with accepted good practices for the given location conditions known at the

time by the persons responsible for the design, construction, and maintenance of the overhead electrical lines and equipment (see Section 4.19.2 for the specific requirements of General Order 95).

As part of its ongoing strategy to reduce wildfire risk and the impact of Public Safety Power Shutoffs during adverse weather conditions, SDG&E is currently implementing its Strategic Undergrounding Program. The program was established in 2019 and involves removing existing overhead power lines and placing them underground in areas of the region that are at the greatest risk for wildfires. Specifically, the Strategic Undergrounding Program focuses on HFTD Tier 3 and Tier 2 areas, which consist of areas on the CPUC Fire-Threat Map where there is an extreme and elevated risk, respectively, from wildfires associated with overhead power lines or facilities (see Section 4.19.1 for additional details) (SDG&E 2023). Work associated with the program is anticipated to continue through 2032, with a goal of undergrounding approximately 1,500 miles of powerlines (SDG&E 2025b). As shown in Table 4.19-1, although electrical equipment failure is not one of the primary causes of wildfire in the San Diego region, absent a commitment to underground all future lines serving new development in High and Very High FHSZs and the WUI, new electrical transmission infrastructure would exacerbate the risk of wildfire ignition in the region. Accordingly, impacts related to exacerbating wildfire risks from the installation of infrastructure to serve regional growth and land use change by 2035 would be significant.

Current fire planning in San Diego County does not call for additional fire roads or fuel breaks (County of San Diego Fire Authority 2019); therefore, no impacts from the creation of fire breaks or fire roads are anticipated.

Transportation Network Improvements

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR-75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Utilities serving regional transportation network improvements developed between 2022 and 2035 would consist primarily of electrical lines for signage, signals, and LRT propulsion along with reclaimed water lines for landscape irrigation. These utility lines would be constructed within the transportation facility ROW. Electrical transmission would occur primarily via underground conduit, while water lines for irrigation would similarly be installed underground. Because underground lines would not be exposed to dry vegetation or hazardous trees, and because sparks from failure or malfunction would be contained within underground conduit and vaults, such lines would pose minimal fire risk. In those instances where aboveground electrical facilities are required, such as substations, the facilities would be in urban areas with buffers from any vegetation. Impacts associated with exacerbation of wildfire risk from the installation of these utilities would be less than significant.

2035 Conclusion

Regional growth and land use development between 2022 and 2035 would expand into High and Very High FHSZs, potentially expanding the WUI as a result. This development would require extension and expansion of existing utilities. In instances where utilities are expanding contiguous to existing development, or when utilities are installed underground, which is typically the case in urban areas or for transportation network improvements, there is minimal fire risk as construction activities would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific environmental review, as applicable, as well as adherence to existing fire prevention regulations and BMPs described in Section 4.19.2, above. This includes the construction-related fire safety requirements provided in PRC Section 4427. However, land use development requiring the construction or extension of aboveground electrical transmission lines in High and Very High FHSZs

and the WUI by 2035 would exacerbate the risk of wildfire ignition in the region. Therefore, this impact (WF-3) would be significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the regional population is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units are in the City of San Diego (51.6%), City of Chula Vista (17.1%), and the unincorporated jurisdictions. Similarly, these same three jurisdictions contribute to approximately 70.3% of new jobs between 2036 and 2050. In these cities, higher demand for new utility infrastructure, upgraded systems, and/or expansions would occur, while demand for utilities would also increase throughout the region in response to forecasted growth. Regional growth and land use development in urban areas would have less demands on utilities than more rural areas that are less comprehensively served by existing utility infrastructure.

The horizon for SDCWA's 2024 Master Plan, which plans for the region's water supply, storage, and conveyance infrastructure, is 2045; however, no infrastructure improvement projects are identified for implementation in the 2024 Water Master Plan beyond 2035 (SDCWA 2025). Thus, the need for investment in major water infrastructure beyond this timeframe is unknown. If large-scale water projects are undertaken, it is reasonable to assume that fire risks associated with construction activities would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by SDCWA during project-specific environmental review, as applicable, as well as adherence to existing regulations and BMPs for fire prevention described in Section 4.19.2, above. Specifically, construction activities associated with the installation of new water service infrastructure would be subject to PRC Section 4427, which includes fire safety statutes that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with internal combustion engines; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on site for various types of work in fire-prone areas.

In addition, connections for new water service within the LRA, and often within the SRA, would typically be accomplished via trenching within public ROW and installing new water pipelines. Connections to any new development would likely be via underground pipes and would pose minimal fire risk because they would not be exposed to dry vegetation or hazardous trees. There is nothing inherent in the construction or maintenance of water infrastructure that would result in increased risk of wildfire. Similar to large-scale water projects, construction activities associated with new water service connections would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific environmental review and would be subject to the fire safety requirements in PRC Section 4427, described above.

As discussed in Section 4.15, forecasted growth in 2050 in accordance with the proposed Plan would trigger the need for new or expanded wastewater treatment facilities and collection systems. Smaller treatment plants throughout the region may reach capacity and need to be expanded. Minimal development in rural areas is forecast, but development in existing communities would require expansion or upsizing of existing collection and treatment systems. The pipelines associated with these new and expanded facilities would be installed underground, typically in the public ROW. As with water infrastructure, there is nothing inherent in the construction or maintenance of wastewater infrastructure that would result in increased risk of wildfire. It is reasonable to assume that fire risks associated with construction activities for wastewater infrastructure would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific environmental review, as applicable, as well as adherence to the existing regulations and BMPs for fire prevention

described in Section 4.19.2, above. This includes the construction-related fire safety requirements provided in PRC Section 4427, as described above for water infrastructure.

As discussed in Section 4.6, the region's energy demands will increase along with the region's population, which would trigger the need for new or expanded energy facilities. The impacts of construction of these facilities could have a range of impacts depending on the facility type, size, and location. The provision of new or expanded energy-generation facilities would result in construction-related impacts. Additional demand for natural gas may also require the construction of new supply, conveyance, storage, and distribution infrastructure. It is reasonable to assume that fire risks associated with construction activities for energy infrastructure would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific environmental review, as applicable, as well as adherence to existing fire prevention regulations and BMPs described in Section 4.19.2, above. This includes the construction-related fire safety requirements provided in PRC Section 4427, as described above for water infrastructure.

Land use development between 2036 and 2050 would occur primarily in cities and areas contiguous to existing development that are already developed and have electricity and natural gas infrastructure in place. This would be particularly the case in the LRA, and to a lesser extent, in the SRA in areas where new development is contiguous to existing development. Although this would reduce the need for construction of new facilities in other areas, the increases in demand for electricity, and development in non-contiguous or topographically constrained areas within the SRA, would potentially create a need for new transmission lines routed across undeveloped land.

Similar to the 2035 analysis, the construction and operation of new overhead transmission lines across natural habitat within High or Very High FHSZs or the WUI would exacerbate wildfire risk. Wildfires are often caused along transmission lines from downed lines, direct contact with vegetation, and line faults and equipment failures. Most common are downed lines or arcing between conductors that generates heat and sparks and ignite vegetation (WFCA 2024). Because of the higher potential for fire risk from electrical infrastructure (e.g., power lines in contact with vegetation or hazard trees, sparks from equipment malfunction or failure), electrical utility companies place a high priority on safety during construction and operation (SDG&E 2025a). Common solutions to mitigate fire risk include rigorous vegetation management, use of fire-resistant utility poles, undergrounding distribution lines for resilience, deploying advanced technology for predictive maintenance, implementing strategic planned power outages, and other measures. In addition, new overhead transmission lines in high fire risk areas would be subject to CPUC General Order 95, which governs the design, construction, and maintenance of overhead electrical lines. Rule 31.1 of General Order 95 generally states that design, construction, and maintenance of overhead electrical lines should be done in accordance with accepted good practices for the given location conditions known at the time by the persons responsible for the design, construction, and maintenance of the overhead electrical lines and equipment (see Section 4.19.2 for the specific requirements of General Order 95).

As shown in Table 4.19-1, although electrical equipment failure is not one of the primary causes of wildfire in the San Diego region, absent a commitment to underground all future lines serving new development in High and Very High FHSZs and the WUI, new electrical transmission infrastructure would exacerbate the risk of wildfire ignition in the region. Accordingly, impacts related to exacerbating wildfire risks from the installation of infrastructure to serve regional growth and development by 2050 would be significant.

Transportation Network Improvements

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Utilities serving regional transportation network improvements developed between 2036 and 2050 would primarily involve electrical lines for signage, signals, and LRT propulsion, as well as reclaimed water lines for landscape irrigation. These utility lines would be constructed within the transportation facility ROW. Electrical transmission would occur primarily via underground conduit, while water lines for irrigation would similarly be installed underground. Because underground lines would not be exposed to dry vegetation or hazardous trees, and because sparks from failure or malfunction would be contained within underground conduit and vaults, such lines would pose minimal fire risk. In those instances where aboveground electrical facilities are required, such as substations, the facilities would be located in urban areas with buffers from any vegetation. Impacts associated with exacerbation of wildfire risk from the installation of these utilities would be less than significant.

2050 Conclusion

Regional growth and land use development between 2036 and 2050 would expand into High and Very High FHSZs and the WUI. This development would require extension and expansion of existing utilities. In instances where utilities are expanding contiguous to existing development, or when utilities are installed underground as is the typically the case in urban areas or in association with transportation network improvements, there is minimal fire risk as construction activities would be controlled, avoided, or substantially lessened by mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) adopted by the implementing agency during project-specific environmental review, as applicable, as well as adherence to existing fire prevention regulations and BMPs described in Section 4.19.2, above. This includes the construction-related fire safety requirements provided in PRC Section 4427. However, new land development requiring the construction or extension of aboveground electrical transmission lines in High and Very High FHSZs by 2050 would exacerbate the risk of wildfire ignition in the region. Therefore, this impact (WF-3) would be significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change in the region would result in increased fire risk due to installation of new infrastructure. Installation of aboveground electrical distribution infrastructure to support development in the High and Very High FHSZs and WUI, as the proposed Plan identifies, increases the risk of wildfire ignition, such as from downed lines, direct contact with vegetation, and line faults and equipment failures (WFCA 2024), especially in rural and high fire-risk areas. Combined with climate change effects that would increase wildfire risk, this could result in more wildfires in the future.

MITIGATION MEASURES

WF-3 REQUIRE THE INSTALLATION OR MAINTENANCE OF ASSOCIATED INFRASTRUCTURE (SUCH AS ROADS, FUEL BREAKS, EMERGENCY WATER SOURCES, POWER LINES OR OTHER UTILITIES) THAT MAY EXACERBATE FIRE RISK OR THAT MAY RESULT IN TEMPORARY OR ONGOING IMPACTS TO THE ENVIRONMENT.

2035, 2050

Implement Mitigation Measure WF-1: Reduce Wildfire Risk for Development and Transportation Projects, as described above.

WF-3 Reduce Wildfire Risk Related to New or Expanded Infrastructure Required to Support Regional Growth and Land Use Development.

During planning, design, and project-level CEQA review of future development projects located in State Responsibility Areas (SRAs) or Local Responsibility Areas (LRAs) classified by CAL FIRE as High and Very High Fire Hazard Severity Zones (FHSZs), as well as the Wildland-Urban Interface (WUI), (the County of San Diego, cities, other local jurisdictions, and public service and utility providers in the region) can and should ensure that project applicants implement measures to reduce wildfire impacts from new or expanded infrastructure. Such measures include, but are not limited to, the following:

- Establishing site-specific safety measures for new infrastructure and facilities required to provide public services and utilities for new development in order to protect local resources from wildfire. Such measures may include fire hazard identification (e.g., flammable and combustible materials, ignition sources), hazard controls and safeguards (e.g., setbacks, containment), equipment maintenance, fire protection technology and equipment (e.g., fire alarm, suppression, and shut-off systems), employee/worker training, agency coordination and mutual aid, and other elements.
- Preparing project-specific fire protection plans for new infrastructure. Fire protection plans should be developed by the project applicant during project-level CEQA review and identify measures that reduce the risk of structural and human loss from wildfire, such as the use of ignition resistant materials, incorporation of fuel modification techniques and brush clearance, and providing for adequate fire-flow water supply in compliance with applicable fire safety regulations. Fire protection plans should be based on appropriate wildfire modeling that accounts for site-specific conditions related to wildfire.
- Adhering to wildfire safety and mitigation plans established by local utilities companies, including design and construction standards, inspection schedules, and emergency preparedness.
- Adhering to the most current building code requirements for structures related to public services and infrastructure, including ignition-resistant construction and inclusion of design features that prevent the intrusion of flames and embers. Fire-resistant features could include ember-resistant vents, fire-resistant roofs, and maintenance of defensible spaces around structures.
- Ensuring sufficient emergency water supply and pressure (local water providers) in accordance with the Emergency Water Standards of the SRA Minimum Fire Safe Regulations (CCR Title 14, Division 1.5, Section 1270 et seq) and most current version of the California Fire Code (CCR Title 24, Part 9) for new projects.

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Mitigation measure WF-1 would reduce this impact by requiring measures to preclude or substantially reduce wildfire risk in High and Very High FHSZs and the WUI. For example, reducing the area and density of allowable development in areas mapped by CAL FIRE as High and Very High FHSZs would reduce the number of people and structures in these fire-prone zones, potentially reduce areas of WUI, and reduce potential sources of ignition, including those from utility infrastructure to serve new development in fire prone areas. These measures, in conjunction with the other measures described in mitigation measure WF-1, would reduce the potential for the proposed Plan to exacerbate wildland fire risks from the installation of utility infrastructure.

It is reasonable to conclude that mitigation measure WF-3, combined with other mitigation measures (e.g., fire hazard assessment, fire-resistant materials and design, vegetation management) identified during project-level CEQA review conducted by the implementing agency, as well as adherence to existing fire prevention regulations and BMPs identified in Section 4.19.2 (e.g., PRC 4427), above, would be sufficient to reduce impacts related to utility infrastructure construction to a less-than-significant level. However, land development within areas classified as High and Very High FHSZs as well as the WUI would likely require the construction of aboveground electrical transmission lines. Mitigation measure WF-3 would serve to reduce impacts associated with wildfire ignition risks from new electrical infrastructure, but not necessarily to a less-than-significant level given the significant wildfire risk posed by these transmission lines; therefore, this impact (WF-3) would remain significant and unavoidable.

WF-4 EXPOSE PEOPLE OR STRUCTURES TO SIGNIFICANT RISKS, INCLUDING DOWNSLOPE OR DOWNSTREAM FLOODING OR LANDSLIDES, AS A RESULT OF RUNOFF, POST-FIRE SLOPE INSTABILITY, OR DRAINAGE CHANGES.

Analysis Methodology

A significant impact would occur if regional growth and land use changes or transportation network improvements and programs were located in or near SRAs or LRA lands classified as High and Very High FHSZs and would exacerbate wildfire conditions (i.e., worsen an existing wildfire hazard) that would expose people or structures to significant risks related to postfire changes in vegetation and topography. Impacts related to downslope or downstream flooding, landslides, or drainage changes are discussed for areas where regional growth and land use development and transportation network improvements would be located in SRAs or LRAs classified as High and Very High FHSZs, which tend to coincide with areas on steeper slopes and are susceptible to these postfire risks.

Impact Analysis

2035

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2022 to 2035, regional growth is forecast to result in an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). The 2035 regional SCS land use pattern is shown in Figure 2-4. Approximately 93.3% of the forecasted regional population increases between 2022 and 2035 are in the cities of San Diego (51.3%), Chula Vista (26.1%), and San Marcos (15.8%). Those same three jurisdictions would accommodate approximately 71.4% of new housing units in the region between 2022 and 2035, while the cities of San Diego, San Marcos, and Oceanside would accommodate more than 69.5% of new jobs in the region between 2022 and 2035.

Rainfall runoff is enhanced subsequent to wildfire due to changes in soil properties, loss of vegetation cover, and destruction of organic debris on the ground surface. Runoff is accelerated down burned hillslopes compared to unburned hillslopes for two reasons. Surficial soil characteristics are altered when subjected to high temperatures and become water repellant (USGS 2021). Vegetation, which would normally provide resistance to runoff flow and dissipate its energy, is absent. During intense rainfall, post-fire conditions can cause flooding to occur much faster than under normal conditions (hence, "flash" flooding). In the years immediately following a wildfire, accelerated runoff can cause flooding, debris flows, and landslides. In the immediate aftermath of wildfires there is a heightened risk of flash floods due to higher than normal runoff rates. This increases flood waters above what would normally occur with a given rate of precipitation. The more intense rain events predicted as a result of climate change increase the risk of these post-wildfire flash floods. Areas already in or close to flood zones would be at greater risk. Debris flows are common events in Southern California in the aftermath of wildfires. Debris flows are sediment-laden slurries resulting from surface runoff accumulating on hillslopes and channel material such as soil, logs, and boulders as it moves downslope. San Diego County and Southern California, in general, have a history of damaging post-fire debris flows due to the combination of high wildfire frequency, steep terrain covered by high fuel loads, periodic high intensity rainstorms and high population densities. Over the last century, major debris flow events causing widespread damage (destruction of 40 or more structures) and loss of life have occurred on average every 13 years (Kean and Staley 2021). Events causing more localized but still substantial damage occur with more frequency. This has led to the construction of sediment and debris retention basins at the most exposed locations, such as along the southern base of the San Gabriel Mountains.

Study of debris flow events has shown that they are often triggered by high-intensity rainfall events of relatively short duration, and that unlike more typical landslides, they are not dependent on underlying soil saturation (Kean and Staley 2021). The greatest likelihood of a debris flow occurs in the rainy season immediately following the wildfire. A US Geological Survey study covering the larger southwestern study area found that debris flows were triggered by a median 2-year storm event, meaning a storm event that was likely on average to happen every other year (USGS 2021). It has been predicted that, in the event of a severe wildfire followed by an average or

greater storm event, there is a 5 to 12 percent probability of an ensuing debris flow. The USGS has developed an analytical methodology for assessing the risk of damaging floods and resulting debris flows (USGS 2021). This methodology uses watershed terrain and configuration, wildfire burn severity, soil properties, and rainfall characteristics to estimate the probability and volume of debris flows that may occur in response to a 2-year storm. Many such assessments have been conducted in the aftermath of wildfires across the western United States. A problem arises in that these assessments are performed after a wildfire has occurred. In late fire-season wildfires there is often a very short interval between the fire and the onset of winter rains, and the first rain season after the wildfire is the period of highest risk (Kean and Staley 2021; Rengers et al. 2020). This short window combined with the widespread fires occurring in the American West means that most burn areas are not assessed.

Kean and Staley (2021) applied the USGS assessment methodology regionally across all of Southern California. It was found that the areas of most severe risk were at the base of the transverse ranges (i.e., the San Bernardino and San Gabriel Mountains). Virtually all other slopes in Southern California, however, were rated as a moderate to high risk for debris flows, assuming a median intensity wildfire and typical high-intensity rainstorm. They conclude that, with the increasing warming, extended fire season, and higher intensity rainstorms expected as a result of the changing climate, the frequency of debris flows will increase. Virtually all slopes within the High and Very High FHSZs in San Diego County are classified at a moderate to high risk of debris flows (Kean and Staley 2021; Figures 3–5).

Landslides also occur subsequent to wildfires. Unlike debris flows, which most often occur in the rainy season immediately after a wildfire, a study of rainfall-induced landslides in burn areas across Southern California, including several in San Diego County, shows that they are more likely to occur 3 years after the wildfire (Rengers et al. 2020). Rainfall-induced landslides increase in frequency after some vegetation recovery has occurred and the water repellant soil properties present immediately after wildfires have subsided. The above study also monitored a 70-square-kilometer area in the San Gabriel Mountains containing several wildfire burn areas of varying age. This focused area of study confirmed that rainfall-induced landslides are most likely during peak rainfall intensity periods in the midst of protracted storms in the third-year wet season following the wildfire. Landslides are far more likely to occur on south, southwest, and southeast-facing slopes. This is thought to be a result of the sparser vegetation cover present on these slopes compared to north-facing slopes receiving less direct sunlight.

Mapping of known or suspected landslides within San Diego County illustrates that they have occurred across large portions of the County, including within areas designated as High and Very High FHSZs (USGS 2019). Although mapped landslides are widespread throughout the region, areas with mapped known or suspected landslides within High and Very High FHSZs are primarily concentrated in the Otay Ranch area of Chula Vista, El Cajon, Santee, and Poway (see Figure 4.19-3). Using the methodology described above in "Analysis Methodology," an estimated 20,635 acres of new development would occur within FHSZs by 2035. Of this total, approximately 16,400 acres would occur on land classified as a Very High FHSZ, while approximately 2,090 acres would occur in areas classified as a High FHSZ (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025). Portions of this land are on or below slopes that could generate floodwaters, debris flows, or landslides following a wildfire. Increasing levels of severe wildfire occurrence are expected in these areas as a result of the changing climate. At the same time, some individual rain events are expected to be more severe. Development within these areas would face an elevated level of flood risk due to accelerated runoff from previously burned areas. As a result, there would be a high likelihood of damaging debris flows from burned slopes, particularly from slopes that burned during the immediately prior fire season. In the subsequent rainy seasons, a higher likelihood of landslides would be expected in burned areas that are characterized by landslide risk.

As discussed under WF-1, regional growth and land use development between 2022 and 2035 would significantly increase the risk of wildfire ignition. Accordingly, because regional growth and land use development under the proposed Plan would exacerbate wildfire risk, the resultant increased exposure of people and structures to risk of flooding, debris flows, and landslides, as a result of post-fire runoff would be a significant impact.

Transportation Network Improvements

Major transportation network improvements by 2035 include new Managed Lanes and Managed Lane Connectors on SR 15, SR 52, SR 78, SR 125, I-5, I-15, and I-805. The proposed Plan also includes Reversible Managed Lane improvements on SR 75, improvements to rural corridors on SR 67, SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as tolling equipment and Regional Border Management System investments on SR 11. Upgrades at certain locations on the Los Angeles–San Diego–San Luis Obispo (LOSSAN) Rail Corridor would be implemented during this period. Other major network improvements include grade separations at certain locations on the SPRINTER, Green line, Blue Line, and Orange Line. Double-tracking is also proposed on the SPRINTER. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

The transportation network improvements that would be implemented between 2022 and 2035 generally would be focused in the highly urbanized western portion of the region, although portions of this area remain susceptible to wildland fires due to climate, topography, and native vegetation as previously discussed. However, the proposed Plan also includes improvements to rural intersections and interchanges on SR 76, SR 79, SR 94, and I-8, as well as interchange and arterial operational improvements on SR 94 and SR 125. These improvements would be located in areas prone to wildfire. Using the methodology described above, an estimated 986 acres of new transportation network improvements would be developed within FHSZs by 2035. Of the 986 acres, new transportation network improvements would occupy approximately 217 and 702 acres of land classified as High and Very High FHSZs, respectively, between 2022 and 2035 (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025).

Post-wildfire debris flows represent a significant hazard for transportation infrastructure. The location and intensity of post-fire debris movements are difficult to predict, and threats can persist for several years until the watershed is restored to pre-fire conditions. The majority of transportation network improvements that would be implemented between 2036 and 2050 would occur in the highly urbanized western portion of the region. In general, transportation projects and facilities are designed and implemented in a manner that does not result in changes in vegetation and topography that, after a wildfire, would increase risks related to downslope or downstream flooding, landslides, or drainage changes. By conducting hydraulic studies before transportation facility design, which would occur during project-specific environmental review, and adhering to requirements for stormwater detention and floodplain regulation, transportation facilities projects typically do not substantially alter pre-project drainage conditions. However, as discussed in WF-1, transportation network improvements would exacerbate wildfire hazards. Accordingly, because transportation network improvements under the proposed Plan would exacerbate wildfire risk, the resultant increased exposure of people and structures to risk of flooding, debris flows, and landslides as a result of post-fire runoff would be a significant impact.

2035 Conclusion

Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would exacerbate wildfire risk that would result in increased exposure of people and structures to risk of flooding, debris flows, and landslides, as a result of post-fire runoff. Therefore, this impact (WF-4) would be significant.

2050

Regional Growth and Land Use Change

As shown in Table 2-1 in Section 2.0 "Project Description," of this Draft EIR, from 2036 to 2050, the regional population is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The 2050 regional SCS land use pattern is shown in Figure 2-5. The majority of the forecasted regional population decrease between 2036 and 2050 is attributed to the unincorporated jurisdictions, the City of Carlsbad, and the City of El Cajon. Approximately 78.8% of new housing units would be developed in the City of San Diego (51.6%), City of Chula Vista (17.1%), and unincorporated jurisdictions. Similarly, these same three jurisdictions would accommodate approximately 70.3% of new jobs between 2036 and 2050.

As described in the 2035 analysis, mapping of known or suspected landslides within San Diego County illustrates that they have occurred across large portions of the County, including within areas designated as High and Very High FHSZs (USGS 2019). Although mapped landslides are widespread throughout the region, mapped known or suspected landslides within High and Very High FHSZs are primarily concentrated in the Otay Ranch area of Chula Vista, El Cajon, Santee, and Poway (see Figure 4.19-3). Using the methodology described above, an estimated 2,608 acres of new development would occur within FHSZs by 2050. Of this total, approximately 2,305 acres would occur on land classified as a Very High FHSZ, while approximately 200 acres would occur in areas classified as a High FHSZ (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025). Although the regional population is forecasted to slightly decrease by 2050, new housing would continue to be developed in the City of San Diego, City of Chula Vista, and the unincorporated jurisdictions.

As discussed under WF-1, regional growth and land use development between 2036 and 2050 would significantly increase the risk of wildfire ignition. Accordingly, because regional growth and land use development under the proposed Plan would exacerbate wildfire risk, the resultant increased exposure of people and structures to risk of flooding, debris flows, and landslides as a result of post-fire runoff would be a significant impact.

Transportation Network Improvements

Major transportation network improvements by 2050 include new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 75, SR 94, SR 125, SR 163, I-15, and I-805, several of which will be a continuation of improvements from 2035. In addition, the proposed Plan includes increased roadway and transit connections to the United States–Mexico border, as well as expansion of and improvements to existing port of entry facilities, which will continue during this period. Upgrades at certain locations on the LOSSAN Rail Corridor would continue during this period. Grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, as well as double-tracking on the SPRINTER would also continue during this period. See Tables 2-7 through 2-10 for a full list of proposed projects by subregion.

Similar to the 2035 analysis, the majority of transportation network improvements that would be implemented between 2036 and 2050 would occur in the highly urbanized western portion of the region; however, portions of this area remain susceptible to wildland fires due to climate, topography, and native vegetation. Using the methodology described above, an estimated 1,287 acres of new transportation network improvements would be developed within FHSZs by 2035. Of the 1,287 acres, new transportation network improvements would occupy approximately 215 and 988 acres of land classified as High and Very High FHSZs, respectively, between 2036 and 2050 (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025).

Although the majority of transportation improvements between 2036 and 2050 would be focused in the highly urbanized western portion of the region, the proposed Plan also includes new Managed Lanes and Managed Lane Connectors on SR 52, SR 56, SR 94, SR 125, SR 163, I-15, and I-805, as well as upgrades at certain locations on the LOSSAN Rail Corridor, grade separations on the SPRINTER, Blue Line, Green Line, and Orange Line, and double-tracking on the SPRINTER. These improvements would be located in areas prone to wildfire.

In general, transportation projects and facilities are designed and implemented in a manner that does not result in changes in vegetation and topography that, after a wildfire, would increase risks related to downslope or downstream flooding, landslides, or drainage changes. By conducting hydraulic studies before transportation facility design, which would occur during project-specific environmental review, and adhering to requirements for stormwater detention and floodplain regulation, transportation facilities projects typically do not substantially alter pre-project drainage conditions. However, as discussed in WF-1, transportation network improvements would exacerbate wildfire hazards. Accordingly, because transportation network improvements under the proposed Plan would exacerbate wildfire risk, the resultant increased exposure of people and structures to risk of flooding, debris flows, and landslides as a result of post-fire runoff would be a significant impact.

2050 Conclusion

Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2036 and 2050 would exacerbate wildfire risk that would result in increased exposure of people and

structures to risk of flooding, debris flows, and landslides, as a result of post-fire runoff. Therefore, this impact (WF-4) from regional growth and land use development would be significant.

Impacts of the Proposed Plan with Future Climate Change

With future climate change, growth and land use change and transportation network improvements in the region would result in the exposure of people or structures to significant risks resulting from runoff, post-fire slope instability, or drainage changes. Climate change is also expected to increase the risk of flooding and landslides in the future due to increased frequency and intensity of extreme precipitation events (Kalansky et al. 2018). Furthermore, climate change would increase the potential for heavy rainfall to occur after wildfire, resulting in potential landslides as flooding washes away soil destabilized from wildfire (Bedsworth et al. 2018). Thus, the proposed Plan could expose more people and structures to increased flooding and landslide risks, risks that are heightened by climate change.

MITIGATION MEASURES

WF-4 EXPOSE PEOPLE OR STRUCTURES TO SIGNIFICANT RISKS, INCLUDING DOWNSLOPE OR DOWNSTREAM FLOODING OR LANDSLIDES, AS A RESULT OF RUNOFF, POST-FIRE SLOPE INSTABILITY, OR DRAINAGE CHANGES.

2035, 2050

WF-4 Reduce Post-Fire Risks Related to Flooding, Landslides, Slope Instability, or Drainage Changes for Development and Transportation Projects.

During planning, design, and project-level CEQA review of future development projects and transportation network improvement projects located in State Responsibility Areas (SRAs) or Local Responsibility Areas (LRAs) classified by CAL FIRE as High and Very High Fire Hazard Severity Zones (FHSZs), as well as the Wildland-Urban Interface (WUI), SANDAG shall, to the degree allowed by its authority, and other agencies (the County of San Diego, cities, and other local jurisdictions) can and should ensure that project applicants implement measures to reduce post-fire impacts. Such measures include, but are not limited to, the following:

- Treating wildfire burned areas using best practices to control stormwater runoff prior to winter rains.
- Restoring wildfire areas by planting native vegetation cover or encouraging the regrowth of native species using best practices as soon as possible to aid in control of stormwater runoff.
- Reducing potential for future flood hazard by removal of dead, woody vegetation along watercourses following a catastrophic fire to reduce the risk of future catastrophic fires.
- Including fire hazard reduction measures (e.g., prescribed burning, vegetation management) that maintain forest health and reduce flood risks when implementing fuel-reducing activities

SIGNIFICANCE AFTER MITIGATION

2035, 2050

Between 2022 and 2050 it is forecast that thousands of acres of land classified as High and Very High FHSZs would be converted from vacant land by land use development and/or transportation network improvements. Climate change is also expected to increase the risk of flooding and landslides in the future due to increased frequency and intensity of extreme precipitation events. Furthermore, climate change may increase the potential for heavy rainfall to occur after wildfire, resulting in potential landslides as flooding washes away soil destabilized from wildfire (Bedsworth et al. 2018). These factors together would greatly increase the risks of flash floods, debris flows, and landslides in the years following wildfires and would likely occur on a scale and in a timeframe that would preclude prevention by implementing mitigation measure WF-4. Because there are no feasible mitigation measures to reduce the increased elevated risk of flash floods, debris flows, and landslides as a result of runoff,

post-fire slope instability, or drainage changes to less than significant, this impact would remain significant and unavoidable.

4.19.5 Cumulative Impacts Analysis

C-WF-1 MAKE A CUMULATIVELY CONSIDERABLE CONTRIBUTION TO ADVERSE EFFECTS RELATED TO WILDFIRE

The area of geographic consideration for cumulative wildfire impacts is the Southern California and northern Baja regions. Large-scale land use changes and improvements to the transportation system influence the regional development pattern, thereby altering the level of exposure of buildings, transportation facilities, and people to the risks posed by wildfire. The most immediate indication of potential wildfire risk is the projected location of new development, either structures or transportation facilities, in areas classified as High and Very High FHSZs. Post-fire slope instability poses a risk in the form of debris flows and landslides. In addition, wildfires pose a significant public health risk due to their air quality impacts from smoke and risk of death or injury.

A projection approach is used for the cumulative analysis of wildfire risk as growth, land use development, and transportation network improvements across the region that can result in the placement of structures and people in High and Very High FHSZs, WUI, and in areas adjacent to slopes posing post-wildfire risks and hazards. The cumulative impact is the combination of the impacts of the proposed Plan and similar impacts identified in adopted plans. Cumulatively considerable impacts related to wildfire would occur if the proposed Plan, when combined with other planning documents, would result in the development of a substantial number of new structures and residents in areas with a high risk of wildfire, such that wildfire risk would increase and/or be exacerbated.

This cumulative impact assessment considers and relies on the impact analysis within this EIR for the proposed Plan and the Southern California Association of Governments (SCAG) 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final EIR (SCAG 2024) for the Southern California region, including Los Angeles, Orange County, Riverside, and San Bernardino County. The SCAG 2024-2050 RTP/SCS planning horizon is 2050. Other plans considered in the analysis below include the California-Baja California Border Master Plan, which provides a general land use description of the United States–Mexico border region (Caltrans 2021).

Impacts of the Proposed Plan

The analysis in this EIR concludes that regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires (WF-1). In addition, implementation of the proposed Plan would exacerbate wildfire risk due to slope, prevailing winds, and other factors that would expose people to pollutant concentrations from a wildfire and to the uncontrolled spread of a wildfire (WF-2).

New land use development requiring the construction or extension of aboveground electrical transmission lines in High and Very High FHSZs and the WUI would exacerbate the risk of wildfire ignition in the region (WF-3). Finally, regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would exacerbate wildfire risk that would result in increased exposure of people and structures to risk of flooding, debris flows, and landslides, as a result of post-fire runoff (WF-4).

Impacts of Projections in Adopted Plans

Potential development resulting from implementation of regional plans could occur in wildfire prone areas and could result in additional impacts related to wildfire. SCAG's 2024–2050 RTP/SCS covers all of the other counties in Southern California, i.e., Los Angeles, Orange, Imperial, Riverside, San Bernardino and Ventura. The SCAG 2024-2050 RTP/SCS Final EIR (SCAG 2024) identified significant impacts related to wildfire risk, concluding that development resulting from the plan would be responsible for "exposing occupants to wildfire risks and pollutant

concentrations from wildfire, and exposing people or structures to post-fire slope instability. Wildfires pose a significant public health risk due to their air quality impacts." At the regional scale, the 2024-2050 RTP/SCS Final EIR identified cumulatively significant impacts related to wildfire (SCAG 2024).

Cumulative Impacts and Impact Conclusions

2035

Increase the Risk of Wildland Fire Ignition

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. It was concluded that the proposed Plan would result in significant impacts related to increasing the risk of wildfire ignition. This impact determination was based on projected land development of approximately 20,635 acres of land within FHSZs. Of this total, a vast majority of new development (approximately 16,400 acres) would occur on land classified as a Very High FHSZ, while approximately 2,090 acres would occur in areas classified as a High FHSZ. In addition, a total of 986 acres of new transportation network improvements would be developed within FHSZs. Of the total 986 acres, new transportation network improvements would occupy approximately 217 and 702 acres of land classified as High and Very High FHSZs, respectively, between 2022 and 2035. The regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. These wildfire ignition risks would be exacerbated in areas classified as High and Very High FHSZs and in the WUI, as humans are responsible for most wildfire ignitions (Syphard et al. 2007; Syphard and Keeley 2015).

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the County, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk that could affect the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2035 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to increased wildfire ignition risk. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows the same conclusion.

Because cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2035 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-1).

Exacerbate Wildfire Risk and Expose Project Occupants to Pollutant Concentrations

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. It was concluded that the proposed Plan would result in significant impacts related exacerbating wildfire risk. The regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would exacerbate wildfire risk due to slope, strong winds, and other factors. The increased risk of wildfire as a result of the proposed Plan would also expose the region's population to harmful pollutant concentrations in the form of smoke from wildfire and to the uncontrolled spread of a wildfire.

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the County, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk and expose people to

pollutant concentrations in the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2035 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to exacerbation of wildfire risk and exposure of people to pollutant concentrations. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows the same conclusion.

Because cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2035 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-1).

Exacerbate Wildfire Risk from the Installation or Maintenance of Infrastructure

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. The potential need to extend electrical transmission infrastructure into wildfire prone areas was identified as a significant impact from regional growth and land use development. Regional growth and land development between 2022 and 2035 would expand into High and Very High FHSZs, potentially expanding the WUI as a result. This development would require extension and expansion of existing utilities. Regional growth and land use development requiring the construction or extension of aboveground electrical transmission lines in High and Very High FHSZs and the WUI would exacerbate the risk of wildfire ignition in the region.

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the County, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk from the installation of infrastructure that would affect the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2035 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to the exacerbation of wildfire risk from the installation or maintenance of infrastructure. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows the same conclusion.

Because cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2035 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-1).

Expose People or Structures to Post-Fire Risks

A significant cumulative impact in the year 2035 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. It was concluded that the proposed Plan would result in significant impacts related to post-fire risks posed by potential debris flows, landslides, and drainage changes on nearby slopes. Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2022 and 2035 would exacerbate wildfire risk that would result in increased exposure of people and structures to risk of flooding, debris flows, and landslides, as a result of post-fire runoff.

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the County, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk and expose people or structures to post-fire hazards in the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2035 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to the exposure of people and structures to post-fire risks. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows the same conclusion.

Because cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2035 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-1).

2050

Increase the Risk of Wildland Fire Ignition

A significant cumulative impact in the year 2050 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. It was concluded that the proposed Plan would result in significant impacts related to increasing the risk of wildfire ignition. This impact determination was based on projected land development of a total of approximately 2,608 acres within FHSZs. Of this total, approximately 2,305 acres would occur on land classified as a Very High FHSZ, while approximately 200 acres would occur in areas classified as a High FHSZ. In addition, an estimated 1,287 acres of new transportation network improvements would be developed within FHSZs by 2050. Of the 1,287 acres, new transportation network improvements would occupy approximately 215 and 988 acres of land classified as High and Very High FHSZs, respectively, between 2036 and 2050 (Data downloaded from CAL FIRE and SanGIS in 2025; adapted by Ascent in 2025).

The regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2036 and 2050 would increase the risk of wildland fire ignition that would directly or indirectly expose people and structures to a significant risk of loss, injury, or death involving wildland fires. Wildfire ignition risks would be exacerbated in areas classified as High and Very High FHSZs and in the WUI, as humans are responsible for most wildfire ignitions (Syphard et al. 2007; Syphard and Keeley 2015).

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the county, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk that could affect the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2050 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to increased wildfire ignition risk. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows the same conclusion.

Because cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2050 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-1).

Exacerbate Wildfire Risk and Expose Project Occupants to Pollutant Concentrations

A significant cumulative impact in the year 2050 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. It was concluded that the proposed Plan would result in significant impacts related exacerbating wildfire risk. The regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2036 and 2050 would exacerbate wildfire risk due to slope, strong winds, and other factors. The increased risk of wildfire as a result of the proposed Plan would also expose the region's population to harmful pollutant concentrations in the form of smoke from wildfire and to the uncontrolled spread of a wildfire.

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the county, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk and expose people to

pollutant concentrations in the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2050 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to exacerbation of wildfire risk and exposure of people to pollutant concentrations. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows the same conclusion.

Because cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2050 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-1).

Exacerbate Wildfire Risk from the Installation or Maintenance of Infrastructure

A significant cumulative impact in the year 2050 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. The potential need to extend electrical transmission infrastructure into wildfire prone areas was identified as a significant impact for regional growth and land use development. Regional growth and land development between 2036 and 2050 would expand into High and Very High FHSZs, potentially expanding the WUI as a result. This development would require the extension and expansion of existing utilities. Regional growth and land use development requiring the construction or extension of aboveground electrical transmission lines in High and Very High FHSZs and the WUI would exacerbate the risk of wildfire ignition in the region.

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the county, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk from the installation of infrastructure that would affect the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2050 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to the exacerbation of wildfire risk from the installation or maintenance of infrastructure. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows the same conclusion.

cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2050 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-2).

Expose People or Structures to Post-Fire Risks

A significant cumulative impact in the year 2050 would result if the combined impacts of the proposed Plan and impact projections from the other adopted plan were significant when considered together, even if not independently significant. It was concluded that the proposed Plan would result in significant impacts related to post-fire risks posed by potential debris flows, landslides, and drainage changes on nearby slopes. Regional growth, land use development, and transportation network improvements associated with the proposed Plan between 2036 and 2050 would exacerbate wildfire risk that would result in increased exposure of people and structures to risk of flooding, debris flows, and landslides, as a result of post-fire runoff.

The EIR for the SCAG 2024-2050 RTP/SCS (2024) identified similar project-level and cumulative impacts for six additional counties to the north and east of San Diego County, three of which directly abut the county, including Orange County, Riverside, and Imperial. Because these three counties all contain large areas prone to wildfire, cumulative development in or adjacent to these areas would exacerbate wildfire risk and expose people or structures to post-fire hazards in the Southern California and Northern Baja region. Therefore, the direct and cumulative wildfire impacts from SCAG's adopted 2024-2050 RTP/SCS, when combined with the 2035 wildfire impacts of the proposed Plan, would result in significant cumulative wildfire impacts related to the exposure of people and structures to post-fire risks. While comparable analysis for Baja California is not available, the combination of similar landscape and rapid demographic growth allows a similar conclusion.

Because cumulative wildfire impacts throughout Southern California, and likely the northern Baja region, by 2050 would be significant, and because the proposed Plan's incremental wildfire impacts are significant, the proposed Plan's incremental contribution to cumulative wildfire impacts are cumulatively considerable and therefore significant (Impact C-WF-3).

MITIGATION MEASURES

C-WF-1 DUE TO SLOPE, PREVAILING WINDS, AND OTHER FACTORS, EXACERBATE WILDFIRE RISKS, AND THEREBY EXPOSE PROJECT OCCUPANTS TO POLLUTANT CONCENTRATIONS FROM A WILDFIRE OR THE UNCONTROLLED SPREAD OF A WILDFIRE; OR EXPOSE PEOPLE OR STRUCTURES, EITHER DIRECTLY OR INDIRECTLY, TO A SIGNIFICANT RISK OF LOSS, INJURY OR DEATH INVOLVING WILDLAND FIRES.

2035, 2050

Mitigation measure WF-1 is intended to reduce wildfire risk for development and transportation projects during planning, design, and project-level CEQA review of projects in areas classified as High and Very High FHSZs and the WUI. SANDAG would be required to, and other transportation project sponsors, the County of San Diego, cities, and other local jurisdictions such as fire protection agencies can and should, implement measures to reduce impacts from wildfires. Mitigation measure WF-3 would require that during planning, design, and project-level CEQA review of development projects located in SRAs or in LRAs classified as High and Very High FHSZs and the WUI, that the County of San Diego, cities, other local jurisdictions such as fire protection agencies, and public service and utility providers can and should ensure that project sponsors implement measures to reduce impacts from utility infrastructure. Mitigation measure WF-4 would reduce post-fire risks related to flooding, landslides, slope instability, or drainage changes resulting from development and transportation projects. It would apply to planning, design, and project-level CEQA review of development projects or transportation network improvement projects in areas classified as High and Very High FHSZs and the WUI. Local agencies would ensure that project applicants work with local communities to implement measures to reduce post-fire impacts.

Implementation of mitigation measures WF-1, WF-3, and WF-4 may not reduce all proposed Plan impacts associated with wildfire to a less-than-significant level given the relatively large area within the San Diego region considered at high risk for wildland fires and the level of uncertainty regarding the location, frequency, and severity of future wildfires. In addition, although mitigation measures WF-1, WF-3, and WF-4 identify measures that can and should be implemented by the County of San Diego, cities, other local jurisdictions to reduce significant wildfire impacts, SANDAG lacks the authority to ensure their implementation by these other agencies. Therefore, the proposed Plan's incremental contributions to the cumulative wildfire impacts in years 2035 and 2050 would remain cumulatively considerable post-mitigation.

5 ALTERNATIVES ANALYSIS

This chapter discusses the alternatives to the proposed Plan considered in this EIR and provides an analysis of impacts associated with those alternatives.

5.1 RATIONALE FOR ALTERNATIVES SELECTION

CEQA requires the consideration of alternatives to the proposed Plan and the analysis of impacts associated with those alternatives. By comparing the proposed Plan to the alternatives, the advantages of each can be weighed and analyzed. Section 15126.6(a) of the CEQA Guidelines requires that an EIR "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

Additionally, the CEQA Guidelines state the following:

- The specific alternative of "no project" shall also be evaluated along with its impact. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. [Section 15126.6(e)(1), (2)]
- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly discuss the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were eliminated from further consideration as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts. [Section 15126.6(a), (c)]
- "Feasible" means capable of being accomplished within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. [Section 15364] Factors taken into account when addressing the feasibility of alternatives include site suitability, economic viability, availability of infrastructure, other plans or regulatory limitations, and jurisdictional boundaries. [Section 15126.6(f)]

CEQA requires identification of alternatives that would avoid or substantially lessen the significant impacts of the proposed Plan. Based on the analysis in Chapter 4, Environmental Impact Analysis, construction and operational activities associated with forecasted regional growth and land use change and planned transportation network improvements and programs under the proposed Plan would result in significant impacts for many resource topics. Of these topics, air quality, greenhouse gas (GHG), and biological resources, transportation and land use impacts were of particular concern to the public during the EIR scoping and planning processes. The comments provided on the Notice of Preparation (NOP), available in Appendix A-2 of this Draft EIR, and during development of the proposed Plan focused on reducing GHG emission and air quality impacts through reductions in vehicle miles traveled (VMT) and land use planning that supported conservation efforts (Appendix A-2). The proposed Plan achieves GHG and VMT reductions by increasing transit utilization and aligning the SCS land use pattern with jurisdiction-specific general plans which concentrate development in urban areas. These strategies also have the effect of reducing other impacts, such as loss of wildlife habitat or agricultural land.

The range of alternatives analyzed in detail in the EIR is in large part based on these public and stakeholder comments. This chapter provides:

- A description of alternatives considered in detail.
- A summary of the environmental impacts of each alternative and a comparison of each alternative's impacts to those of the proposed Plan. The focus of this analysis is to determine if alternatives can avoid or substantially lessen the significant environmental effects of the proposed Plan to a less-than-significant level.
- A discussion of the environmentally superior alternative.
- A discussion of alternatives considered but rejected from detailed analysis.

5.2 ALTERNATIVES CONSIDERED IN DETAIL

Aside from Alternative 1: No Project, the alternatives analyzed in detail are considered potentially feasible for the purposes of CEQA analysis of alternatives to the proposed Plan, although some elements of the alternatives may require major changes in legislation, policy, or in the availability of funding. This analysis focuses on the characteristics that differentiate the alternatives from the proposed Plan.

Appendix M provides the following information to support the analysis of the alternatives:

- Table M-1 provides a list of the "No Build" projects that are assumed to be implemented for the No Project Alternative. No-Build projects are projects that would be built in the region in absence of the 2025 Regional Plan because they are in progress or recently completed.
- Table M-2 provides performance measures data for the proposed Plan and Alternatives Considered in Detail in this EIR, including population, housing, and employment information.
- Table M-3 provides Senate Bill (SB) 375 GHG reduction for Alternatives Considered in Detail in this EIR.
- Table M-4 provides the EMFAC 2017 onroad output summary for Alternatives Considered in Detail in this EIR.

5.2.1 Alternative 1: No Project

CEQA requires a No Project Alternative to be analyzed in the EIR. The No Project Alternatives assumes that the proposed Plan would not be adopted or implemented.

The proposed Plan involves updating the existing plan, the Amended 2021 Regional Plan. The No Project Alternative therefore reflects continuation of the existing plan. [CEQA Guidelines Section 15126.6(e)(3)(A)] The No Project Alternative assumes the Series 15 Regional Growth Forecast with the Amended 2021 Regional Plan land use pattern. Alternative 1 would result in more concentrated development patterns than the proposed Plan because Alternative 1's land use pattern focused growth primarily in mobility hubs, resulting in a denser development pattern than the proposed Plan. he total population, number of housing units, and number of jobs by 2050 would likely be the same as the proposed Plan under this alternative. Table M-2 (Appendix M of this EIR) provides a comparison of the population, housing, and employment for the proposed Plan and the alternatives. The No Project Alternative includes "No Build" transportation projects likely to be implemented if the proposed Plan were not adopted. A list of No-Build projects is included in Appendix M. Future project development and implementation under the No Project Alternative would be limited as SANDAG would fall out of compliance with the state and federal funding requirement of an adopted RTP and SCS in January 2026.

5.2.2 Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions

Alternative 2 incorporates and adapts elements of the proposed Plan, such as the proposed Plan transportation network and many policies and programs. Unlike the proposed Plan, Alternative 2 would include a land use pattern with more focused growth in areas with available multimodal transportation, higher parking pricing than what is included in the proposed Plan, and speed reductions on arterials and freeways not included in the

proposed Plan. This alternative could feasibly accomplish most of the basic objectives of the project and could substantially lessen one or more of the significant effects. This alternative increases mode shift to transit and other non-solo driving transportation modes due to higher parking pricing and reduces GHG emissions due to speed reductions on arterials and freeways. Percent of work trips during peak period for modes other than solo driving increases by 2.7% in 2035 and 3.7% in 2050 for Alternative 2 (see Appendix M). Per capita GHG emissions reductions from 2005 levels are 23.6% in 2035 and 24.6% in 2050 for Alternative 2, compared to 19.32% in 2035 and 19.51% in 2050 for proposed Plan (see Appendix M). Land use in Alternative 2 would focus all growth in areas with available multimodal transportation and expect new growth to only be found in such locations. The land use pattern in Alternative 2 increases capacity for density only in locations with existing multi-family, commercial and office land uses. Alternative 2 includes the same transportation network as the proposed Plan, and funding for Alternative 2 would be the same as described for the proposed Plan. Table 5-1 provides a comparison of the components of each of the alternatives considered in detail.

5.2.3 Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit

Alternative 3 incorporates and adapts elements of the proposed Plan, such as the proposed Plan transportation network and many policies and programs. a land use pattern similar to the proposed Plan that concentrates growth in areas with available multimodal transportation to provide convenient, and increased mode shift to low-VMT options for moving around the region. Unlike the proposed Plan, Alternative 3 would include a land use pattern with more focused growth in areas with available multimodal transportation, higher parking and managed lane pricing policies than what is included in the proposed Plan, and availability of free transit not included in the proposed Plan. This alternative could feasibly accomplish most of the basic objectives of the project and could substantially lessen one or more of the significant effects. This alternative increases mode shift to transit and other non-solo driving transportation modes and reduces GHG emissions due to higher parking pricing, higher managed lane pricing, and access to free transit. Percent of work trips during peak period for modes other than solo driving increases by 2.6% in 2035 and 3.6% in 2050 for Alternative 3 (see Appendix M). Per capita GHG emissions reductions from 2005 are 22% in 2035 and 22.9% in 2050 for Alternative 3, compared to 19.32% in 2035 and 19.51% in 2050 for the proposed Plan (see Appendix M)]. Like Alternative 2, land use in Alternative 3 would focus all growth in areas with available multimodal transportation and expect new growth to only be found in such locations. The land use pattern in Alternative 3 increases capacity for density only in locations with existing multi-family, commercial and office land uses. Alternative 3 includes the same transportation network as the proposed Plan, and funding for Alternative 3 would be the same as described for the proposed Plan. Table 5-1 provides a comparison of the components of each of the alternatives considered in detail.

Table 5-1 Summary of Alternatives Considered in Detail

Components	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
Land Use Pattern	Amended 2021 Regional Plan	Land use pattern focuses new growth in areas with available multimodal transportation	Land use pattern focuses new growth in areas with available multimodal transportation
Transportation Network	"No Build" Projects	Same as proposed Plan	Same as proposed Plan
Parking Pricing	Amended 2021 Regional Plan	Increases parking costs by 100% compared to proposed Plan	Increases parking costs by 100% compared to proposed Plan
Managed Lane Pricing	Amended 2021 Regional Plan	Same as proposed Plan	Increases managed lane pricing by 100% compared to proposed Plan

Components	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
Speed Reductions	No	Reduces speeds on arterials and freeways by 5 mph	No
Free Transit	No	No	Yes
Funding	Committed funding	Same as proposed Plan	Same as proposed Plan

5.2.4 Project Objectives

Alternatives were generated to feasibly attain most of the basic objectives of the proposed Plan. As stated in Chapter 2, these basic objectives are to:

- Focus population and employment growth to protect sensitive habitat and natural resource areas.
- Provide transportation investments that support compact land development patterns and reduce vehicle miles traveled.
- Meet greenhouse gas emissions targets established for the San Diego region by the California Air Resources Board.
- Provide transportation investments and a land use pattern that improves air quality.
- Provide multimodal access to employment centers and key destinations for all communities.
- Enhance the efficiency of the transportation network for moving people and goods through the deployment of new technologies.

Table 5-2 shows that the alternatives considered in detail in this EIR partially or fully meet most of the basic Plan objectives with the exception of Alternative 1: No Project. In this table, a "yes" indicates that an alternative can at least partially, if not fully, meet project objectives.

Table 5-2 Ability for Alternatives Considered in Detail in this EIR to Meet Basic Project Objectives

Project Objectives	Proposed Plan	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
Focus population and employment growth to protect sensitive habitat and natural resource areas.	Yes	Yes	Yes	Yes
Provide transportation investments that support compact land development patterns and reduce vehicle miles traveled.	Yes	No	Yes	Yes
Meet greenhouse gas emissions targets established for the San Diego region by the California Air Resources Board.	Yes	No	Yes	Yes

Project Objectives	Proposed Plan	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
Provide transportation investments and a land use pattern that improves air quality.	Yes	No	Yes	Yes
Provide multimodal access to employment centers and key destinations for all communities.	Yes	No	Yes	Yes
Enhance the efficiency of the transportation network for moving people and goods through the deployment of new technologies.	Yes	No	Yes	Yes

5.3 ALTERNATIVES COMPARISON

Table 5-3 (at the end of this chapter) provides a list of impacts and their significance for Alternatives 1, 2 and 3, with a comparison of the impacts of each alternative to those of the proposed Plan. Calculations for the alternatives analysis are provided in Appendix M of this EIR.

5.4 Environmentally Superior Alternative

Based on the analysis of alternatives provided in Table 5-3, Alternative 2 is the environmentally superior alternative. Although Alternative 2 would not reduce any of the proposed Plan's significant impacts to less than-significant levels, it would reduce many of the proposed Plan's significant impacts. Compared to the proposed Plan's significant impacts, Alternative 2 would have decreased impacts for one or more significance criteria for the following environmental resources: aesthetics and visual resources, agricultural and forestry resources, air quality, biological resources, cultural resources, energy, geology and soils, paleontological resources, greenhouse gas emissions, mineral resources, noise and vibration, public services, recreation, utilities, transportation, tribal cultural resources, water supply, and wildfire. Compared to the proposed Plan's significant impacts, Alternative 2 would have increased impacts for only a few significance criteria for the following resource areas: land use and population and housing.

Among the alternatives, Alternative 2 would achieve the greatest reductions of GHG emissions VMT, and air quality emissions as compared to the proposed Plan. Alternative 2 would result in a 24.6 percent per capita GHG reduction below 2005 levels in 2050, which would result in a greater reduction than the proposed Plan (19.51 percent below 2005 levels in 2050). In addition, Alternative 2 would result in a SB743-based VMT per capita of 14.55 in 2050 compared to VMT per capita of 15.39 VMT under the proposed Plan in 2050 (see Appendix M). SB-743 based VMT per capita reflects non-commercial VMT per resident in the region. In addition, Alternative 2 would result in an increase in SB 375- based total regionwide VMT of 959,729 vehicle miles per day in 2050 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 4,343,189 miles per day in 2050 under the proposed Plan (see Appendix M). Therefore, Alternative 2 would result in decreased impacts as it would achieve a higher VMT reduction than the proposed Plan. Because VMT reductions correlate to GHG reductions, Alternative 2 would result in decreased GHG impacts as compared to the proposed Plan. Alternative 2 would also result in a decrease in reactive organic gases (ROG), nitrous oxides (NO_X), carbon monoxide (CO), fine and respirable particulate matter ($PM_{2.5}$ and PM_{10}), and sulfur oxide (SO_X) emissions compared to the proposed Plan from onroad sources.

5.5 ALTERNATIVES CONSIDERED BUT EXCLUDED FROM FURTHER ANALYSIS

This section discusses several alternatives that were considered by SANDAG decision makers or raised by the public during the planning process for the proposed Plan, or that were raised in public comments on the NOP for the EIR, but were rejected from detailed consideration in this EIR. Reasons for rejecting these alternatives include the following:

- Major elements of the alternative are already included in the proposed Plan or one of the alternatives evaluated in detail in this EIR.
- The alternative is infeasible due to economic, legal, or other considerations.
- The alternative fails to reduce any of the proposed Plan's significant environmental impacts.
- The alternative fails to meet most of the basic project objectives.
- The alternative is for individual project components rather than the proposed Plan as a whole.

SANDAG received several comment letters focused on specific environmental issues, land uses, and individual transportation projects rather than alternatives to the proposed Plan. Those comments are not discussed in this section.

5.5.1 LA PLAYA PLAN

In a January 8, 2023, NOP comment letter, Katheryn Rhodes requested that the proposed Plan include analysis of an alternative La Playa Plan (LPP) for a Full Tidelands Reclamation project, suggesting this alternative would significantly reduce GHG emissions impacts in the SANDAG region. The LPP alternative suggests several projects already included in the proposed Plan (enhanced active transportation corridors and improved fleet connectivity to San Diego International Airport [SDIA] facilities). Funding for the LPP would be subject to confirmation that SDIA is a Grandfathered Airport, which would allow normally restricted Federal Aviation Administration airport revenue to be diverted towards airport transportation projects, including the proposed annexation of port tidelands.

REASONS FOR REJECTION:

The LPP alternative focuses on a limited geographical portion of the region. In addition, most of the major elements of the LPP alternative are already included in the proposed Plan and/or Alternatives 2 and 3 analyzed in this EIR, such as enhanced active transportation corridors and improved fleet connectivity to SDIA facilities.

The LPP alternative is an individual project in a limited geographical portion of the region rather than an alternative for the proposed Plan as a whole, and CEQA does not require analysis of alternatives to individual components of a project (see *California Oak Foundation v. Regents of University of California* (2010) 188 Cal. App. 4th 227, 276–277). Because it is limited, this alternative would not avoid or substantially reduce any of the proposed Plan's significant impacts nor would it meet most of the project objectives. For these reasons, this alternative has been excluded from further consideration.

5.5.2 ACCELERATED PLAN IMPLEMENTATION

As discussed in Section 4.16, Transportation and Section 4.8, Greenhouse Gases, implementation of the proposed Plan would result in significant VMT and GHG impacts. The proposed Plan includes land use growth and transportation improvements that, when implemented, would reduce VMT. However, to further reduce VMT and GHG impacts for years 2035 and 2050, greater transit ridership would need to be achieved earlier than projected. To

accomplish this the implementation of the transportation network improvements in the proposed Plan would need to be accelerated and the projects would need to be constructed sooner than contemplated in the proposed Plan.

REASONS FOR REJECTION:

Funding is not available to accelerate the construction of the proposed Plan. The funding strategy for the proposed Plan considers all reasonably anticipated revenues to be received out to 2050. These funds will come with constraints. A majority of the anticipated funds will be tied to certain types of projects (for example, transit infrastructure or highway operations and maintenance), and SANDAG does not have the authority to interchange them. These constraints include requirements from Congress or the State Legislature, and the investment strategy for the proposed Plan is aligned with those rules. SANDAG is also constrained by when funds will become available over the 25-year life of the proposed Plan. Two thirds of anticipated revenues are not expected to become available until the 2036–2050 timeframe. Accelerating Plan implementation ahead of this timeframe, and in light of the funding constraints, would not allow SANDAG to accomplish the Alternative within a reasonable period of time, taking into account economic and logistical factors. Thus, the Alternative would be infeasible.

For these reasons, this alternative has been excluded from further consideration.

5.5.3 FOCUSED GROWTH, HIGHER PARKING PRICING, AND ROAD USAGE CHARGE

SANDAG received comments during the scoping period about the use of focused growth and pricing to reduce VMT and GHG impacts in the region. As discussed in Section 4.16, Transportation, implementation of the proposed Plan would result in significant VMT and GHG impacts. Therefore, SANDAG evaluated the effect of focused growth, higher parking pricing, and a road usage charge on the proposed Plan's significant impacts.

This analysis includes the proposed Plan transportation network, a land use pattern that concentrates growth in areas with available multimodal transportation to provide convenient, low-VMT options for moving around the region, higher parking pricing than what is included in the proposed Plan, a road usage charge and the same funding availability as the proposed Plan.

REASONS FOR REJECTION:

Major elements of this alternative are already included in Alternatives 2 and 3, evaluated in detail in this EIR. Alternative 2 achieves greater reductions in the proposed Plan's impacts than this alternative and is still environmentally superior to the Focused Growth, Higher Parking Pricing, and Road Usage Charge Alternative. An EIR need not consider additional alternatives that are permutations of alternatives already evaluated in detail. *Village Laguna v. of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal. App. 3d 1022, 1028.

Similar to Alternatives 2 and 3 analyzed in this EIR, this alternative also meets the project objectives for the proposed Project. However, the combination of focused growth, higher parking pricing, and a road usage charge would not reduce any of the proposed Plan's significant impacts to less-then-significant levels. Regional PM10 emissions would be slightly lower compared to the proposed Plan, but would result in a similar significant impact In addition, GHG emissions would be lower than the proposed Plan, but would not meet the reduction target reference points for 2030, 2045, and 2050 and thus would result in a similar significant impact as the proposed Plan. VMT would also be lower than the proposed Plan, but the alternative would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. This alternative would not avoid or substantially lessen a number of significant environmental impacts of the proposed Plan.

As a financial strategy, higher parking pricing coupled with a road usage charge would provide an additional revenue source for the region. However, the region's residents, including those in disadvantaged communities, would bear these increased costs in addition to other existing economic challenges like the recent rise in inflation.

Compared to the proposed Plan, the percentage of income consumed by out-of-pocket transportation costs would be substantially greater in 2035 and 2050. This makes this alternative undesirable from a policy standpoint, and therefore infeasible.

For these reasons, this alternative has been excluded from further consideration.

5.5.4 WOLFORD BRIEF

In a February 20, 2023, NOP comment letter, Albert Perdon submitted the Wolford Brief as an alternative to the 5 Big Moves of the 2021 Regional Plan and an alternative to the proposed Plan. The Wolford Brief proposes setting new population, housing and economic growth targets for the year 2123 (from 3.4 million people to 9.1 million people), densifying land use including the development of four or more megacities for populations of two million each, developing transit corridors including 200+ mph high-speed train/Maglev plus connected local transit and integrated 24-city/800-mile high-speed trains, building a new integrated airport/high-speed train/housing complex at Miramar, and implementing a benefit assessment-based funding plan. The letter presents the Wolford Brief as an effective alternative to the proposed Plan, suggesting it would significantly reduce VMT and GHG emissions impacts in the SANDAG region.

REASONS FOR REJECTION:

The population and employment projections for the proposed Plan are a forecast rather than a target, as required by state and federal law and regulations (See 23 CFR 450.324 (e) and California Government Code Section 65080(b)(2)(B)(ii)). The Series 15 Growth Forecast meets the legal requirements of SB 375 and aligns with the State of California Department of Finance and the U.S. Census Bureau projections. A full description of the process for developing the Series 15 Growth Forecast population, housing, and jobs numbers can be found in Appendix F to the proposed Plan. SANDAG is legally required to provide a transportation plan for at least a 20-year time horizon consistent with its population and employment forecasts. Implementation of the Wolford Brief Alternative on the proposed 100-year time horizon is remote and speculative, and would be increasingly speculative the further out that SANDAG forecasted. [Guidelines, § 15126.6(f)(3)] Based on the Series 15 Growth Forecast, the population of San Diego County is expected to be 3.4 million by 2050, which is inconsistent with the megacities and supporting transit corridors proposed in the Wolford Brief. The Wolford Brief asks that SANDAG accelerate construction of high speed rail in San Diego County. The proposed Plan does include high speed rail consistent with state planning assumptions.However, SANDAG is not the implementing agency for high speed rail and the Wolford Brief includes high speed rail implementation assumptions that are inconsistent with current state planning assumptions, Therefore, it is not feasible for SANDAG to implement high speed rail in a manner consistent with the Wolford Brief.

The proposed population target upon which the alternative is based is inconsistent with state and federal law and regulations. While this alternative might meet some of the project objectives for the proposed Plan, forecasting population and employment growth for 100 years is remote and speculative. For these reasons, this alternative has been excluded from further consideration.

Table 5-3 provides a list of impacts and their level of significance for Alternatives 1, 2, and 3, with a comparison of the impacts of each alternative to those of the proposed Plan. Calculations for the alternatives analysis are provided in Appendix M of this EIR. The designation “significant impact” in Table 5-3 refers to the level of significance of the impact identified for the proposed Plan as analyzed in this EIR. Within the parentheses is a comparison of the magnitude of the alternative’s impact to the magnitude of the proposed Plan’s impacts (i.e., same, increased, decreased). The level of significance may be the same for the proposed Plan and an alternative for a given threshold, but the impacts from an alternative may be relatively increased or decreased without changing the significance determination.

Table 5-3 Comparison of Alternatives 1, 2, and 3 Impacts to the Proposed Plan Impacts

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Aesthetics and Visual Resources		
2035	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts in 2035 for **AES-1,** substantially adverse effects on scenic vistas; **AES-2,** substantially damage scenic resources, including but not limited to trees, rocks, outcroppings, and historic structures within a state scenic highway; **AES-3,** substantially degrade visual character or quality of public views of the site and its surroundings, including adding a visual element of urban character to an existing rural or open space area, or conflicting with regulations governing scenic quality; and **AES-4,** substantially degrade the existing visual character or quality of public views of the site and its surroundings by creating a new source of substantial light or glare that would adversely affect day or nighttime views. Impacts would be decreased compared to the proposed Plan in 2035 because Alternative 1's land use pattern would be more concentrated in urban areas than the proposed Plan, which would result in less impacts on scenic vistas, scenic resources within scenic highways, visual character in rural and less developed areas of the region, and new sources of substantial light or glare.	**Significant Impact (decreased)** – Impacts **AES-1**, **AES-2**, **AES-3**, and **AES-4** would be significant for Alternative 2 in 2035. Impacts would be reduced compared to the proposed Plan in 2035 because Alternative 2 would result in more compact development patterns compared to the proposed Plan, which would result in reduced impacts on scenic vistas, scenic resources within scenic highways, visual character in rural and less developed areas of the region, and new sources of substantial light or glare.	**Significant Impact (decreased)** – Impacts **AES-1**, **AES-2**, **AES-3**, and **AES-4** would be significant for Alternative 3in 2035. Impacts would be reduced compared to the proposed Plan in 2035 because Alternative 3 would result in more compact development patterns compared to the proposed Plan, which would result in reduced impacts on scenic vistas, scenic resources within scenic highways, visual character in rural and less developed areas of the region, and new sources of substantial light or glare.
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-AES-1**, making a cumulatively considerable contribution to adverse effects related to aesthetics and visual resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-AES-1**, making a cumulatively considerable contribution to adverse effects related to aesthetics and visual resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-AES-1**, making a cumulatively considerable contribution to adverse effects related to aesthetics and visual resources. Cumulative impacts would decrease compared to the proposed Plan.
2050	**Significant Impact (decreased)** – Impacts **AES-1**, **AES-2**, **AES-3**, and **AES-4** would be significant for Alternative 1 in 2050 and decreased compared to the proposed Plan. The rationale described under 2035 also applies to 2050.	**Significant Impact (decreased)** – Impacts **AES-1**, **AES-2, AES-3**, and **AES-4** would be significant for Alternative 2 in 2050 and reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050.	**Significant Impact (decreased)** – Impacts **AES-1**, **AES-2**, **AES-3**, and **AES-4** would be significant for Alternative 3 in 2050 and reduced compared to the proposed Plan. The rationale described under 2035 also applies to 2050.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-AES-1**, making a cumulatively considerable contribution to adverse effects related to aesthetics and visual resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-AES-1**, making a cumulatively considerable contribution to adverse effects related to aesthetics and visual resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-AES-1**, making a cumulatively considerable contribution to adverse effects related to aesthetics and visual resources. Cumulative impacts would decrease compared to the proposed Plan.
	Agriculture and Forestry Resources		
2035	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts on agricultural and forest resources (**AG-1**, **AG-2**, and **FR-1**). **AG-1** would occur due to conversion of agricultural lands to nonagricultural uses, **AG-2** would occur as a result of conflict with land zoned for agricultural use or with Williamson Act contracts, and **FR-1** would result from direct loss of forest land. Impacts would be reduced compared to the proposed Plan in 2035 because Alternative 1 land use would be denser in urban areas than the proposed Plan and would thus result in less conversion of agricultural lands to nonagricultural uses and result in less land use conflicts with agricultural and forest resources.	**Significant Impact (decreased) –** Alternative 2 would result in significant impacts on agricultural and forest resources (**AG-1**, **AG-2**, and **FR-1**). Impacts would be reduced compared to the proposed Plan in 2035 because Alternative 2 land use would be denser in urban areas than the proposed Plan and would thus result in less conversion of agricultural lands to nonagricultural uses and result in less land use conflicts with agricultural and forest resources.	**Significant Impact (decreased) –** Alternative 3 would result in significant impacts on agricultural and forest resources (**AG-1**, **AG-2**, and **FR-1**). Impacts would be reduced compared to the proposed Plan in 2035 because Alternative 3 land use would be denser in urban areas than the proposed Plan and would thus result in less conversion of agricultural lands to nonagricultural uses and result in less land use conflicts with agricultural and forest resources.
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-AG-1**, making a cumulatively considerable contribution to adverse effects on agriculture and forestry resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-AG-1**, making a cumulatively considerable contribution to adverse effects on agriculture and forestry resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-AG-1**, making a cumulatively considerable contribution to adverse effects on agriculture and forestry resources. Cumulative impacts would decrease compared to the proposed Plan.
2050	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts on agricultural and forest resources (**AG-1**, **AG-2**, and **FR-1**) and the impacts would be reduced compared to the proposed Plan. The rationale described under 2035 also applies to 2050.	**Significant Impact (decreased) –** Alternative 2 would result in significant impacts on agricultural and forest resources (**AG-1**, **AG-2**, and **FR-**1) and the impacts would be reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050.	**Significant Impact (decreased) –** Alternative 3 would result in significant impacts on agricultural and forest resources (**AG-1**, **AG-2**, and **FR-**1) and the impacts would be reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-AG-1**, making a cumulatively considerable contribution to adverse effects on agriculture and forestry resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-AG-1**, making a cumulatively considerable contribution to adverse effects on agriculture and forestry resources. Cumulative impacts would decrease compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-AG-1**, making a cumulatively considerable contribution to adverse effects on agriculture and forestry resources. Cumulative impacts would decrease compared to the proposed Plan.
	Air Quality		
2035	**Less-than-Significant Impact (same)** – Alternative 1 would result in a less-than- significant impact in 2035 for **AQ-1,** conflict with or obstruct implementation of applicable Air Quality Attainment Plans. As with the proposed Plan, this alternative would result in population growth that is similar to or less than that assumed in the 2022 RAQS, the 2020 SIP, and the CERP. Therefore, this alternative would be consistent with the 2022 RAQS, the 2020 SIP, and the CERP.	**Less-than-Significant Impact (same)** – Alternative 2 would result in a less-than- significant impact in 2035 for **AQ-1**. As with the proposed Plan, this alternative would result in population growth that is similar to or less than that assumed in the 2022 RAQS, the 2020 SIP, and the CERP. Therefore, this alternative would be consistent with the 2022 RAQS, the 2020 SIP, and the CERP.	**Less-than-Significant Impact (same)** – Alternative 3 would result in a less-than- significant impact in 2035 for **AQ-1**. As with the proposed Plan, this alternative would result in population growth that is similar to or less than that assumed in the 2022 RAQS, the 2020 SIP, and the CERP. Therefore, this alternative would be consistent with the 2022 RAQS, the 2020 SIP, and the CERP.
2035	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2035 for **AQ-2,** result in a cumulatively considerable net increase in nonattainment or attainment criteria pollutants**.** Alternative 1 would increase VMT and on-road emissions compared to the proposed Plan. However, Alternative 1 would result in less emissions (or no change in emissions) than the baseline (2022) conditions for all emission types except for $PM_{2.5}$ and PM_{10}, which would see a marginal increase due to the increase in VMT and associated road dust; refer to Appendix M, Table M-4. Alternative 1 would result in increased emissions of $PM_{2.5}$ and PM_{10} compared to the proposed Plan, an, compared to baseline (2022) conditions. As such, Alternative 1 would also result in a similar but slightly higher significant impact.	**Less-than-Significant Impact (decreased)** – Alternative 2 would result in a less-than-significant impact in 2035 for **AQ-2**. Alternative 2 would decrease VMT and on-road emissions compared to the proposed Plan. Alternative 2 would result in higher VMT but lower emissions than the baseline (2022) conditions. All emission types would decrease relative to both the proposed Plan and baseline (2022) conditions; refer to Appendix M, Table M-4. Therefore, because Alternative 2 would result in reduced emissions compared to the proposed Plan and compared to baseline (2022) conditions, Alternative 2 would have a less-than-significant impact the net increase in nonattainment or attainment criteria pollutants.	**Less-than-Significant Impact (decreased)** – Alternative 3 would result in a less-than- significant impact in 2035 for **AQ-2**. Alternative 3 would decrease VMT and on-road emissions compared to the proposed Plan. Alternative 3 would result in higher VMT and lower emissions than baseline (2022) conditions; refer to Appendix M, Table M-4. Therefore, because Alternative 3 would result in reduced emissions compared to the proposed Plan and compared to baseline (2022) conditions, Alternative 3 would have a less-than-significant impact the net increase in nonattainment or attainment criteria pollutants.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact in 2035 for **AQ-3,** result in construction-related emissions above mass emission thresholds. Alternative 1 would result in decreased construction-related emissions compared to the proposed Plan because fewer transportation projects would be constructed, and would result in decreased impacts.	**Significant Impact (same)** – Alternative 2 would result in a significant impact in 2035 for **AQ-3**. Alternative 2 would result in similar construction-related emissions compared to the proposed Plan because the same number of transportation projects would be constructed, and would result in similar impacts.	**Significant Impact (same)** – Alternative 3 would result in a significant impact in 2035 for **AQ-3**. Alternative 3 would result in similar construction-related emissions compared to the proposed Plan because the same number of transportation projects would be constructed, and would result in similar impacts.
2035	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2035 for **AQ-4,** expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations. As shown in Appendix M, Table M-4, Alternative 1 would result in higher PM_{10} and $PM_{2.5}$ emissions compared to the proposed Plan. Thus, Alternative 1 would have higher PM_{10} and $PM_{2.5}$ concentration impacts on sensitive receptors compared to the proposed Plan and would also result in a similar significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2035 for **AQ-4**, and would expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations. As shown in Appendix M Table M-4, Alternative 2 would result in slightly lower PM_{10} and $PM_{2.5}$ emissions compared to the proposed Plan and the baseline (2022) conditions. Therefore, Alternative 2 would result in a similar but slightly lower significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2035 for **AQ-4**. Alternative 3 would result in a small decrease of PM_{10} and $PM_{2.5}$ emissions compared to the proposed Plan and the baseline (2022) conditions; refer to Appendix M, Table M-4. Therefore, Alternative 3 would result in a similar but slightly lower significant impact.
2035	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2035 for **AQ-5,** expose sensitive receptors to substantial TAC concentrations. As shown in Appendix M Table M-2, Alternative 1 would result in lower transit ridership and increased VMT, which would increase TAC emissions from roadways. Overall, the decrease in diesel exposure due to commuter rail lines due to lower transit demand would be offset by an increase in roadway TACs from increased on-road VMT. Thus, Alternative 1 would have higher TACs compared to the proposed Plan, resulting in a similar significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2035 for **AQ-5**. As shown in Appendix M Table M-2, Alternative 2 would result in increased transit ridership and reduced VMT, which would increase TAC emissions from commuter rail lines but would reduce TAC emissions from roadways. Overall, the increase in diesel exposure from commuter rail lines due to higher transit demand would be offset by a decrease in roadway TACs due to reduced on-road VMT. Thus, Alternative 2 would have lower TACs compared to the proposed Plan, and would result in a similar but slightly lower significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2035 for **AQ-5**. As shown in Appendix M Table M-2, Alternative 3 would result in increased transit ridership and reduced VMT, which would increase TAC emissions from commuter rail lines but would reduce TAC emissions from roadways. Overall, the increase in diesel exposure from commuter rail lines due to higher transit demand would be offset by a decrease in roadway TACs due to reduced on-road VMT. Thus, Alternative 3 would have lower TACs compared to the proposed Plan, and result in a similar but slightly lower significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Less-than-Significant Impact (decreased) –** Alternative 1 would result in a less-than- significant impact in 2035 for **AQ-6,** expose sensitive receptors to substantial concentrations of CO. According to Appendix M, Table M-4, Alternative 1 would result in lower winter CO emissions compared to the proposed Plan, and substantially lower winter CO emissions than the baseline (2022) conditions. Thus, exposure of sensitive receptors to CO concentrations would decrease under Alternative 1 as under the proposed Plan and result in a less-than- significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in a less-than- significant impact in 2035 for **AQ-6**. According to Appendix M, Table M-4, Alternative 2 would result in slightly lower winter CO emissions compared to the proposed Plan, and substantially lower CO emissions than the baseline (2022) conditions. Thus, similar to the proposed Plan, Alternative 2 would have a less-than-significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in a less-than- significant impact in 2035 for **AQ-6**. According to Appendix M, Table M-4, Alternative 3 would result in slightly lower winter CO emissions compared to the proposed Plan, and substantially lower CO emissions than the baseline (2022) conditions. Thus, similar to the proposed Plan, Alternative 3 would have a less-than-significant impact.
2035	**Less-than-Significant Impact (same) –** Alternative 1 would result in a less-than- significant impact in 2035 for **AQ-7,** expose a substantial number of people to objectionable odors. Exposure of people to objectionable odors would be the same as the proposed Plan because Alternative 1 would not result in major increases in construction or operation of typical land uses that cause odor impacts, such as agricultural activities, wastewater treatment plants, food processing plants, chemical plants, composting facilities, landfills, dairies, and fiberglass molding. Furthermore, Alternative 1 would be required to comply with all SDAPCD, city, county, and other odor rules, regulations and programs. Alternative 1 would have similar construction and operational impacts as the proposed Plan and thus similar odor impacts. Thus, Alternative 1 would result in a less-than-significant impact.	**Less-than-Significant Impact (same) –** Alternative 2 would result in a less-than- significant impact in 2035 for **AQ-7**. Exposure of people to objectionable odors would be the same under Alternative 2 as under the proposed Plan because Alternative 2 would use similar construction methods and have similar land uses as the proposed Plan. Furthermore, Alternative 2 would also be required to comply with all SDAPCD, city, county, and other odor rules, regulations and programs. Thus, Alternative 2 would result in similar less-than-significant odor impacts.	**Less-than-Significant Impact (same) –** Alternative 3 would result in a less-than- significant impact in 2035 for **AQ-7**. Exposure of people to objectionable odors would be the same under Alternative 3 as under the proposed Plan because Alternative 3 would use similar construction methods and have similar land uses as the proposed Plan. Furthermore, Alternative 3 would also be required to comply with all SDAPCD, city, county, and other odor rules, regulations and programs. Thus, Alternative 3 would result in similar less-than-significant odor impacts.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts related to **C-AQ-1**, net increase in nonattainment or attainment criteria pollutants (AQ-2); expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (AQ-4); expose sensitive receptors to substantial TAC concentrations (AQ-5). Cumulative impacts would be increased compared to the proposed Plan. **Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts related to **C-AQ-1**, increase in construction-related emissions (AQ-3). Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same/increased)** – Similar to the proposed Plan, Alternative 1 would not result in cumulatively considerable impacts for **C-AQ-1** related to consistency with plans (AQ-1), exposing sensitive receptors to substantial concentrations of CO (AQ-6), and objectionable odors (AQ-7).	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts related to **C-AQ-1**, expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (AQ-4); expose sensitive receptors to substantial TAC concentrations (AQ-5). Cumulative impacts would be decreased compared to the proposed Plan. **Cumulatively Considerable (same)** - Alternative 2 would result in a cumulatively considerable impacts related to **C-AQ-1,** increase in construction-related emissions (AQ-3), the same as the proposed Project. **Not Cumulatively Considerable (same/decreased)** – Similar to the proposed Plan, Alternative 2 would not result in cumulatively considerable impacts for **C-AQ-1** related to consistency with plans (AQ-1), net increase in nonattainment or attainment criteria pollutants (AQ-2), exposing sensitive receptors to substantial concentrations of CO (AQ-6), and objectionable odors (AQ-7).	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts related to **C-AQ-1**, expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (AQ-4); expose sensitive receptors to substantial TAC concentrations (AQ-5). Cumulative impacts would be decreased compared to the proposed Plan. **Cumulatively Considerable (same)** - Alternative 3 would result in a cumulatively considerable impacts related to **C-AQ-1,** increase in construction-related emissions (AQ-3), the same as the proposed Project. **Not Cumulatively Considerable (same/decreased)** – Similar to the proposed Plan, Alternative 3 would not result in cumulatively considerable impacts for **C-AQ-1** related to consistency with plans (AQ-1), net increase in nonattainment or attainment criteria pollutants (AQ-2), exposing sensitive receptors to substantial concentrations of CO (AQ-6), and objectionable odors (AQ-7).
2050	**Less-than-Significant Impact (same)** – Alternative 1 would result in a less-than- significant impact in 2050 for **AQ-1,** conflict with or obstruct implementation of applicable Air Quality Attainment Plans. As with the proposed Plan, this alternative would result in population growth that is similar to or less than that assumed in the 2022 RAQS, the 2020 SIP, and the CERP. Therefore, this alternative would be consistent with the 2022 RAQS, the 2020 SIP, and the CERP.	**Less-than-Significant Impact (same)** – Alternative 2 would result in a less-than- significant impact in 2050 for **AQ-1**. As with the proposed Plan, this alternative would result in population growth that is similar to or less than that assumed in the 2022 RAQS, the 2020 SIP, and the CERP. Therefore, this alternative would be consistent with the 2022 RAQS, the 2020 SIP, and the CERP.	**Less-than-Significant Impact (same)** – Alternative 3 would result in a less-than- significant impact in 2050 for **AQ-1**. As with the proposed Plan, this alternative would result in population growth that is similar to or less than that assumed in the 2022 RAQS, the 2020 SIP, and the CERP. Therefore, this alternative would be consistent with the 2022 RAQS, the 2020 SIP, and the CERP.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2050 for **AQ-2,** result in a cumulatively considerable net increase in nonattainment or attainment criteria pollutants. As shown in Appendix M, Table M-4, Alternative 1 would increase on-road emissions compared to the proposed Plan. However, Alternative 1 would result in less emissions (or no change in emissions) than the baseline (2022) conditions for all emission types except for $PM_{2.5}$ and PM_{10}, which would increase due to the increase in VMT and associated road dust. Therefore, Alternative 1 would result in increased emissions compared to the proposed Plan and, for $PM_{2.5}$ and PM_{10}, compared to baseline (2022) conditions. As such, Alternative 1 would also result in a similar but slightly higher significant impact.	**Less-than-Significant Impact (decreased)** – Alternative 2 would result in a less-than-significant impact in 2050 for **AQ-2**. As shown in Appendix M, Table M-4, Alternative 2 would decrease VMT and on-road emissions compared to the proposed Plan but would result in higher VMT but lower emissions than baseline (2022) conditions. All emission types would decrease relative to both the proposed Plan and baseline (2022) conditions; refer to Appendix M, Table M-4. Therefore, because Alternative 2 would result in reduced emissions compared to the proposed Plan and compared to baseline (2022) conditions, Alternative 2 would have a less-than-significant impact the net increase in nonattainment or attainment criteria pollutants.	**Less-than-Significant Impact (decreased)** – Alternative 3 would result in a less-than- significant impact in 2050 for **AQ-2**. As shown in Appendix M, Table M-4, Alternative 3 would decrease VMT and on-road emissions compared to the proposed Plan. Alternative 3 would result in higher VMT and lower emissions the baseline (2022) conditions. Therefore, Alternative 3 would result in reduced emissions compared to the proposed Plan and compared to baseline (2022) conditions, Alternative 3 would have a less-than-significant impact the net increase in nonattainment or attainment criteria pollutants.
2050	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact in 2050 for **AQ-3,** result in construction-related emissions above mass emission thresholds. Alternative 1 would result in lower construction-related emissions compared to the proposed Plan because fewer transportation projects would be constructed, and would result in decreased impacts.	**Significant Impact (same)** – Alternative 2 would result in a significant impact in 2050 for **AQ-3**. Alternative 2 would result in similar construction-related emissions compared to the proposed Plan because the same number of transportation projects would be constructed, and would result in similar impacts.	**Significant Impact (same)** – Alternative 3 would result in a significant impact in 2050 for **AQ-3**. Alternative 3 would result in similar construction-related emissions compared to the proposed Plan because the same number of transportation projects would be constructed, and would result in similar impacts.
2050	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2050 for **AQ-4**. As shown in Appendix M, Table M-4, Alternative 1 would result in higher PM_{10} and $PM_{2.5}$ emissions compared to the proposed Plan. Thus, Alternative 1 would also result in a similar, but slightly increased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2050 for **AQ-4**. As shown in Appendix M, Table M-4, Alternative 2 would result in lower PM_{10} and $PM_{2.5}$ emissions compared to the proposed Plan. Thus, Alternative 2 would have a similar, but slightly decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2050 for **AQ-4**. Alternative 3 would result in a small decrease of PM_{10} and $PM_{2.5}$ emissions compared to the proposed Plan; refer to Appendix M, Table M-4. Thus, Alternative 3 would have a similar, but slightly decreased, significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2050 for **AQ-5**. As shown in Appendix M Table M-2, Alternative 1 would result in lower transit ridership and increased VMT, which would increase TAC emissions from roadways. Overall, while diesel exposure due to commuter rail lines would decrease due to lower transit demand, this would be offset by an increase in roadways TACs due to increased on-road VMT. Thus, Alternative 1 would have higher TACs compared to the proposed Plan, resulting in a similar significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2050 for **AQ-5**. As shown in Appendix M Table M-2, Alternative 2 would result in increased transit ridership and reduced VMT, which would increase TAC emissions from commuter rail lines but would reduce TAC emissions from roadways. Overall, decrease in diesel exposure from commuter rail lines due to higher transit demand would be offset by a decrease in roadway TACs due to reduced on-road VMT. Thus, Alternative 2 would have lower TACs compared to the proposed Plan, resulting in a similar significant impact.	**Significant Impact (decreased**) – Alternative 3 would result in a significant impact in 2050 for **AQ-5**. As shown in Appendix M Table M-2, Alternative 3 would result in increased transit ridership and reduced VMT, which would increase TAC emissions from commuter rail lines but reduce TAC emissions from roadways. Overall, decrease in diesel exposure from commuter rail lines due to higher transit demand would be offset by a decrease in roadway TACs due to reduced on-road VMT. Thus, Alternative 3 would have lower TACs compared to the proposed Plan, resulting in a similar significant impact.
2050	**Less-than-Significant Impact (decreased) –** Alternative 1 would result in a less-than- significant impact in 2050 for **AQ-6**. According to Appendix M, Table M-4, Alternative 1 would result in lower winter CO emissions than the proposed Plan, and substantially lower winter CO emissions than baseline (2022) conditions. Thus, exposure of sensitive receptors to CO concentrations would decrease under Alternative 1 and would result in a less-than- significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in a less-than-significant impact in 2050 for **AQ-6**. According to Appendix M, Table M-4, Alternative 2 would result in lower winter CO emissions than the proposed Plan, and substantially lower winter CO emissions than baseline (2022) conditions. Thus, exposure of sensitive receptors to CO concentrations under Alternative 2 would result in a less-than-significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in a less-than- significant impact in 2050 for **AQ-6**. According to Appendix M, Table M-4, Alternative 3 would result in lower winter CO emissions than the Proposed Plan, and substantially lower winter CO emissions than baseline (2022) conditions. Thus, exposure of sensitive receptors to CO concentrations under Alternative 3 would result in a less- than-significant impact.
2050	**Less-than-Significant Impact (same)** – Alternative 1 would result in a less-than-significant impact in 2050 for **AQ-7**. Exposure of people to objectionable odors would be the same as the proposed Plan because Alternative 1 would not result in major increases in construction or operation of typical land uses that cause odor impacts, such as agricultural activities, wastewater treatment plants, food processing plants, chemical plants, composting facilities, landfills, dairies, and fiberglass molding. Furthermore, Alternative 1 would be required to comply with all SDAPCD, city, county, and other odor rules, regulations and programs. Alternative 1 would have similar construction and operational impacts as the proposed Plan and thus similar odor impacts. Thus, Alternative 1 would result in a less-than- significant impact.	**Less-than-Significant Impact (same)** – Alternative 2 would result in a less-than-significant impact in 2050 for **AQ-7**. Exposure of people to objectionable odors would be the same under Alternative 2 as under the proposed Plan because Alternative 2 would use similar construction methods and have similar land uses. Furthermore, Alternative 2 would also be required to comply with all SDAPCD, city, county, and other odor rules, regulations and programs. Thus, Alternative 2 would result in similar less-than-significant odor impacts.	**Less-than-Significant Impact (same)** – Alternative 3 would result in a less-than- significant impact in 2050 for **AQ-7**. Exposure of people to objectionable odors would be the same under Alternative 3 as under the proposed Plan because Alternative 3 would use similar construction methods and have similar land uses. Furthermore, Alternative 3 would also be required to comply with all SDAPCD, city, county, and other odor rules, regulations and programs. Thus, Alternative 3 would result in similar less-than-significant odor impacts.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts related to **C-AQ-1**, net increase in nonattainment or attainment criteria pollutants (AQ-2); expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (AQ-4); expose sensitive receptors to substantial TAC concentrations (AQ-5). Cumulative impacts would be increased compared to the proposed Plan. **Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts related to **C-AQ-1**, increase in construction-related emissions (AQ-3). Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same/decreased)** – Similar to the proposed Plan, Alternative 1 would not result in cumulatively considerable impacts for **C-AQ-1** related to consistency with plans (AQ-1), exposing sensitive receptors to substantial concentrations of CO (AQ-6), and objectionable odors (AQ-7).	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts related to **C-AQ-1**, expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (AQ-4); expose sensitive receptors to substantial TAC concentrations (AQ-5). Cumulative impacts would be decreased compared to the proposed Plan. **Cumulatively Considerable (same)** - Alternative 2 would result in cumulatively considerable impacts related to **C-AQ-1,** increase in construction-related emissions (AQ-3), the same as the proposed Project. **Less than Cumulatively Considerable (same/decreased)** – Similar to the proposed Plan, Alternative 2 would not result in cumulatively considerable impacts for **C-AQ-1** related to consistency with plans (AQ-1), net increase in nonattainment or attainment criteria pollutants (AQ-2), exposing sensitive receptors to substantial concentrations of CO (AQ-6), and objectionable odors (AQ-7).	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts related to **C-AQ-1**, expose sensitive receptors to substantial PM_{10} and $PM_{2.5}$ concentrations (AQ-4); expose sensitive receptors to substantial TAC concentrations (AQ-5). Cumulative impacts would be decreased compared to the proposed Plan. **Cumulatively Considerable (same)** - Alternative 3 would result in cumulatively considerable impacts related to **C-AQ-1,** increase in construction-related emissions (AQ-3), the same as the proposed Project. **Less than Cumulatively Considerable (same/decreased)** – Similar to the proposed Plan, Alternative 3 would not result in cumulatively considerable impacts for **C-AQ-1** related to consistency with plans (AQ-1), net increase in nonattainment or attainment criteria pollutants (AQ-2), exposing sensitive receptors to substantial concentrations of CO (AQ-6), and objectionable odors (AQ-7).
	Biological Resources		
2035	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts on biological resources for **BIO-1**, adverse effects on sensitive natural communities and regulated aquatic resources; **BIO-2**, adverse effects on candidate, sensitive, endangered, rare, threatened, or special status species; and **BIO-3**, substantial interference with wildlife movement. The impacts of Alternative 1 in 2035 would be reduced compared to the proposed Plan because Alternative 1 would result in more concentrated development patterns, which would reduce impacts on natural communities, plant and animal species, and wildlife movement. As such, Alternative 1 would also result in a similar but decreased significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on biological resources for **BIO-1**, **BIO-2**, and **BIO-3**. The impacts of Alternative 2 in 2035 would be reduced compared to the proposed Plan because Alternative 2 would result in more concentrated development patterns, which would reduce impacts on natural communities, plant and animal species, and wildlife movement. As such, Alternative 2 would also result in a similar but decreased significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on biological resources for **BIO-1**, **BIO-2**, and **BIO-3**. The impacts of Alternative 3 in 2035 would be reduced compared to the proposed Plan because Alternative 3 would result in more compact development patterns, which would reduce impacts on natural communities, plant and animal species, and wildlife movement. As such, Alternative 3 would also result in a similar but decreased significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Less-than-Significant Impact (decreased) –** Alternative 1 would result in a less-than-significant impact in 2035 for **BIO-4,** conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources**.** Encroachment into NCCP preserve areas from regional growth and land use change, and, to a lesser extent, transportation network improvements, would require biologically equivalent or superior compensation of habitat or project redesign, the same as the proposed Plan. Therefore, due to more concentrated development, Alternative 1 would result in reduced impacts compared to the proposed Plan.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in a less-than-significant impact in 2035 for **BIO-4**. Encroachment into NCCP preserve areas from regional growth and land use change, and, to a lesser extent, transportation network improvements, would require biologically equivalent or superior compensation of habitat or project redesign, the same as the proposed Plan. Therefore, due to more concentrated development, Alternative 2 would result in reduced impacts compared to the proposed Plan.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in a less-than-significant impact in 2035 for **BIO-4**. Encroachment into NCCP preserve areas from regional growth and land use change, and, to a lesser extent, transportation network improvements, would require biologically equivalent or superior compensation of habitat or project redesign, the same as the proposed Plan. Therefore, due to more concentrated development, Alternative 3 would result in decreased impacts compared to the proposed Plan.
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-BIO-1**, a cumulatively considerable contribution to adverse effects on biological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-BIO-1** in 2035 for BIO-4, conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-BIO-1**, a cumulatively considerable contribution to adverse effects on biological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-BIO-1** in 2035 for BIO-4, conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-BIO-1**, a cumulatively considerable contribution to adverse effects on biological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-BIO-1** in 2035 for BIO-4, conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources.
2050	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact on biological resources for **BIO-1**, **BIO-2**, and **BIO-3**. The impacts of Alternative 1 in 2050 would be reduced compared to the proposed Plan because Alternative 1 would result in more concentrated development patterns, which would reduce impacts on natural communities, plant and animal species, and wildlife movement. As such, Alternative 1 would also result in a similar but decreased significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on biological resources for **BIO-1**, **BIO-2**, and **BIO-3**. The impacts of Alternative 2 in 2050 would be reduced compared to the proposed Plan because Alternative 2 would result in more concentrated development patterns, which would reduce impacts on natural communities, plant and animal species, and wildlife movement. As such, Alternative 2 would also result in a similar but decreased significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on biological resources for **BIO-1**, **BIO-2**, and **BIO-3**. The impacts of Alternative 3 in 2050 would be reduced compared to the proposed Plan because Alternative 3 would result in more concentrated development patterns, which would reduce impacts on natural communities, plant and animal species, and wildlife movement. As such, Alternative 3 would also result in a similar but decreased significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Less-than-Significant Impact (decreased) –** Alternative 1 would result in a less-than-significant impact in 2050 for **BIO-4**. Encroachment into NCCP preserve areas from regional growth and land use change, and, to a lesser extent, transportation network improvements, would require biologically equivalent or superior compensation of habitat or project redesign, the same as the proposed Plan. Therefore, due to more compact development, Alternative 1 would result in reduced less than significant impacts compared to the proposed Plan.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in a less-than-significant impact in 2050 for **BIO-4**. Encroachment into NCCP preserve areas from regional growth and land use change, and, to a lesser extent, transportation network improvements, would require biologically equivalent or superior compensation of habitat or project redesign, the same as the proposed Plan. Therefore, due to more compact development, Alternative 2 would result in reduced less than significant impacts compared to the proposed Plan.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in a less-than-significant impact in 2050 for **BIO-4**. Encroachment into NCCP preserve areas from regional growth and land use change, and, to a lesser extent, transportation network improvements, would require biologically equivalent or superior compensation of habitat or project redesign, the same as the proposed Plan. Therefore, due to more compact development, Alternative 3 would result in reduced less than significant impacts compared to the proposed Plan.
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-BIO-1**, a cumulatively considerable contribution to adverse effects on biological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-BIO-1** in 2050 for BIO-4, conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-BIO-1**, a cumulatively considerable contribution to adverse effects on biological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-BIO-1** in 2050 for BIO-4, conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-BIO-1**, a cumulatively considerable contribution to adverse effects on biological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-BIO-1** in 2050 for BIO-4, conflict with the provisions of an adopted HCP, NCCP, or other conservation plan, or with any local policies or ordinances protecting biological resources.
	Cultural Resources		
2035	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact on cultural resources for **CULT-1,** substantial adverse change in the significance of a historical resource or unique archaeological resource. The impacts of Alternative 1 in 2035 would be reduced compared to the proposed Plan. Alternative 1's land use pattern would be more concentrated compared to the proposed Plan, resulting in fewer ground-disturbing activities on previously undisturbed land that could encounter and adversely affect historical or archaeological resources. Therefore, Alternative 1 would result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on cultural resources for **CULT-1**. The impacts of Alternative 2 in 2035 would be reduced compared to the proposed Plan because Alternative 2's land use pattern would be more concentrated compared to the proposed Plan, resulting in fewer ground-disturbing activities on previously undisturbed land that could encounter and adversely affect historical or archaeological resources. Therefore, Alternative 2 would result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on cultural resources for **CULT-1**. The impacts of Alternative 3 in 2035 would be reduced compared to the proposed Plan because Alternative 3's land use pattern would be more concentrated compared to the proposed Plan, resulting in fewer ground-disturbing activities in previously undisturbed land that could encounter and adversely affect historical or archaeological resources. Therefore, Alternative 3 would result in a similar, but decreased, significant impact compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Less-than-Significant Impact (same) –** Alternative 1 would result in a less-than-significant impact in 2035 for **CULT-2,** disturb any human remains, including those interred outside of dedicated cemeteries, in violation of existing laws and regulations. Existing laws and regulations would continue to apply to Alternative 1, so the impact would be the same as the proposed Plan impact.	**Less-than-Significant Impact (same) –** Alternative 2 would result in a less-than-significant impact in 2035 for **CULT-2**. Existing laws and regulations would continue to apply to Alternative 2, so the impact would be the same as the proposed Plan impact.	**Less-than-Significant Impact (same) –** Alternative 3 would result in a less-than-significant impact in 2035 for **CULT-2**. Existing laws and regulations would continue to apply to Alternative 3, so the impact would be the same as the proposed Plan impact.
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-CULT-1**, a cumulatively considerable contribution to adverse effects on cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-CULT-1**, a cumulatively considerable contribution to adverse effects on cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-CULT-1**, a cumulatively considerable contribution to adverse effects on cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.
2050	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact on cultural resources for **CULT-1**. The impacts of Alternative 1 in 2050 would be decreased compared to the proposed Plan because the land use pattern would be more concentrated, which would result in fewer ground-disturbing activities in previously undisturbed land that could encounter and adversely affect historical or archaeological resources. Therefore, Alternative 1 would result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on cultural resources for **CULT-1**. The impacts of Alternative 2 in 2050 would be decreased compared to the proposed Plan because the land use pattern would be more concentrated, which would result in fewer ground-disturbing activities in previously undisturbed land that could encounter and adversely affect historical or archaeological resources. Therefore, Alternative 2 would result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on cultural resources for **CULT-1**. The impacts of Alternative 3 in 2050 would be decreased compared to the proposed Plan because the land use pattern would be more concentrated, which would result in fewer ground-disturbing activities in previously undisturbed land that could encounter and adversely affect historical or archaeological resources. Therefore, Alternative 3 would result in a similar, but decreased, significant impact compared to the proposed Plan.
2050	**Less-than-Significant Impact (same) –** Alternative 1 would result in a less-than-significant impact in 2050 for **CULT-2**. Existing laws and regulations would continue to apply to Alternative 1, so the impact would be the same as the proposed Plan impact.	**Less-than-Significant Impact (same) –** Alternative 2 would result in a less-than-significant impact in 2050 for **CULT-2**. Existing laws and regulations would continue to apply to Alternative 2, so the impact would be the same as the proposed Plan impact.	**Less-than-Significant Impact (same) –** Alternative 3 would result in a less-than-significant impact in 2050 for **CULT-2**. Existing laws and regulations would continue to apply to Alternative 3, so the impact would be the same as the proposed Plan impact.
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-CULT-1**, a cumulatively considerable contribution to adverse effects on cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-CULT-1**, a cumulatively considerable contribution to adverse effects on cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-CULT-1**, a cumulatively considerable contribution to adverse effects on cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Energy		
2035	**Less-than-Significant Impact (increased) –** Alternative 1 would result in a less-than-significant impact in 2035 for (**EN-1),** result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy during project construction or operations. Existing State and regional regulations and programs to reduce energy use would continue to apply to Alternative 1; however, land use would concentrate more new growth in areas with available multimodal transportation than the proposed Plan, resulting in more efficient energy usage for transportation during project operations. Thus, Alternative 2 would result in decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in a less-than-significant impact in 2035 (**EN-1**). Existing State and regional regulations and programs to reduce energy use would continue to apply to Alternative 2; however, land use would concentrate more new growth in areas with available multimodal transportation than the proposed Plan, resulting in more efficient energy usage for transportation during project operations. Alternative 2 would result in more efficient energy usage from incentives to use transit as compared to the proposed Plan, thus decreasing reliance on gasoline and diesel fuel to power automobiles. Thus, Alternative 2 would result in decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in a less-than-significant impact in 2035 (**EN-1**). Existing State and regional regulations and programs to reduce energy use would continue to apply to Alternative 3; however, the land use pattern would be more concentrated as compared to the proposed Plan. Alternative 3 would also concentrate more new growth in areas with available multimodal transportation than the proposed Plan, resulting in more efficient energy usage for transportation during project operations. Moreover, the free transit component of Alternative 3 could incentivize increased reliance on transit leading to decreased energy per capita for on-road transportation as compared to the proposed Plan. This could occur as gasoline and diesel fuel consumption associated with on-road vehicles shifts to transit, which may be powered by electricity or condensed natural gas. Thus, Alternative 3 would result in decreased, less-than-significant impacts.
2035	**Less-than-Significant Impact (same) –** Alternative 1 would result in a less-than-significant impact in 2035 for **EN-2,** conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Alternative 1 would be consistent with adopted plans to address energy efficiency and renewable energy and thus would result in the same less-than-significant impact as the proposed Plan.	**Less-than-Significant Impact (same) –** Alternative 2 would result in a less-than-significant impact in 2035 (**EN-2**). Alternative 2 would be consistent with adopted plans to address energy efficiency and renewable energy and thus would result in the same less-than-significant impact as the proposed Plan.	**Less-than-Significant Impact (same) –** Alternative 3 would result in a less-than-significant impact in 2035 (**EN-2**). Alternative 3 would be consistent with adopted plans to address energy efficiency and renewable energy and thus would result in the same less-than-significant impact as the proposed Plan.
2035	**Not Cumulatively Considerable (decreased)** - Alternative 1 would not result in cumulatively considerable impacts in 2035 for **C-EN-1**, a cumulatively considerable contribution to adverse effects related to energy. Cumulative impacts would be decreased compared to the proposed Plan.	**Not Cumulatively Considerable (decreased)** - Alternative 2 would not result in cumulatively considerable impacts in 2035 for **C-EN-1**, a cumulatively considerable contribution to adverse effects related to energy. Cumulative impacts would be decreased compared to the proposed Plan.	**Not Cumulatively Considerable (decreased)** - Alternative 3 would not result in cumulatively considerable impacts in 2035 for **C-EN-1**, a cumulatively considerable contribution to adverse effects related to energy. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Less-than-Significant Impact (decreased) –** Alternative 1 would result in a less-than-significant impact in 2050 for **EN-1**. Existing State and regional regulations and programs to reduce energy use would continue to apply to Alternative 1; however, Alternative 1 would concentrate new growth in areas with available multimodal transportation more than the proposed Plan. Thus, Alternative 1 would result in a decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in a less-than-significant impact in 2050 for **EN-1**. Existing State and regional regulations and programs to reduce energy use would continue to apply to Alternative 2; however, Alternative 2 would concentrate new growth in areas with available multimodal transportation as compared to the proposed Plan. Alternative 2 would result in more efficient energy usage from incentives to use transit as compared to the proposed Plan, thus decreasing reliance on gasoline and diesel fuel to power automobiles. Thus, Alternative 2 would result in a decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in a less-than- significant impact in 2050 for **EN-1**. Existing State and regional regulations and programs to reduce energy use would continue to apply to Alternative 3; however, Alternative 3 would concentrate new growth in areas with available multimodal transportation as compared to the proposed Plan, resulting in more efficient energy usage for transportation during project operations. Moreover, the free transit component of Alternative 3 could incentivize increased reliance on transit leading to decreased energy per capita for on-road transportation as compared to the proposed Plan. This could occur as gasoline and diesel fuel consumption associated with on-road vehicles shifts to transit, which may be powered by electricity or condensed natural gas. Thus, Alternative 3 would result in a decreased, less-than-significant impact.
2050	**Less-than-Significant Impact (same) –** Alternative 1 would result in a less-than-significant impact in 2050 for **EN-2**. Alternative 1 would be consistent with adopted plans to address energy and thus would result in the same significant impact as the proposed Plan.	**Less-than-Significant Impact (same) –** Alternative 2 would result in a less-than-significant impact in 2050 for **EN-2**. Alternative 2 would be consistent with adopted plans to address energy and thus would result in the same significant impact as the proposed Plan.	**Less-than-Significant Impact (same) –** Alternative 3 would result in a less-than-significant impact in 2050 for **EN-2**. Alternative 3 would be consistent with adopted plans to address energy and thus would result in the same significant impact as the proposed Plan.
2050	**Not Cumulatively Considerable (decreased)** - Alternative 1 would not result in cumulatively considerable impacts in 2050 for **C-EN-1**, a cumulatively considerable contribution to adverse effects related to energy. Cumulative impacts would be decreased compared to the proposed Plan.	**Not Cumulatively Considerable (decreased)** - Alternative 1 would not result in cumulatively considerable impacts in 2050 for **C-EN-1**, a cumulatively considerable contribution to adverse effects related to energy. Cumulative impacts would be decreased compared to the proposed Plan.	**Not Cumulatively Considerable (decreased)** - Alternative 3 would not result in cumulatively considerable impacts in 2050 for **C-EN-1**, a cumulatively considerable contribution to adverse effects related to energy. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Geology, Soils, and Paleontological Resources		
2035	**Less-than-Significant Impact (same) –** Alternative 1 would result in similar less-than-significant impacts in 2035 for **GEO-1**, expose people or structures to potential substantial significant impacts, including the risk of loss, injury, or death involving: a) rupture of a known earthquake fault, b) strong seismic ground shaking; c) seismic-related ground failure, including liquefaction; and d) seismically-induced landslides; **GEO-2**, locate projects on a geologic unit or soil that is expansive or unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; **GEO-3**, result in substantial soil erosion or the loss of topsoil; and **GEO-4**, have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems, potentially causing adverse groundwater impacts. Alternative 1 would result in less-than-significant impacts due to adherence to applicable laws and regulations and thus would result in the same less-than-significant impact as the proposed Plan.	**Less-than-Significant Impact (same) –** The proposed Plan would result in less-than-significant impacts in 2035 (**GEO-1**, **GEO-2**, **GEO-3,** and **GEO-4**). Alternative 2 would result in less-than-significant impacts due to adherence to applicable laws and regulations and thus would result in the same less-than-significant impact as the proposed Plan.	**Less-than-Significant Impact (same)–** The proposed Plan would result in less-than-significant impacts in 2035 (**GEO-1**, **GEO-2**, **GEO-3,** and **GEO-4**). Alternative 3 would result in less-than-significant impacts due to adherence to applicable laws and regulations and thus would result in the same less-than-significant impact as the proposed Plan.
2035	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact in 2035 for **GEO-5**, directly or indirectly destroy a unique paleontological resource or site or unique geological feature. Impacts would be decreased compared to the proposed Plan in 2035 because Alternative 1 land use pattern would be more concentrated in urban areas than the proposed Plan, which would result in less land use conflict with, and likelihood of disturbing, unique paleontological and geologic resources. Alternative 1 would thus result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2035 for **GEO-5**. Impacts would be decreased compared to the proposed Plan in 2035 because Alternative 2 land use pattern would be more concentrated in urban areas than the proposed Plan, which would result in less land use conflict with, and likelihood of disturbing, unique paleontological and geologic resources. Alternative 2 would thus result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 3 would result in significant impact in 2035 for **GEO-5**. Impacts would be decreased compared to the proposed Plan in 2035 because Alternative 3 land use pattern would be more concentrated in urban areas than the proposed Plan, which would result in less land use conflict with, and likelihood of disturbing, unique paleontological and geologic resources. Alternative 3 would thus result in a similar, but decreased, significant impact compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-PALEO-1**, a cumulatively considerable contribution to adverse effects on paleontological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** – Similar to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact in 2035 for **C-GEO-1,** geologic or seismic hazards or unstable soils.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-PALEO-1**, a cumulatively considerable contribution to adverse effects on paleontological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** – Similar to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact in 2035 for **C-GEO-1**, geologic or seismic hazards or unstable soils.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-PALEO-1**, a cumulatively considerable contribution to adverse effects on paleontological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** – Similar to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact in 2035 for **C-GEO-1,** geologic or seismic hazards or unstable soils.
2050	**Less-than-Significant Impact (same) –** The proposed Plan would result in less-than-significant impacts in 2050 for **GEO-1**, **GEO-2**, **GEO-3,** and **GEO-4**. Alternative 1 would result in the same less-than-significant impact as the proposed Plan due to adherence to applicable laws and regulations.	**Less-than-Significant Impact (same) –** The proposed Plan would result in less-than-significant impacts in 2050 for **GEO-1**, **GEO-2**, **GEO-3,** and **GEO-4**. Alternative 2 would result in the same less-than-significant impact as the proposed Plan due to adherence to applicable laws and regulations.	**Less-than-Significant Impact (same) –** The proposed Plan would result in less-than-significant impacts in 2050 for **GEO-1**, **GEO-2**, **GEO-3,** and **GEO-4**. Alternative 3 would result in the same less-than-significant impacts as the proposed Plan due to adherence to applicable laws and regulations.
2050	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact in 2050 for **GEO-5**. Impacts from regional growth and land use change would be reduced compared to the proposed Plan in 2050 due to a more concentrated land use pattern. Therefore, this alternative would result in less impacts to unique paleontological and geologic resources. Alternative 1 would thus result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2050 for **GEO-5**. Impacts from regional growth and land use change would be reduced compared to the proposed Plan in 2050 due to a more concentrated land use pattern. Therefore, this alternative would result in less impacts to unique paleontological and geologic resources. Alternative 2 would thus result in a similar, but decreased, significant impact compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2050 for **GEO-5**. Impacts from regional growth and land use change would decrease compared to the proposed Plan in 2050 due to a more concentrated land use pattern. Thus, Alternative 3 would result in less impacts to unique paleontological and geologic resources. Alternative 3 would thus result in a similar, but decreased, significant impact compared to the proposed Plan.
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-PALEO-1**, a cumulatively considerable contribution to adverse effects on paleontological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** – Similar to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact in 2050 for **C-GEO-1,** geologic or seismic hazards or unstable soils.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-PALEO-1**, a cumulatively considerable contribution to adverse effects on paleontological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** – Similar to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact in 2050 for **C-GEO-1,** geologic or seismic hazards or unstable soils.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-PALEO-1**, a cumulatively considerable contribution to adverse effects on paleontological resources. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** – Similar to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact in 2050 for **C-GEO-1,** geologic or seismic hazards or unstable soils.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Greenhouse Gas Emissions		
2035	**Less-than-Significant Impact (increased) –** Alternative 1 would result in less-than-significant impacts in 2035 for **GHG-1,** directly or indirectly result in an increase in GHG emissions compared to existing conditions (2022); and **GHG-3,** conflict with or impede the implementation of local plans adopted for the purpose of reducing GHG emissions. As shown in Appendix M, Tables M-3 and M-4, regional growth, land uses, and transportation network improvements for Alternative 1 would result in higher GHG emissions than the proposed Plan, due higher VMT, but lower emissions than 2022 baseline levels Population projections are anticipated to be the same as the proposed Plan under this Alternative, so future year emission estimates for other sectors (e.g., electricity, natural gas) would be similar under this Alternative (**GHG-1**). Alternative 1 would not conflict with or impede the implementation of local plans because it would not impair a local jurisdiction's independent capacity to implement measures of a climate action plan (CAP) or greenhouse gas reduction plan (GHGRP) (**GHG-3**). Thus, Alternative 1 would result in similar, but increased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in less-than-significant impacts in 2035 (**GHG-1** and **GHG-3**). As shown in Appendix M, Tables M-3 and M-4, regional growth, land uses, and transportation network improvements for Alternative 2 would result in lower GHG emissions than the proposed Plan due to more compact development around available multimodal transportation, increased parking pricing, and freeway speed reductions. Similar to the proposed Plan, Alternative 2's 2035 GHG emissions would be lower than 2022 baseline levels. Population projections are anticipated to be the same as the proposed Plan under this Alternative, so future year emission estimates for other sectors (e.g., electricity, natural gas) would be similar under this Alternative (**GHG-1**). Alternative 2 would not conflict with or impede the implementation of local plans because it would not impair a local jurisdiction's independent capacity to implement measures of a CAP or GHGRP (**GHG-3**). Thus, Alternative 2 would result in similar, but decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in less-than-significant impacts in 2035 (**GHG-1** and **GHG-3**). As shown in Appendix M, Tables M-3 and M-4, regional growth, land uses, and transportation network improvements for Alternative 3 would result in lower GHG emissions than the proposed Plan due to more compact development around available multimodal transportation, increased parking pricing, and free transit, and would result in decreased impacts. Similar to the proposed Plan, Alternative 3's 2035 GHG emissions would be lower than 2022 baseline levels. Population projections are anticipated to be the same as the proposed Plan under this Alternative, so future year emission estimates for other sectors (e.g., electricity, natural gas) would be similar under this Alternative (**GHG-1).** Alternative 3 would not conflict with or impede the implementation of local plans because it would not impair a local jurisdiction's independent capacity to implement measures of a CAP or GHGRP (**GHG-3**). Thus, Alternative 3 would result in similar, but decreased, less-than-significant impacts.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Significant Impact (increased) -** Alternative 1 would result in a significant impact in 2035 for **GHG-2**, conflict with achievement of SB 375 GHG emissions reduction targets for 2035. Notably, Alternative 1 would increase the significance determination compared to the proposed Plan, which has a less-than-significant impact. As shown in Appendix M, Table M-3, Alternative 1 would result in a 16.3% per capita GHG reduction below 2005 levels, which would not meet the 2035 reduced goal of 19% below 2005. Alternative 1 would result in less reductions than the proposed Plan because under Alternative 1, transportation projects would be funded for a shorter duration, thus not achieving the VMT and associated GHG reductions as compared to the proposed Plan. Thus, Alternative 1 would have a significant impact.	**Less-than-Significant Impact (decreased)-** Alternative 2 would result in a less-than-significant impact in 2035 for **GHG-2** and would result in a decreased impact compared to the proposed Plan. As shown in Appendix M, Table M-3, Alternative 2 would result in a 23.6% per capita GHG reduction, which would exceed the 2035 reduction goal of 19% below 2005. Alternative 2 would result in greater GHG reductions than the proposed Plan because of the VMT and associated GHG reductions achieved as compared to the proposed Plan. Thus, Alternative 2 would have a similar, but decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased)-** Alternative 3 would result in a less-than-significant impact in 2035 for **GHG-2** and would result in a decreased impact compared to the proposed Plan. As shown in Appendix M, Table M-3, Alternative 3 would result in a 22% per capita GHG reduction, which would exceed the 2035 reduction goal of 19% below 2005, and would result in a greater reduction than the proposed Plan. Alternative 3 would result in greater GHG reductions than the proposed Plan because of the VMT and associated GHG reductions achieved as compared to the proposed Plan. Thus, Alternative 3 would have a similar, but decreased, less-than-significant impact.
2035	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2035 for **GHG-4**, be inconsistent with the State's ability to achieve the 2030 reduction target of SB 32 and 2045 reduction goal of AB 1279. As shown in Appendix M, Tables M-3 and M-4, Alternative 1 would result in higher GHG emissions associated with increases in VMT and GHG emissions as compared to the proposed Plan due to decreased funding for transportation projects. For this reason, Alternative 1 would not meet the reduction target reference points for 2030 and 2045, which would be based on the total mobile source emissions for Alternative 1 plus other sector emissions (e.g., stationary, area, energy, water, wastewater, solid waste) which would be same as the proposed Plan. Therefore, Alternative 1 would result in increased impacts compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2035 for **GHG-4**. As shown in Appendix M, Tables M-3 and M-4, Alternative 3 would result in lower GHG emissions associated with decreases in VMT and GHG emissions as compared to the proposed Plan due to focused growth, higher parking pricing, and speed reductions as compared to the proposed Plan. Nevertheless, Alternative 2 would not meet the reduction target reference points for 2030 and 2045, which would be based on the total mobile source emissions for Alternative 2 plus other sector emissions (e.g., stationary, area, energy, water, wastewater, solid waste) which would be same as the proposed Plan. Therefore, Alternative 2 would result in decreased impacts compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2035 for **GHG-4**. As shown in Appendix M, Tables M-3 and M-4, Alternative 3 would result in lower GHG emissions compared to the proposed Plan associated with decreases in VMT and GHG emissions due to focused growth, higher parking and managed lane pricing, and free transit as compared to the proposed Plan. Nevertheless, Alternative 3 would not meet the reduction target reference points for 2030 and 2045, which would be based on the total mobile source emissions for Alternative 3 plus other sector emissions (e.g., stationary, area, energy, water, wastewater, solid waste) which would be same as the proposed Plan. Therefore, Alternative 3 would result in decreased impacts compared to the proposed Plan.
2035	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-GHG-1**, a cumulatively considerable contribution to adverse effects related to GHG emissions. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-GHG-1**, a cumulatively considerable contribution to adverse effects related to GHG emissions. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-GHG-1**, a cumulatively considerable contribution to adverse effects related to GHG emissions. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Less-than-Significant Impact (increased) –** Alternative 1 would result in less-than-significant impacts in 2050 for **GHG-1** and **GHG-3**. As shown in Appendix M, Tables M-3 and O-4, regional growth, land uses, and transportation network improvements for Alternative 1 would result in higher GHG emissions in 2050 than the proposed Plan, due to fewer transit-oriented transportation network improvement projects, but lower emissions than 2022 baseline levels (**GHG-1**). Alternative 1's GHG emissions would not conflict with or impede the implementation of local plans because it would not impair a local jurisdiction's independent capacity to implement measures of a CAP or GHGRP (**GHG-3**). Alternative 1 would result in similar, but increased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in less-than-significant impacts in 2050 for **GHG-1** and **GHG-3**. As shown in Appendix M, Tables M-3 and M-4, regional growth, land uses, and transportation network improvements for Alternative 2 would result in lower GHG emissions than the proposed Plan due to more compact development, increased parking pricing, and freeway speed reductions. and would result in decreased impacts. Similar to the proposed Plan, Alternative 2's 2050 GHG emissions would be lower than 2022 baseline levels (**GHG-1**). Alternative 2's GHG emissions would not conflict with or impede the implementation of local plans because it would not impair a local jurisdiction's independent capacity to implement measures of a CAP or GHGRP (**GHG-3**). Thus, Alternative 2 would result in similar, but decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in less-than-significant impacts in 2050 for **GHG-1** and **GHG-3**. As shown in Appendix M, Tables M-3 and M-4, regional growth, land uses, and transportation network improvements for Alternative 3 would result in lower GHG emissions than the proposed Plan due to more compact development, increased parking pricing, and free transit, and would result in decreased impacts. Similar to the proposed Plan, Alternative 3's 2050 GHG emissions would be lower than 2022 baseline levels (**GHG-1**). Alternative 3's GHG emissions would not conflict with or impede the implementation of local plans because it would not impair a local jurisdiction's independent capacity to implement measures of a CAP or GHGRP (**GHG-3**). Thus, Alternative 3 would result in similar, but decreased, less-than-significant impacts.
2050	**No Impact (same)** - **GHG-2**, conflict with achievement of SB 375 GHG emissions reduction targets for 2035, does not consider impacts in 2050.	**No Impact (same)** - **GHG-2**, conflict with achievement of SB 375 GHG emissions reduction targets for 2035, does not consider impacts in 2050.	**No Impact (same)** - **GHG-2**, conflict with achievement of SB 375 GHG emissions reduction targets for 2035, does not consider impacts in 2050.
2045 and 2050	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2050 for **GHG-4**. As shown in Appendix M, Tables M-3 and M-4, Alternative 1 would result in higher GHG emissions associated with increases in VMT and GHG emissions as compared to the proposed Plan due to decreased funding for transportation projects. For this reason, Alternative 1 would not meet the reduction target reference points for 2045 and 2050, which would be based on the total mobile source emissions for Alternative 1 plus other sector emissions (e.g., stationary, area, energy, water, wastewater, solid waste) which would be same as the proposed Plan. Therefore, Alternative 1 would result in increased impacts compared to the proposed Plan.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2050 for **GHG-4**. Alternative 2 would result in lower GHG emissions associated with decreases in VMT and GHG emissions as compared to the proposed Plan due to focused growth, higher parking pricing, and speed reductions as compared to the proposed Plan. Nevertheless, Alternative 2 still would not meet the reduction target reference points for 2045 and 2050, which would be based on the total mobile source emissions for Alternative 2 plus other sector emissions (e.g., stationary, area, energy, water, wastewater, solid waste) which would be same as the proposed Plan. Alternative 2 would result in decreased impacts compared to the proposed Plan. Refer to Appendix M, Table M-3 and M-4.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2050 for **GHG-4**. Alternative 3 would result in lower GHG emissions associated with decreases in VMT and GHG emissions due to focused growth, higher parking and managed lane pricing, and free transit as compared to the proposed Plan. Nevertheless, Alternative 3 still would not meet the reduction target reference points for 2045 and 2050 which would be based on the total mobile source emissions for Alternative 3 plus other sector emissions (e.g., stationary, area, energy, water, wastewater, solid waste) which would be same as the proposed Plan. Alternative 3 would result in decreased impacts compared to the proposed Plan. Refer to Appendix M, Table M-3 and M-4.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Cumulatively Considerable (increased)** - Alternative 1 would result in less than cumulatively considerable impacts in 2050 for **C-GHG-1**, a cumulatively considerable contribution to adverse effects related to GHG emissions. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-GHG-1**, a cumulatively considerable contribution to adverse effects related to GHG emissions. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3would result in cumulatively considerable impacts in 2050 for **C-GHG-1**, a cumulatively considerable contribution to adverse effects related to GHG emissions. Cumulative impacts would be decreased compared to the proposed Plan.
	Hazards and Hazardous Materials		
2035	**Significant Impact (same) –** Alternative 1 would result in a significant impact in 2035 for **HAZ-4,** impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or result in inadequate emergency access. This impact would be the same as the proposed Plan because regional growth would be more compact in Alternative 1, which would lead to shorter emergency response times but more people using the same evacuation routes. Alternative 1 would thus result in similar significant impacts.	**Significant Impact (same) –** Alternative 2 would result in a significant impact in 2035 for **HAZ-4**. This impact would be the same as the proposed Plan because regional growth would be more compact in Alternative 2, which would lead to shorter emergency response times but more people using the same evacuation routes. Alternative 2 would thus result in similar significant impacts.	**Significant Impact (same) –** Alternative 3 would result in a significant impact in 2035 for **HAZ-4**. This impact would be the same as the proposed Plan because regional growth would be more compact in Alternative 3, which would lead to shorter emergency response times but more people using the same evacuation routes. Alternative 3 would thus result in similar significant impacts.
2035	**Less-than-Significant Impact (same)** – Alternative 1 would result in less-than-significant impacts in 2035 for **HAZ-1,** create a significant hazard by generating hazardous emissions or handle hazardous materials or result in the release of hazardous materials in the environment during pre-construction, demolition, and/or construction activities, including being located on a Government Code Section 65952.5 hazardous materials site; **HAZ-2**, create a significant hazard to the public, schools or the environment through the routine use, handling, transport, or disposal of hazardous materials; and **HAZ-3**, for a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area. These impacts would be the same as proposed Plan impacts because existing regulations, plans, and programs maintaining these impacts at less-than-significant levels would continue to apply to Alternative 1.	**Less-than-Significant Impact (same)** – Alternative 2 would result in less-than-significant impacts in 2035 for **HAZ-1**, **HAZ-2**, and **HAZ-3**. These impacts would be the same as proposed Plan impacts because existing regulations, plans, and programs maintaining these impacts at less-than-significant levels would apply to Alternative 2.	**Less-than-Significant Impact (same)** – Alternative 3 would result in less-than-significant impacts in 2035 for **HAZ-1**, **HAZ-2**, and **HAZ-3**. These impacts would be the same as proposed Plan impacts because existing regulations, plans, and programs maintaining these impacts at less-than-significant levels would apply to Alternative 3.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Cumulatively Considerable (same)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-HAZ-1**, a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plan or result in inadequate emergency access, the same as the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-HAZ-1** in 2035 for the other hazards significant thresholds (HAZ-1, HAZ-2, and HAZ-3).	**Cumulatively Considerable (same)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-HAZ-1**, a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plan or result in inadequate emergency access, the same as the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-HAZ-1** in 2035 for the other hazards significant thresholds (HAZ-1, HAZ-2, and HAZ-3).	**Cumulatively Considerable (same)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-HAZ-1**, a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plan or result in inadequate emergency access, the same as the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-HAZ-1** in 2035 for the other hazards significant thresholds (HAZ-1, HAZ-2, and HAZ-3).
2050	**Significant Impact (same) –** Alternative 1 would result in a significant impact in 2050 for **HAZ-4** and the impact would be the same as the proposed Plan. The rationale described for 2035 applies to 2050.	**Significant Impact (same) –** Alternative 2 would result in a significant impact in 2050 for **HAZ-4** and the impact would be the same as the proposed Plan. The rationale described for 2035 applies to 2050.	**Significant Impact (same) –** Alternative 3 would result in a significant impact in 2050 for **HAZ-4** and the impact would be the same as the proposed Plan. The rationale described for 2035 applies to 2050.
2050	**Less-than-Significant Impact (same)** – Alternative 1 would result in less-than-significant impacts in 2050 for **HAZ-1**, **HAZ-2**, and **HAZ-3** and the impacts would be the same as the proposed Plan. The rationale described for 2035 applies to 2050.	**Less-than-Significant Impact (same)** – Alternative 2 would result in less-than- significant impacts in 2050 for **HAZ-1**, **HAZ-2**, and **HAZ-3** and the impacts would be the same as the proposed Plan. The rationale described for 2035 applies to 2050.	**Less-than-Significant Impact (same)** – Alternative 3 would result in less-than- significant impacts in 2050 for **HAZ-1**, **HAZ-2**, and **HAZ-3** and the impacts would be the same as the proposed Plan. The rationale described for 2035 applies to 2050.
2050	**Cumulatively Considerable (same)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-HAZ-1**, a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plan or result in inadequate emergency access, the same as the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-HAZ-1** in 2050 for the other hazards significant thresholds (HAZ-1, HAZ-2, and HAZ-3).	**Cumulatively Considerable (same)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-HAZ-1**, a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plan or result in inadequate emergency access, the same as the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-HAZ-1** in 2050 for the other hazards significant thresholds (HAZ-1, HAZ-2, and HAZ-3).	**Cumulatively Considerable (same)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-HAZ-1**, a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plan or result in inadequate emergency access, the same as the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-HAZ-1** in 2050 for the other hazards significant thresholds (HAZ-1, HAZ-2, and HAZ-3).

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Hydrology and Water Quality		
2035	**Less-than-Significant Impact (decreased) –** Alternative 1 would result in less-than-significant impacts in 2035 for **HWQ-1**, substantially degrade surface water or groundwater quality, including in violation of any water quality standards or waste discharge requirements or in conflict with a water quality control plan or its implementation; **HWQ-2**, substantially alter the existing drainage patter of any area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site; **HWQ-3**, substantially alter the existing drainage pattern of an area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would (i) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site or (ii) impede or redirect flood flows; and **HWQ-4**, substantially increase risk of pollutant release due to inundation of a flood hazard, tsunami, or seiche zone. Existing regulations, plans, and programs would continue to be in effect, and design measures would be implemented, the same as under the proposed Plan. However, the land use pattern would be more concentrated in Alternative 1 compared to the proposed project, which would result in less impervious surfaces and less stormwater run-off region wide, decreasing the risk and rate of flood flows and associated pollutant releases (**HWQ-1**, **HWQ-2**, **HWQ-3**, and **HWQ-4**). Alternative 1 would thus have similar, but decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in less-than-significant impacts in 2035 for **HWQ-1**, **HWQ-2**, **HWQ-3**, and **HWQ-4**. Existing regulations, plans, and programs would be in effect, and implementation of design measures would occur, the same as under the proposed Plan; however, the land use pattern would be more concentrated in Alternative 2 compared to the proposed project, which would result in less impervious surfaces and less stormwater run-off region wide, decreasing the risk and rate of flood flows and associated pollutant releases (**HWQ-1**, **HWQ-2**, **HWQ-3**, and **HWQ-4**). Alternative 2 would thus have similar, but decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in less-than-significant impacts in 2035 for **HWQ-1**, **HWQ-2**, **HWQ-3**, and **HWQ-4**. Existing regulations, plans, and programs would be in effect, and implementation of design measures would occur, the same as under the proposed Plan; however, the land use pattern would be more concentrated in Alternative 3 compared to the proposed project, which would result in less impervious surfaces and less stormwater run-off region wide, decreasing the risk and rate of flood flows and associated pollutant releases (**HWQ-1**, **HWQ-2**, **HWQ-3**, and **HWQ-4**). Alternative 3 would thus have similar, but decreased, less-than-significant impacts.
2035	**Not Cumulatively Considerable (decreased)** – Similar to the proposed Plan, Alternative 1 would not result in cumulatively considerable impacts for **C-HWQ-1** related to hydrology and water quality in 2035.	**Not Cumulatively Considerable (decreased)** – Similar to the proposed Plan, Alternative 2 would not result in cumulatively considerable impacts for **C-HWQ-1** related to hydrology and water quality in 2035.	**Not Cumulatively Considerable (decreased)** – Similar to the proposed Plan, Alternative 3 would not result in cumulatively considerable impacts for **C-HWQ-1** related to hydrology and water quality in 2035.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Less-than-Significant Impact (decreased) –** Alternative 1 would result in less-than-significant impacts in 2050 for **HWQ-1**, **HWQ-2**, **HWQ-3**, and **HWQ-4**. Existing regulations, plans, and programs would be in effect, and implementation of design measures would occur, the same as under the proposed Plan; however, regional growth would be more concentrated in areas with available multimodal transportation in Alternative 1 compared to the proposed project, which would result in less impervious surfaces and less stormwater run-off region wide. The rationale described for 2035 applies to 2050. Alternative 1 would thus have similar, but decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in less-than-significant impacts in 2050 for **HWQ-1**, **HWQ-2**, **HWQ-3**, and **HWQ-4**. Existing regulations, plans, and programs would be in effect, and implementation of design measures would occur, the same as under the proposed Plan; however, regional growth would be more concentrated in areas with available multimodal transportation in Alternative 2 compared to the proposed project, which would result in less impervious surfaces and less stormwater run-off region wide. The rationale described for 2035 applies to 2050. Alternative 2 would thus have similar, but decreased, less-than-significant impacts.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in less-than-significant impacts in 2050 for **HWQ-1**, **HWQ- 2**, **HWQ-3**, and **HWQ-4**. Existing regulations, plans, and programs would be in effect, and implementation of design measures would occur, the same as under the proposed Plan; however, regional growth would be more concentrated in areas with available multimodal transportation in Alternative 3 compared to the proposed project, which would result in less impervious surfaces and less stormwater run-off region wide. The rationale described for 2035 applies to 2050. Alternative 3 would thus have similar, but decreased, less-than-significant impacts.
2050	**Not Cumulatively Considerable (decreased)** – Similar to the proposed Plan, Alternative 1 would not result in cumulatively considerable impacts for **C-HWQ-1** related to hydrology and water quality in 2050.	**Not Cumulatively Considerable (decreased)** – Similar to the proposed Plan, Alternative 2 would not result in cumulatively considerable impacts for **C-HWQ-1** related to hydrology and water quality in 2050.	**Not Cumulatively Considerable (decreased)** – Similar to the proposed Plan, Alternative 3 would not result in cumulatively considerable impacts for **C-HWQ-1**related to hydrology and water quality in 2050.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Land Use		
2035	**Less-than-Significant Impact (increased)** – Alternative 1 would result in a less-than-significant impact in 2035 for **LU-1**, physically divide an established community. This impact would be increased for Alternative 1 because land use would be more concentrated in urban areas than under the proposed Plan and would therefore result in greater potential to divide existing communities. Focusing development projects in existing urbanized areas reduces the potential to physically divide an established community as result of dispersed development patterns. Alternative 1 would thus have a similar, but increased, less-than-significant impact. In addition, Alternative 1 would result in a less-than-significant impact in 2035 for **LU-2,** cause a significant environmental impact by conflicting with a land use plan, policy, or regulation (including the General Plan, Local Coastal Program, or Zoning Ordinance) and resulting in a physical change to the environment not already addressed in the EIR. The impact for Alternative 1 would be increased compared to the proposed Plan because this alternative proposes more dense development in urban areas, which occasionally may conflict with the land use portions of adopted general plans and specific plans. Alternative 1 would thus have a similar, but increased, less-than-significant impact.	**Less-than-Significant Impact (increased) –** Alternative 2 would result in a significant impact in 2035 for **LU-1**. This impact would be increased for Alternative 2 because land use would be more concentrated in urban areas than under the proposed Plan and would therefore result in greater potential to divide existing communities. Focusing development projects in existing urbanized areas reduces the potential to physically divide an established community as result of dispersed development patterns. Alternative 2 would thus have a similar, but increased, less-than-significant impact. In addition, Alternative 2 would result in a less-than-significant impact in 2035 for **LU-2**. The impact for Alternative 2 would be increased compared to the proposed Plan because this alternative proposes more dense development in urban areas, which occasionally may conflict with the land use portions of adopted general plans and specific plans. Alternative 2 would thus have a similar, but increased, less-than-significant impact.	**Less-than-Significant Impact (increased) –** Alternative 3 would result in a less-than-significant impact in 2035 for **LU-1**. This impact would be increased for Alternative 3 because land use would be more concentrated in urban areas than under the proposed Plan and would therefore result in greater potential to divide existing communities. Focusing development projects in existing urbanized areas reduces the potential to physically divide an established community as result of dispersed development patterns. Alternative 3 would thus have a similar, but increased, less-than-significant impact. In addition, Alternative 3 would result in a less-than-significant impact in 2035 for **LU-2**. The impact for Alternative 3 would be increased compared to the proposed Plan because this alternative proposes more dense development in urban areas, which occasionally may conflict with the land use portions of adopted general plans and specific plans. Alternative 3 would thus have a similar, but increased, less-than-significant impact.
2035	**Not Cumulatively Considerable (increased)** –Alternative 1 would not result in cumulatively considerable impacts in 2035 for **C-LU-1**, a cumulatively considerable contribution to adverse impacts to land use and planning. Cumulative impacts would be increased compared to the proposed Plan.	**Not Cumulatively Considerable (increased)** –Alternative 2 would not result in cumulatively considerable impacts in 2035 for **C-LU-1**, a cumulatively considerable contribution to adverse impacts to land use and planning. Cumulative impacts would be increased compared to the proposed Plan.	**Not Cumulatively Considerable (increased)** – Alternative 3 would not result in cumulatively considerable impacts in 2035 for **C-LU-1**, a cumulatively considerable contribution to adverse impacts to land use and planning. Cumulative impacts would be increased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2050 for **LU-1** and the impact would be increased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 1 would thus have a similar, but increased, significant impact.	**Significant Impact (increased)** – Alternative 2 would result a significant impact in 2050 for **LU-1** and the impact would be increased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 2 would thus have a similar, but increased, significant impact.	**Significant Impact (increased)** – Alternative 3 would result in a significant impact in 2050 for **LU-1** and the impact would be increased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 3 would thus have a similar, but increased, significant impact.
2050	**Less-than-Significant Impact (increased)** – Alternative 1 would result in a less-than-significant impact in 2050 for **LU-2** and the impact would be increased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 1 would thus have a similar, but increased, less-than-significant impact.	**Less-than-Significant Impact (increased)** – Alternative 2 would result in a less-than-significant impact in 2050 for **LU-2** and the impact would be increased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 2 would thus have a similar, but increased, less-than-significant impact.	**Less-than-Significant Impact (increased) –** Alternative 3 would result in a less-than-significant impact in 2050 for **LU-2** and the impact would be increased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 3 would thus have a similar, but increased, less-than-significant impact.
2050	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-LU-1**, a cumulatively considerable contribution to adverse impacts related to land use and planning. Cumulative impacts would be increased compared to the proposed Plan. **Not Cumulatively Considerable (increased)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-LU-**1 in 2050 for threshold LU-2.	**Cumulatively Considerable (increased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-LU-1**, a cumulatively considerable contribution to adverse impacts related to land use and planning. Cumulative impacts would be increased compared to the proposed Plan. **Not Cumulatively Considerable (increased)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-LU-1** in 2050 for threshold LU-2.	**Cumulatively Considerable (increased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-LU-1**, a cumulatively considerable contribution to adverse impacts related to land use and planning. Cumulative impacts would be increased compared to the proposed Plan. **Not Cumulatively Considerable (increased)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-LU-1** in 2050 for threshold LU-2.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Mineral Resources		
2035	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact on mineral resources in 2035 for **MR-1,** result in the loss of availability of known aggregate and mineral resources supply sites that would be of value to the region and the residents of the State, or result in the loss of availability of a locally-important mineral resource recovery site delineated in a local general plan, specific plan or other land use plan. The impact would be decreased compared to the proposed Plan because Alternative 1 land use would be more concentrated in urban areas than under the proposed Plan and would therefore result in less potential for land use conflicts with mineral resources in previously undeveloped areas. Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on mineral resources in 2035 for **MR-1**. The impact would be decreased compared to the proposed Plan because Alternative 2 land use would be more concentrated in urban areas than under the proposed Plan and would therefore result in less potential for land use conflicts with mineral resources in previously undeveloped areas. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on mineral resources in 2035 for **MR-1**. The impact would be decreased compared to the proposed Plan because Alternative 3 land use would be more concentrated in urban areas than under the proposed Plan and would therefore result in less potential for land use conflicts with mineral resources in previously undeveloped areas. Alternative 3 would thus have a similar, but decreased, significant impact.
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-MR-1**, a cumulatively considerable contribution to adverse impacts related to mineral resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-MR-1**, a cumulatively considerable contribution to adverse impacts related to mineral resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-MR-1**, a cumulatively considerable contribution to adverse impacts related to mineral resources. Cumulative impacts would be decreased compared to the proposed Plan.
2050	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact on mineral resources in 2050 for **MR-1** and the impact would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on mineral resources in 2050 for **MR-1** and the impact would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on mineral resources in 2050 for **MR-1** and the impact would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 3 would thus have a similar, but decreased, significant impact.
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-MR-1**, a cumulatively considerable contribution to adverse impacts related to mineral resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-MR-1**, a cumulatively considerable contribution to adverse impacts related to mineral resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-MR-1**, a cumulatively considerable contribution to adverse impacts related to mineral resources. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Noise and Vibration		
2035	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts in 2035 for **NOI-1**, generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or generate a substantial absolute increase in ambient noise; and **NOI-2**, generation of excessive groundborne vibration or groundborne noise levels. The impacts would be decreased compared to the proposed Plan in 2035 because Alternative 1 land use would be more concentrated in areas with available multimodal transportation than under the proposed Plan, which would result in the exposure of fewer sensitive receptors to high noise and vibration levels than the proposed Plan. Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in significant impacts in 2035 for **NOI-1** and **NOI-2**. The impacts would be decreased compared to the proposed Plan in 2035 because Alternative 2 land use would be more concentrated in areas with available multimodal transportation than under the proposed Plan, which would result in the exposure of fewer sensitive receptors to high noise and vibration levels than the proposed Plan. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in significant impacts in 2035 for **NOI-1** and **NOI-2**. The impacts would be decreased compared to the proposed Plan in 2035 because Alternative 3 land use would be more concentrated in areas with available multimodal transportation than under the proposed Plan, which would result in the exposure of fewer sensitive receptors to high noise and vibration levels than the proposed Plan. Alternative 3 would thus have a similar, but decreased, significant impact.
2035	**Less-than-Significant Impact (same)** – Alternative 1 would result in less-than-significant impacts in 2035 for **NOI-3**, for a project located in the vicinity of a private airstrip or an airport land use plan, or, where a plan has not been adopted, within two miles of a public airport, the project would expose people residing or working in the project area to excessive noise levels. The impact of this alternative is the same as under the proposed Plan because this alternative would not meaningfully change exposure of people to excessive noise levels from aircraft. To prevent incompatible uses in areas with higher aircraft noise, ALUCPs and AICUZs establish land use policies and criteria (e.g., noise compatibility zones) to limit future incompatible uses in certain areas to minimize noise impacts to people living and working within the ALUCP or AICUZ. Both Alternative 1 and the proposed Plan would comply with such policies and criteria. Alternative 1 would thus have a similar, less-than-significant impact.	**Less-than-Significant Impact (same)** – Alternative 2 would result in less-than-significant impacts in 2035 for **NOI-3**. The impact of this alternative is the same as under the proposed Plan because this alternative would not meaningfully change exposure of people to excessive noise levels from aircraft. To prevent incompatible uses in areas with higher aircraft noise, ALUCPs and AICUZs establish land use policies and criteria (e.g., noise compatibility zones) to limit future incompatible uses in certain areas to minimize noise impacts to people living and working within the ALUCP or AICUZ. Both Alternative 2 and the proposed Plan would comply with such policies and criteria. Alternative 2 would thus have a similar, less-than-significant impact.	**Less-than-Significant Impact (same)** – Alternative 3 would result in less-than-significant impacts in 2035 for **NOI-3**. The impact of this alternative is the same as under the proposed Plan because this alternative would not meaningfully change exposure of people to excessive noise levels from aircraft. To prevent incompatible uses in areas with higher aircraft noise, ALUCPs and AICUZs establish land use policies and criteria (e.g., noise compatibility zones) to limit future incompatible uses in certain areas to minimize noise impacts to people living and working within the ALUCP or AICUZ. Both Alternative 3 and the proposed Plan would comply with such policies and criteria. Alternative 3 would thus have a similar, less-than-significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-NOI-1**, a cumulatively considerable contribution to adverse impacts related to noise and vibration. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-NOI-1** in 2035 for threshold NOI-3.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-NOI-1**, a cumulatively considerable contribution to adverse impacts related to noise and vibration. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-NOI-1** in 2035 for threshold NOI-3.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-NOI-1**, a cumulatively considerable contribution to adverse impacts related to noise and vibration. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-NOI-1** in 2035 for threshold NOI-3.
2050	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts in 2050 for **NOI-1** and **NOI-2**. The impacts would be decreased compared to the proposed Plan in 2050 because Alternative 1's land use pattern would be more concentrated in areas with available multimodal transportation than under the proposed Plan, which would result in the exposure of fewer sensitive receptors to high noise and vibration levels than the proposed Plan. Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in significant impacts in 2050 for **NOI-1** and **NOI-2**. The impacts would be decreased compared to the proposed Plan in 2050 because Alternative 2 land use would be more concentrated in areas with available multimodal transportation than under the proposed Plan, which would result in the exposure of fewer sensitive receptors to high noise and vibration levels than the proposed Plan. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in significant impacts in 2050 for **NOI-1** and **NOI-2**. The impacts would be decreased compared to the proposed Plan in 2050 because Alternative 3 land use would be more concentrated in areas with available multimodal transportation than under the proposed Plan, which would result in the exposure of fewer sensitive receptors to high noise and vibration levels than the proposed Plan. Alternative 3 would thus have a similar, but decreased, significant impact.
2050	**Less-than-Significant Impact (same)** – Alternative 1 would result in a less-than-significant impact in 2050 for **NOI-3**. Alternative 1 would have the same impact as the proposed Plan because Alternative 1 would not meaningfully change exposure of people to excessive noise levels from aircraft. Alternative 1 would thus have a similar, less-than-significant impact.	**Less-than-Significant Impact (same)** – Alternative 1 would result in a less-than-significant impact in 2050 for **NOI-3**. Alternative 2 would have the same impact as the proposed Plan because Alternative 2 would not meaningfully change exposure of people to excessive noise levels from aircraft. Alternative 2 would thus have a similar, less-than-significant impact.	**Less-than-Significant Impact (same)** – Alternative 3 would result in a less-than-significant impact in 2050 for **NOI-3**. Alternative 3 would have the same impact as the proposed Plan because Alternative 3 would not meaningfully change exposure of people to excessive noise levels from aircraft. Alternative 3 would thus have a similar, less-than-significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-NOI-1**, a cumulatively considerable contribution to adverse impacts related to noise and vibration. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-NOI-1** in 2050 for threshold NOI-3.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-NOI-1**, a cumulatively considerable contribution to adverse impacts related to noise and vibration. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-NOI-1** in 2050 for threshold NOI-3.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-NOI-1**, a cumulatively considerable contribution to adverse impacts related to noise and vibration. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-NOI-1** in 2050 for threshold NOI-3.
	Population and Housing		
2035	**Significant Impact (increased) –** Alternative 1 would result in significant impacts for **POP-1,** induce substantial unplanned population growth in the region, either directly (for example, by proposing new homes or businesses) or indirectly (for example, through extension of roads or other infrastructure), and **POP-2,** displace substantial numbers of people or housing units, necessitating construction of replacement housing elsewhere, in 2035. Alternative 1 would have greater impacts than the proposed Plan because increased densification in areas with available multimodal transportation and improved accessibility and connectivity could facilitate population and economic growth in areas of the region that are currently not developed or underdeveloped. Therefore, Alternative 1 would result in greater potential for unplanned population growth in transit served areas than with the proposed Plan (**POP-1**). In addition, more compact land use patterns and transportation projects in developed areas would result in greater displacement of people and housing units (**POP-2**). Alternative 1 would thus have similar, but increased, significant impacts.	**Significant Impact (increased) –** Alternative 2 would result in significant impacts for **POP-1** and **POP-2** in 2035. Growth under Alternative 2, may exceed what is anticipated in local general plans, leading to unplanned population growth. Impacts for Alternative 2 would be greater than the proposed Plan because increased densification in areas with available multimodal transportation and improved accessibility and connectivity, could facilitate population and economic growth in areas of the region that are currently not developed or underdeveloped. Therefore, Alternative 2 would result in greater potential for unplanned population growth in transit served areas than with the proposed Plan (**POP-1**). In addition, more compact land use patterns and transportation projects in developed areas would result in greater displacement of people and housing units (**POP-2**). Alternative 2 would thus have similar, but increased, significant impacts.	**Significant Impact (increased) –** Alternative 3 would result in significant impacts for **POP-1** and **POP-2** in 2035. Growth under Alternative 3, may exceed what is anticipated in local general plans, leading to unplanned population growth. Impacts for Alternative 3 would be greater than the proposed Plan because increased densification in areas with available multimodal transportation and improved accessibility and connectivity, could facilitate population and economic growth in areas of the region that are currently not developed or underdeveloped. Therefore, Alternative 3 would result in greater potential for unplanned population growth in transit served areas. In addition, more compact land use patterns and transportation projects in developed areas would result in greater displacement of people and housing units. Alternative 3 would thus have similar, but increased, significant impacts.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-POP-1**, a cumulatively considerable contribution to adverse impacts related to population and housing. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (increased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-POP-1**, a cumulatively considerable contribution to adverse impacts related to population and housing. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (increased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-POP-1**, a cumulatively considerable contribution to adverse impacts related to population and housing. Cumulative impacts would be increased compared to the proposed Plan.
2050	**Significant Impact (increased) –** Alternative 1 would result in significant impacts for **POP-1** and **POP-2** in 2050 and the impacts would be greater compared to the proposed Plan impact. The rationale described for 2035 applies to 2050. Alternative 1 would thus have similar, but increased, significant impacts.	**Significant Impact (increased) –** Alternative 2 would result in significant impacts for **POP-1** and **POP-2** in 2050 and the impacts would be greater compared to the proposed Plan impact. The rationale described for 2035 applies to 2050. Alternative 2 would thus have similar, but increased, significant impacts.	**Significant Impact (increased) –** Alternative 3 would result in significant impacts for **POP-1** and **POP-2** in 2050 and the impacts would be greater compared to the proposed Plan impact. The rationale described for 2035 applies to 2050. Alternative 3 would thus have similar, but increased, significant impacts.
2050	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-POP-1**, a cumulatively considerable contribution to adverse impacts related to population and housing. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (increased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-POP-1**, a cumulatively considerable contribution to adverse impacts related to population and housing. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (increased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-POP-1**, a cumulatively considerable contribution to adverse impacts related to population and housing. Cumulative impacts would be increased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Public Services, Recreation, and Utilities		
2035	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts in 2035 for **PS-1,** result in substantial physical deterioration of public facilities or cause substantial adverse physical impacts associated with the provision of or need for new or physically altered (i.e. expanded) public facilities, in order to maintain adequate fire and police protection, emergency services, schools, libraries, and recreation facilities; **REC-1**, increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; **U-1**, result in the expansion or construction of wastewater collection and treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities to adequately meet projected capacity needs, the construction of which could cause significant environmental impacts; **U-2**, generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, negatively impact the provision of solid waste services or impair the attainment of solid waste reduction goals, or fail to comply with federal, State, and local management and reduction statutes and regulations related to solid waste. The impacts for Alternative 1 would be decreased for each of these significance thresholds compared to the proposed Project because development would be more compact and would be focused in areas that are already served by existing public services, recreation facilities, and utilities. Alternative 1 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 2 would result in significant impacts in 2035 for **PS-1**, **REC-1**, **U-1**, and **U-2**. The impacts for Alternative 2 would be decreased for each of these significance thresholds compared to the proposed Project because development would be more compact and would be focused in areas that are already served by existing public services, recreation facilities, and utilities. Alternative 2 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 3 would result in significant impacts in 2035 for **PS-1**, **REC-1**, **U-1**, and **U-2**. The impacts for Alternative 3 would be decreased for each of these significance thresholds compared to the proposed Project because development would be more compact and would be focused in areas that are already served by existing public services, recreation facilities, and utilities. Alternative 3 would thus have similar, but decreased, significant impacts.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-PS-1**, a cumulatively considerable contribution to adverse impacts related to public services; **C-U-1,** a cumulatively considerable contribution to adverse impacts related to utilities; and **C-REC-1,** a cumulative considerable contribution to adverse impacts related to recreational resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-PS-1**, a cumulatively considerable contribution to adverse impacts related to public services; **C-U-1,** a cumulatively considerable contribution to adverse impacts related to utilities; and **C-REC-1** a cumulative considerable contribution to adverse impacts related to recreational resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-PS-1**, a cumulatively considerable contribution to adverse impacts related to public services; **C-U-1,** a cumulatively considerable contribution to adverse impacts related to utilities; and **C-REC-1,** a cumulative considerable contribution to adverse impacts related to recreational resources. Cumulative impacts would be decreased compared to the proposed Plan.
2050	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts in 2050 for **PS-1**, **REC-1**, **U-1**, and **U-2** and the impacts would be decreased compared to the proposed Plan impacts. The rationale described for 2035 applies to 2050. Alternative 1 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 2 would result in significant impacts in 2050 for **PS-1**, **REC-1**, **U-1**, and **U-2** and the impacts would be decreased compared to the proposed Plan impacts. The rationale described for 2035 applies to 2050. Alternative 2 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 3 would result in significant impacts in 2050 for **PS-1**, **REC-1**, **U-1**, and **U-2** and the impacts would be decreased compared to the proposed Plan impacts. The rationale described for 2035 applies to 2050. Alternative 3 would thus have similar, but decreased, significant impacts.
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-PS-1**, a cumulatively considerable contribution to adverse impacts related to public services; **C-U-1,** a cumulatively considerable contribution to adverse impacts related to utilities; and, **C-REC-1,** a cumulative considerable contribution to adverse impacts related to recreational resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-PS-1**, a cumulatively considerable contribution to adverse impacts related to public services; **C-U-1,** a cumulatively considerable contribution to adverse impacts related to utilities; and, **C-REC-1,** a cumulative considerable contribution to adverse impacts related to recreational resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-PS-1**, a cumulatively considerable contribution to adverse impacts related to public services, **C-U-1,** a cumulatively considerable contribution to adverse impacts related to utilities; and, **C-REC-1,** a cumulative considerable contribution to adverse impacts related to recreational resources. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Transportation		
2030	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2030 for **TRA-2**, conflict or be inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals. The SANDAG ABM3 Model does not provide a 2030 scenario. Therefore, this data was interpolated between base year 2022 and year 2035 data. Alternative 1 would result in a SB-743 based VMT per capita of 16.63 in 2030, exceeding the proposed Plan's 2030 VMT per capita of 16.21. In addition, Alternative 1 would result in an increase in total VMT of 3,872,723 vehicle miles per day in 2030 compared to Baseline Year 2019 conditions. This increase would be greater than the increase of 2,629,048 miles per day in 2030 under the proposed Plan. Therefore, Alternative 1 would result in greater impacts as it would achieve a smaller VMT reduction as compared to the proposed Plan. This is considered significant since Alternative 1 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 1 would thus have a similar, but increased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2030 for **TRA-2**. The SANDAG ABM3 Model does not provide a 2030 scenario. Therefore, this data was interpolated between base year 2022 and year 2035 data. Alternative 2 would result in a SB-743 based VMT per capita of 15.31 in 2030 compared to VMT per capita of 16.21 VMT under the proposed Plan in 2030. Alternative 2 would result in an increase in total VMT of 944,380 vehicle miles per day in 2030 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 2,629,048 miles per day in 2030 under the proposed Plan. Therefore, Alternative 2 would result in less impacts as it would achieve a higher VMT reduction as compared to the proposed Plan. This is considered significant since Alternative 2 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2030 for **TRA-2**. The SANDAG ABM3 Model does not provide a 2030 scenario. Therefore, this data was interpolated between base year 2022 and year 2035 data. Alternative 3 would result in a SB-743 based VMT per capita in 2035 of 15.36 in 2030 compared to the VMT per capita of 16.21 under the proposed Plan in 2030. Alternative 3 would result in an increase in total VMT of 1,137,334 vehicle miles per day in 2030 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 2,629,048 miles per day in 2030 under the proposed Plan. Therefore, Alternative 3 would result in less impacts as it would achieve a higher VMT reduction as compared to the proposed Plan. This is considered significant since Alternative 3 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 3 would thus have a similar, but decreased, significant impact.
2030	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2030 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2030 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2030 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Less-than-Significant Impact (same)** – Alternative 1 would result in less-than-significant impacts in 2035 for **TRA-1,** conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities; and **TRA-3,** substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses. The impact of Alternative 1 is the same as proposed Plan impact because Alternative 1 would be consistent with adopted plans, programs, and design standards. Alternative 1 would thus have similar, less-than-significant impacts.	**Less-than-Significant Impact (same)** – Alternative 2 would result in less-than-significant impacts in 2035 for **TRA-1** and **TRA-3**. The impact of Alternative 2 is the same as proposed Plan impact because Alternative 2 would be consistent with adopted plans, programs, and design standards. Alternative 2 would thus have similar, less-than-significant impacts.	**Less-than-Significant Impact (same)** – Alternative 3 would result in less-than-significant impacts in 2035 for **TRA-1** and **TRA-3**. The impact of Alternative 3 is the same as proposed Plan impact because Alternative 3 would be consistent with adopted plans, programs, and design standards. Alternative 3 would thus have similar, less-than-significant impacts.
2035	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2035 for **TRA-2**, conflict or be inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals. As shown in Appendix M, Table M-2, Alternative 1 would result in a SB-743 based VMT per capita of 16.58 in 2035, exceeding the proposed Plan's 2035 VMT per capita of 15.95. In addition, Alternative 1 would result in an increase in total VMT of 5,845,0414 vehicle miles per day in 2035 compared to Baseline Year 2019 conditions. This increase would be greater than the increase of 3,824,069 miles per day in 2035 under the proposed Plan. This is considered significant since Alternative 1 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Therefore, Alternative 1 would result in greater impacts as it would achieve a smaller VMT reduction as compared to the proposed Plan. Alternative 1 would thus have a similar, but increased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2035 for **TRA-2**. As shown in Appendix M, Table M-2, Alternative 2 would result in a SB-743 based VMT per capita of 15.31 in 2035 compared to VMT per capita of 15.95 VMT under the proposed Plan in 2035. Alternative 2 would result in an increase in total VMT of 1,086,485 vehicle miles per day in 2035 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 3,824,069 miles per day in 2035 under the proposed Plan. Therefore, Alternative 2 would result in less impacts as it would achieve a higher VMT reduction as compared to the proposed Plan. This is considered significant since Alternative 2 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2035 for **TRA-2**. As shown in Appendix M, Table M-2, Alternative 3 would result in a SB-743 based VMT per capita in 2035 of 15.36 in 2035 compared to the VMT per capita of 15.95 under the proposed Plan in 2035. Alternative 3 would result in an increase in total VMT of 1,400,034 vehicle miles per day in 2035 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 3,824,069 miles per day in 2035 under the proposed Plan. Therefore, Alternative 3 would result in less impacts as it would achieve a higher VMT reduction as compared to the proposed Plan. This is considered significant since Alternative 3 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 3 would thus have a similar, but decreased, significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Less-than-Significant Impact (increased)** – Alternative 1 would result in a less-than-significant impact in 2035 for **TRA-4,** lead to a lack of parking supply, causing significant secondary environmental impacts not already analyzed in this EIR. Alternative 1 would result in increased impacts because it would not include parking related programs that are anticipated to better manage the existing available public parking supply as compared to the proposed Plan. Alternative 1 would thus have a similar, but increased, less-than-significant impact.	**Less-than-Significant Impact (decreased)** – Alternative 2 would result in a less-than-significant impact in 2035 for **TRA-4**. Alternative 2 would result in decreased impacts because it would increase development in areas with multimodal transportation and include increased parking costs that are anticipated to better manage the existing available public parking supply than the proposed Plan. Alternative 2 would thus have a similar, but decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased)** – Alternative 3 would result in a less-than-significant impact in 2035 for **TRA-4**. Alternative 3 would result in decreased impacts because it would increase development in areas with multimodal transportation, increase parking costs, and include free transit, measures which are anticipated to better manage the existing available public parking supply than the proposed Plan. Alternative 3 would thus have a similar, but decreased, less-than-significant impact.
2035	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2030 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be increased compared to the proposed Plan. **Not Cumulatively Considerable (same/increased)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-TRA-1** in 2035 for thresholds TRA-1, TRA-3, and TRA-4. As compared to the proposed Plan, impacts would be the same for TRA-1 and TRA-4 but increased for TRA-4.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2030 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same/decreased)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-TRA-1** in 2035 for thresholds TRA-1, TRA-3, and TRA-4. As compared to the proposed Plan, impacts would be the same for TRA-1 and TRA-4 but decreased for TRA-4.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2030 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same/decreased)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-TRA-1** in 2035 for thresholds TRA-1, TRA-3, and TRA-4. As compared to the proposed Plan, impacts would be the same for TRA-1 and TRA-4 but decreased for TRA-4.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2045	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2045 for **TRA-2**. The SANDAG ABM3 Model does not provide a 2045 scenario. Therefore, this data was interpolated between year 2035 and year 2050 data. Alternative 1 would result in a SB-743 based VMT per capita of 16.41 in 2045 compared to VMT per capita of 15.57 VMT under the proposed Plan in 2045. In addition, Alternative 1 would result in an increase in total VMT of 7,019,463 vehicle miles per day in 2045 compared to Baseline Year 2019 conditions. This increase would be greater than the increase of 4,170,149 miles per day in 2045 under the proposed Plan. Therefore, Alternative 1 would result in greater impacts as it would achieve a smaller VMT reduction than the proposed Plan. This is considered significant since Alternative 1 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 1 would thus have a similar, but increased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2045 for **TRA-2**. The SANDAG ABM3 Model does not provide a 2045 scenario. Therefore, this data was interpolated between year 2035 and year 2050 data. Alternative 2 would result in a SB-743 based VMT per capita of 14.80 in 2045 compared to VMT per capita of 15.57 VMT under the proposed Plan in 2045. In addition, Alternative 2 would result in an increase in total VMT of 1,001,981 vehicle miles per day in 2045 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 4,170,149 miles per day in 2045 under the proposed Plan. Therefore, Alternative 2 would result in decreased impacts as it would achieve a higher VMT reduction than the proposed Plan. This is considered significant since Alternative 2 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2045 for **TRA-2**. The SANDAG ABM3 Model does not provide a 2045 scenario. Therefore, this data was interpolated between year 2035 and year 2050 data. Alternative 3 would result in a SB-743 based VMT per capita of 14.86 in 2045 compared to VMT per capita of 15.57 VMT under the proposed Plan in 2045. In addition, Alternative 3 would result in an increase in total VMT of 1,367,026 vehicle miles per day in 2045 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 4,170,149 miles per day in 2045 under the proposed Plan. Therefore, Alternative 3 would result in decreased impacts as it would achieve a higher VMT reduction than the proposed Plan. This is considered significant since Alternative 3 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 3 would thus have a similar, but decreased, significant impact.
2045	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2045 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be increased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2045 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2045 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan.
2050	**Less-than-Significant Impact (same)** – Alternative 1 would result in less-than-significant impacts in 2050 for **TRA-1** and **TRA-3**. The impact of this alternative is the same as proposed Plan impact because this alternative would be consistent with adopted plans, programs, and design standards. Alternative 1 would thus have similar, less-than-significant impacts.	**Less-than-Significant Impact (same)** – Alternative 2 would result in less-than-significant impacts in 2050 for **TRA-1** and **TRA-3**. The impact of this alternative is the same as proposed Plan impact because this alternative would be consistent with adopted plans, programs, and design standards. Alternative 2 would thus have similar, less-than-significant impacts.	**Less-than-Significant Impact (same)** – Alternative 3 would result in less-than-significant impacts in 2050 for TRA-1 and TRA-3. The impact of this alternative is the same as proposed Plan impact because this alternative would be consistent with adopted plans, programs, and design standards. Alternative 3 would thus have similar, less-than-significant impacts.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Significant Impact (increased)** – Alternative 1 would result in a significant impact in 2050 for **TRA-2**. As shown in Appendix M, Table M-2, Alternative 1 would result in a SB-743 based VMT per capita of 16.33 in 2050 compared to VMT per capita of 15.39 VMT under the proposed Plan in 2050. In addition, Alternative 1 would result in an increase in total VMT of 7,606,674 vehicle miles per day in 2050 compared to Baseline Year 2019 conditions. This increase would be greater than the increase of 4,343,189 miles per day in 2050 under the proposed Plan. Therefore, Alternative 1 would result in greater impacts as it would achieve a smaller VMT reduction than the proposed Plan. This is considered significant since Alternative 1 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 1 would thus have a similar, but increased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact in 2050 for **TRA-2**. As shown in Appendix M, Table M-2, Alternative 2 would result in a SB-743 based VMT per capita of 14.55 in 2050 compared to VMT per capita of 15.39 VMT under the proposed Plan in 2050. In addition, Alternative 2 would result in an increase in total VMT of 959,729 vehicle miles per day in 2050 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 4,343,189 miles per day in 2050 under the proposed Plan. Therefore, Alternative 2 would result in decreased impacts as it would achieve a higher VMT reduction than the proposed Plan. This is considered significant since Alternative 2 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact in 2050 for **TRA-2**. As shown in Appendix M, Table M-2, Alternative 3 would result in a SB-743 based VMT per capita of14.61 in 2050 compared to VMT per capita of 15.39 VMT under the proposed Plan in 2050. In addition, Alternative 3 would result in an increase in total VMT of 1,367,026 vehicle miles per day in 2050 compared to Baseline Year 2019 conditions. This increase would be less than the increase of 4,343,189 miles per day in 2050 under the proposed Plan. Therefore, Alternative 3 would result in decreased impacts as it would achieve a higher VMT reduction than the proposed Plan. This is considered significant since Alternative 3 would not achieve the substantial VMT reductions needed to help achieve statewide GHG reduction goals. Alternative 3 would thus have a similar, but decreased, significant impact.
2050	**Less-than-Significant Impact (increased)** – Alternative 1 would result in a less-than-significant impact in 2050 for **TRA-4**. Alternative 1 would result in increased impacts because it would not include parking related strategies and programs that are anticipated to better manage the existing available public parking supply as compared to the proposed Plan. Alternative 1 would thus have a similar, but increased, less-than-significant impact.	**Less-than-Significant Impact (decreased)** – Alternative 2 would result in a less-than-significant impact in 2050 for **TRA-4**. Alternative 2 would result in decreased impacts because it would increase development in areas with multimodal transportation and include additional parking related programs that are anticipated to better manage the existing available public parking supply as compared to the proposed Plan. Alternative 2 would thus have a similar, but decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased)** – Alternative 3 would result in a less-than-significant impact in 2050 for **TRA-4**. Alternative 3 would result in decreased impacts because it would increase development in areas with multimodal transportation, increase parking costs, and include free transit, measures which are anticipated to manage the existing available public parking supply better than the proposed Plan. Alternative 3 would have a similar, but decreased, less-than-significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Cumulatively Considerable (increased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be increased compared to the proposed Plan. **Not Cumulatively Considerable (same/increased)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-TRA-1** in 2050 for thresholds TRA-1, TRA-3, and TRA-4. As compared to the proposed Plan, impacts would be the same for TRA-1 and TRA-4 but increased for TRA-4.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same/increased)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-TRA-1** in 2050 for thresholds TRA-1, TRA-3, and TRA-4. As compared to the proposed Plan, impacts would be the same for TRA-1 and TRA-4 but increased for TRA-4.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-TRA-1**, a cumulatively considerable contribution to adverse impacts related to transportation. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (same/increased)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-TRA-1** in 2050 for thresholds TRA-1, TRA-3, and TRA-4. As compared to the proposed Plan, impacts would be the same for TRA-1 and TRA-4 but increased for TRA-4.
	Tribal Cultural Resources		
2035	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact on tribal cultural resources in 2035 for **TCR-1**, potential to cause a substantial adverse change in the significance of an adverse change in the significance of a tribal cultural resource. The impact of Alternative 1 in 2035 would be decreased compared to the proposed Plan because development would be more compact, which would result in less ground-disturbing activities that could encounter and adversely affect tribal cultural resources. Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on tribal cultural resources in 2035 for **TCR-1**. The impact of Alternative 2 in 2035 would be decreased compared to the proposed Plan because development would be more compact, which would result in less ground-disturbing activities that could encounter and adversely affect tribal cultural resources. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on tribal cultural resources in 2035 for **TCR-1**. The impact of Alternative 3 in 2035 would be decreased compared to the proposed Plan because development would be more compact, which would result in less ground-disturbing activities that could encounter and adversely affect tribal cultural resources. Alternative 3 would thus have a similar, but decreased, significant impact.
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-TCR-1**, a cumulatively considerable contribution to adverse impacts related to tribal cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-TCR-1**, a cumulatively considerable contribution to adverse impacts related to tribal cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-TCR-1**, a cumulatively considerable contribution to adverse impacts related to tribal cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.
2050	**Significant Impact (decreased)** – Alternative 1 would result in a significant impact on tribal cultural resources in 2050 for **TCR-1** and the impact would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 2 would result in a significant impact on tribal cultural resources in 2050 for **TCR-1** and the impact would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased)** – Alternative 3 would result in a significant impact on tribal cultural resources in 2050 for **TCR-1** and the impact would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 3 would thus have a similar, but decreased, significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-TCR-1**, a cumulatively considerable contribution to adverse impacts related to tribal cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-TCR-1**, a cumulatively considerable contribution to adverse impacts related to tribal cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-TCR-1**, a cumulatively considerable contribution to adverse impacts related to tribal cultural resources. Cumulative impacts would be decreased compared to the proposed Plan.
	Water Supply		
2035	**Less-than-Significant Impact (decreased)** – Alternative 1 would result in a less than significant impact in 2035 for Impact **WS-1,** not have sufficient water supplies available to serve the projected regional demand during normal, dry, and multiple dry years. The impact on regional water demand under Alternative 1 would be less than the proposed Plan because Alternative 1 would result in lower water demand, including less demand for water landscaping, associated with more compact development. Alternative 1 would thus have a similar, but decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased)** – Alternative 2 would result in a less than significant impact in 2035 for Impact **WS-1**. The impact on regional water demand under Alternative 2 would be less than the proposed Plan because Alternative 2 would result in lower water demand, including less demand for water landscaping, associated with more compact development. Alternative 2 would thus have a similar, but decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased)** – Impact **WS-1** would be less than significant in 2035 for Alternative 3. The impact on regional water demand under Alternative 3 would be less than the proposed Plan because this alternative would result in lower water demand, including less demand for water landscaping, associated with more compact development. Alternative 3 would thus have a similar, but decreased, less-than-significant impact.
2035	**Significant Impact (decreased) –** Alternative 1 would result in a significant impact in 2035 for Impact **WS-2**, substantially reduce groundwater supplies, groundwater recharge, or the sustainable management of groundwater basins; and **WS-3**, require or result in the construction of new or expanded water facilities, the construction of which could cause a significant environmental effect**.** The impacts of Alternative 1 would be less than the proposed Plan because Alternative 1 would reduce groundwater demand associated with more compact development and less demand for landscaping watering (**WS-2**). In addition, Alternative 1 would have less demand for new or expanded water facilities because development would occur in developed areas that are already served by existing infrastructure. (**WS-3**). Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased) –** Impact **WS-2** and **WS-3** would be significant for Alternative 2 in 2035. The impacts of Alternative 2 would be less than the proposed Plan because Alternative 2 would reduce groundwater demand associated with more compact development and less demand for landscaping watering (**WS-2**). In addition, Alternative 2 would have less demand for new or expanded water facilities because development would occur in developed areas that are already served by existing infrastructure. (**WS-3**). Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased) –** Impact **WS-2** and **WS-3** would be significant for Alternative 3 in 2035. The impacts of Alternative 3 in 2035 would be less than the proposed Plan because Alternative 3 would result in reduced groundwater demand associated with more compact development and less demand for landscaping watering (**WS-2**). In addition, Alternative 3 would have less demand for new or expanded water facilities because development would occur in developed areas that are already served by existing infrastructure (**WS-3**). Alternative 3 would thus have a similar, but decreased, significant impact.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-WS-1**, a cumulatively considerable contribution to adverse impacts related to water supply. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-WS-1** in 2035 for threshold WS-1.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-WS-1**, a cumulatively considerable contribution to adverse impacts related to water supply. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-WS-1** in 2035 for threshold WS-1.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-WS-1**, a cumulatively considerable contribution to adverse impacts related to water supply. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-WS-1** in 2035 for threshold WS-1.
2050	**Less-than-Significant Impact (decreased)–** Alternative 1 would result in a less-than-significant impact in 2050 for **WS-1** and the impact would be reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 1 would thus have a similar, but decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 2 would result in a less-than-significant impact in 2050 for **WS-1** and the impact would be reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 2 would thus have a similar, but decreased, less-than-significant impact.	**Less-than-Significant Impact (decreased) –** Alternative 3 would result in a less-than-significant impact in 2050 for **WS-1** and the impact would be reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 3 would thus have a similar, but decreased, less-than-significant impact.
2050	**Significant Impact (decreased) –** Impact **WS-2** and **WS-3** would be significant in 2050 under Alternative 1 and reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 1 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased) –** Impact **WS-2** and **WS-3** would be significant in 2050 under Alternative 2 and reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 2 would thus have a similar, but decreased, significant impact.	**Significant Impact (decreased) –** Impact **WS-2** and **WS-3** would be significant in 2050 under Alternative 3 and reduced compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 3 would thus have a similar, but decreased, significant impact.
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-WS-1**, a cumulatively considerable contribution to adverse impacts related to water supply. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar, to the proposed Plan, Alternative 1 would not result in a cumulatively considerable impact for **C-WS-1** in 2050 for threshold WS-1.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-WS-1**, a cumulatively considerable contribution to adverse impacts related to water supply. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar, to the proposed Plan, Alternative 2 would not result in a cumulatively considerable impact for **C-WS-1** in 2050 for threshold WS-1.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-WS-1**, a cumulatively considerable contribution to adverse impacts related to water supply. Cumulative impacts would be decreased compared to the proposed Plan. **Not Cumulatively Considerable (decreased)** - Similar, to the proposed Plan, Alternative 3 would not result in a cumulatively considerable impact for **C-WS-1** in 2050 for threshold WS-1.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
	Wildfire		
2035	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts in 2035 for **WF-1**, increase risk of wildland fire ignition and directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires; **WF-2,** due to slope, prevailing winds, and other factors, exacerbate wildfire risks, thereby exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire, or exposing people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires; **WF-3**, require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment; and **WF-4,** expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Alternative 1 would result in decreased wildfire impacts for each of these significance thresholds because this alternative would result in more compact land development than the proposed Plan and therefore more of the regional growth and land use change would be located in dense urban areas outside of the wildland-urban interface. Alternative 1 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 2 would result in significant impacts in 2035 for **WF-1**, **WF-2**, **WF-3**, and **WF-4**. Alternative 2 would result in decreased wildfire impacts for each of these significance thresholds because this alternative would result in more compact land development than the proposed Plan and therefore more of the regional growth and land use change, would be located in dense urban areas outside of the wildland-urban interface. Alternative 2 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 3 would result in significant impacts in 2035 for **WF-1**, **WF-2**, **WF-3**, and **WF-4**. Alternative 3 would result in decreased wildfire impacts for each of these significance thresholds because this alternative would result in more compact land development than the proposed Plan and therefore more of the regional growth and land use change, would be located in dense urban areas outside of the wildland-urban interface. Alternative 3 would thus have similar, but decreased, significant impacts.
2035	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2035 for **C-WF-1**, a cumulatively considerable contribution to adverse impacts related to wildfire. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2035 for **C-WF-1**, a cumulatively considerable contribution to adverse impacts related to wildfire. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2035 for **C-WF-1**, a cumulatively considerable contribution to adverse impacts related to wildfire. Cumulative impacts would be decreased compared to the proposed Plan.

Year	Alternative 1: No Project	Alternative 2: Focused Growth, Higher Parking Pricing, and Arterial and Freeway Speed Reductions	Alternative 3: Focused Growth, Higher Parking and Managed Lane Pricing, and Free Transit
2050	**Significant Impact (decreased)** – Alternative 1 would result in significant impacts in 2050 for **WF-1**, **WF-2**, **WF-3**, and **WF-4** and the impacts would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 1 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 2 would result in significant impacts in 2050 for **WF-1**, **WF-2**, **WF-3**, and **WF-4** and the impacts would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 2 would thus have similar, but decreased, significant impacts.	**Significant Impact (decreased)** – Alternative 3 would result in significant impacts in 2050 for **WF-1**, **WF-2**, **WF-3**, and **WF-4** and the impacts would be decreased compared to the proposed Plan. The rationale described for 2035 applies to 2050. Alternative 3 would thus have similar, but decreased, significant impacts.
2050	**Cumulatively Considerable (decreased)** - Alternative 1 would result in cumulatively considerable impacts in 2050 for **C-WF-1**, a cumulatively considerable contribution to adverse impacts related to wildfire. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 2 would result in cumulatively considerable impacts in 2050 for **C-WF-1**, a cumulatively considerable contribution to adverse impacts related to wildfire. Cumulative impacts would be decreased compared to the proposed Plan.	**Cumulatively Considerable (decreased)** - Alternative 3 would result in cumulatively considerable impacts in 2050 for **C-WF-1**, a cumulatively considerable contribution to adverse impacts related to wildfire. Cumulative impacts would be decreased compared to the proposed Plan.

6 OTHER CONSIDERATIONS REQUIRED BY CEQA

This chapter addresses the following other considerations required by CEQA based on the impact analysis in Chapter 4: growth inducement, maximum theoretical buildout, significant irreversible impacts, and significant and unavoidable impacts.

6.1 GROWTH INDUCEMENT

6.1.1 Background

A project is defined as growth inducing when it: directly or indirectly fosters economic growth, population growth, or additional housing; removes obstacles to growth; or encourages or facilitates other activities that would significantly affect the environment (CEQA Guidelines Section 15126.2). Growth inducement would be caused by the provision or extension of utilities and public services. For example, the development of water, wastewater, fire, or other services in previously underserved areas; the extension of transportation routes into undeveloped areas; and the establishment of major new employment opportunities would all induce growth. The proposed Plan is considered growth-inducing for the reasons presented below. In addition, Section 4.14, Population and Housing, under Impact POP-1, further analyzes whether implementation of the proposed Plan would induce substantial unplanned population growth to areas of the region either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., by extending roads and other infrastructure).

6.1.2 Economic Growth, Population Growth, Additional Housing

As shown in Table 2-1, in Section 2.0, "Project Description," of this Draft EIR, from 2022 to 2035, the region is forecasted have an increase of 117,056 people (4%), 137,242 housing units (11%), and 67,297 jobs (4%). From 2036 to 2050, the region is forecasted to decrease by 4,112 people (-0.1%), increase by 65,577 housing units (4.8%), and increase by 103,460 jobs (6.2%). The proposed Plan's objectives include focusing population and employment growth in existing urbanized areas to protect sensitive habitat and natural resource areas, and providing transportation investments that support compact land development patterns. The proposed Plan focuses this population, housing units, and employment growth near existing and planned transportation infrastructure and in areas with existing utilities and municipal or public services. This growth pattern would preserve natural resources, open space, and agricultural lands.

Development to accommodate regional growth and land use change would be constructed throughout the region. However, the proposed Plan forecasts a general intensification of existing land uses in urban communities and along key transportation corridors. Most of these areas have established roadways and utilities, as well as water and sewer services. The placement of additional housing units in established areas would require upgrading and resizing of existing infrastructure, including water facilities. The upgrading of these facilities would further remove obstacles to the construction of additional housing within and adjacent to these areas. Chapter 2, Project Description, and Section 4.14, Population and Housing, further describe forecasted population, housing units, and job growth within the region.

The planned transportation network improvements of the proposed Plan are intended to expand upon the current transportation network by providing transportation investments that support compact land development patterns and decrease sprawl while reducing greenhouse gas (GHG) emissions and other environmental impacts. These transportation network improvements would remove obstacles to growth in some areas of the region, which would support additional housing, population, and economic growth. Section 4.14, Population and Housing, discusses forecasted regional population and employment growth associated with the proposed Plan.

6.2 MAXIMUM THEORETICAL BUILDOUT SCENARIO

6.2.1 Background

The theoretical buildout scenario assumes maximum development allowed under the proposed Plan, pursuant to the maximum density and/or intensity specified in the adopted land use elements of local general plans (100 percent of allowable residential units and 100 percent of allowable non-residential square footage). Due to regulatory constraints, physical constraints, and foreseeable market conditions, realization of this scenario is not reasonably foreseeable and is highly unlikely; however, this EIR includes an analysis of this scenario for informational purposes because the jurisdictional land use plans associated with the proposed Plan land use forecast do provide the theoretical capacity for residential units and nonresidential building square footage up to this maximum. Table 6-1 compares 2050 housing units and jobs under the 2050 forecast of the proposed Plan with the maximum theoretical buildout scenario.

Table 6-1 Existing and Forecasted Job Growth by Jurisdiction

2050 Forecast	Proposed Plan	Maximum Theoretical Buildout	Percent increase relative to the Proposed Plan
Housing Units	1,438,461	1,690,069	17.5%
Jobs	2,373,052	2,738,653	15.4%

Source: SANDAG 2025. Maximum Theoretical Buildout Scenario.

The maximum theoretical buildout scenario would represent a change in the level of residential and nonresidential development in the region. By 2050, it would result in approximately 251,608 additional housing units (approximately 17.5 percent more than the proposed Plan forecast) and approximately 365,601 additional jobs (approximately 15.4 percent more than the proposed Plan forecast) relative to forecasted growth under the proposed Plan. There would be no changes to the planned transportation network improvements and programs of the proposed Plan under this scenario.

The capacity of the maximum theoretical buildout scenario for housing units was estimated by either analyzing maximum plan density based on local adopted general plans (as of 2022) and any additional unit capacity from accessory dwelling units, or from Regional Housing Needs Allocation. The proposed Plan's Sustainable Communities Strategy (SCS) land use pattern is in alignment with each jurisdiction's adopted general plan. Given the generalized, highly theoretical nature of this buildout analysis, the analysis does not account for additional regulations, site specific conditions, or other factors that would hinder attainment of maximum allowable density or intensity on any given parcel. For example, parking requirements, slope and other land suitability characteristics, and implementation of environmental regulations would make attainment of maximum densities and/or intensities infeasible, and site-specific easements would restrict development of certain properties to levels below what is permitted by adopted plans. Another variable is that decision makers in each jurisdiction have the authority to approve, deny, or modify discretionary land use projects based on numerous site-specific factors.

The maximum theoretical buildout scenario assumes that development of lands with specified developmental constraints would be excluded, included but not limited to steep slopes (i.e., greater than 25 percent), Federal Emergency Management Agency (FEMA) 100-year floodplains and floodways, and conserved and preserved lands.

6.2.2 Aesthetics and Visual Resources

Under the maximum theoretical buildout scenario, neighborhoods that are below maximum buildout would be subject to redevelopment to achieve buildout, and areas that are not forecasted for development under the proposed Plan would be developed to the maximum density or intensity. As such, the character and the aesthetic quality of many areas would be altered. New development and infrastructure would be established within and adjacent to scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings. Scenic vistas, as well as scenic resources within a State-designated scenic highway, would be altered, if not blocked

completely in some areas, based on the construction of new buildings resulting from forecasted regional growth and land use change. Impacts would be greater with implementation of the maximum theoretical buildout scenario than with the proposed Plan. The greater amount of development under the theoretical buildout scenario would also substantially degrade the character of areas of the region, including adding a visual element of urban character to an existing rural or open space area. In addition, new development would create new light sources at night that would adversely affect dark skies in some locations. As with the proposed Plan, impacts on aesthetic resources would be reduced with the mitigation measures identified in Section 4.1, Aesthetics and Visual Resources, but would remain significant and unavoidable.

6.2.3 Agriculture and Forestry Resources

Impacts on agricultural lands, including areas with existing agricultural uses or lands with Williamson Act contracts, would be greater under the maximum theoretical buildout scenario. Lands with existing low-density residential uses that encourage or sustain agricultural operations would be developed to achieve maximum buildout and would no longer support agricultural operations. Additionally, a greater number of lands used for agricultural operations would be impacted by encroaching residential or commercial development. Areas adjacent to lands zoned for agricultural uses would be developed to achieve maximum density in such a way as to cause land use conflicts, as the nonagricultural uses would be in proximity to odors, runoff, and other effects. Impacts on agricultural lands would be greater than with implementation of the proposed Plan and greater than existing conditions.

Under the maximum theoretical buildout scenario, lands with existing low-density residential uses that include forest lands would be developed to achieve maximum buildout, and the theoretical buildout scenario would decrease acreage of forest lands in the region. As with the proposed Plan, impacts on agriculture and forestry resources would be reduced with the mitigation measures identified in Section 4.2, Agriculture and Forestry Resources, but would remain significant and unavoidable.

6.2.4 Air Quality

Under maximum theoretical buildout conditions, regional growth and land use change would result in some increases in air pollutant emissions, but as with the proposed Plan, conflicts with applicable Air Quality Attainment Plans are unlikely.

Compared to the proposed Plan, maximum theoretical buildout would result in increased particulate emissions, both construction and operational. Therefore, maximum theoretical buildout would have greater potential to violate or contribute substantially to a violation of an air quality standard. In particular, emissions of respirable particulate matter (PM10,associated with maximum theoretical buildout scenario have greater potential to result in violations of California Ambient Air Quality Standards for this pollutant, or to contribute substantially to existing violations. The proposed Plan results in cumulatively considerable increases in emissions of the nonattainment pollutant PM10, a significant impact. Maximum theoretical buildout would increase the magnitude of this impact.

The proposed Plan's PM2.5 and toxic air contaminant (TAC) emissions would expose sensitive receptors to substantial pollutant concentrations, a significant impact. Emissions of PM2.5 and TACs under the maximum theoretical buildout scenario would increase due to increases in vehicle miles traveled (VMT). Compared to the proposed Plan, there would be increased exposure of sensitive receptors to substantial pollutant concentrations. As with the proposed Plan, significant air quality impacts would be reduced with the mitigation measures identified in Section 4.3, Air Quality, but would remain significant and unavoidable.

6.2.5 Biological Resources

Impacts on biological resources would be greater under the maximum theoretical buildout scenario when compared to the proposed Plan. Under this scenario, areas that are vacant and not preserved or protected, or areas of low density would be developed to allow higher density and higher intensity uses. The conversion of

undeveloped lands to developed lands would result in impacts on biological resources, affecting sensitive natural communities and potential regulated waters; special status plant and wildlife species, and regional wildlife corridors and movement. Mitigation measures to reduce these impacts are described in Section 4.4, Biological Resources, for the proposed Plan. However, those impacts would remain significant and unavoidable. The same mitigation measures would apply for the theoretical buildout scenario. The maximum theoretical buildout scenario would consist of more development than the proposed Plan, and although impacts on biological resources would be reduced with the mitigation identified in Section 4.4, they would remain significant and unavoidable.

The maximum theoretical buildout scenario would not conflict with approved local, regional, State, and federal regulations, policies, ordinances, and finalized Habitat Conservation Plans/Natural Community Conservation Plans (HCP/NCCPs). The maximum theoretical buildout scenario would result in less-than-significant impacts related to encroachment into hardline preserve areas identified by adopted HCP/NCCPs because, as with the proposed Plan, development projects would require biologically equivalent or superior compensation of habitat or project redesign when there is encroachment into hardline preserve areas. Therefore, that impact would be less than significant.

6.2.6 Cultural Resources

Regional growth and land use changes forecasted under the maximum theoretical buildout scenario would result in ground disturbance that would occur during redevelopment and development of most of the region, including areas that are not planned for development under the proposed Plan. The area of ground disturbance would be greater than that anticipated under the proposed Plan, as areas not planned for regional growth and land use changes under the proposed Plan would be developed to their maximum densities. Development under the proposed Plan is more concentrated than it would be under maximum theoretical buildout. The likelihood of encountering historical resources or unique archeological resources is greatest on sites that have been minimally excavated in the past (e.g., undeveloped parcels, vacant lots, and lots containing surface parking, etc.). Previously excavated areas are generally considered to have a low potential for historic resources or unique archaeological resources, as the soil containing such resources has been removed. However, projects under the maximum theoretical buildout scenario likely would involve underground parking areas, underground tanks, new pipelines, or replacement of pipelines, all at a lower depth than the previous development in previously graded areas, and in areas that were not previously developed. As such, additional significant ground disturbances are anticipated, and it is possible that more unique archeological resources would be disturbed.

Therefore, compared to the proposed Plan, a greater number of historical resources or unique archeological resources would experience substantial adverse changes; this impact would continue to be significant. As with the proposed Plan, under maximum theoretical buildout, impacts related to disturbance of human remains would continue to be less than significant due to compliance with existing laws and regulations. Section 4.5, Cultural Resources identifies mitigation measures that would reduce impacts on historical resources or unique archaeological resources. However, as with the proposed Plan, under maximum theoretical buildout these impacts would remain significant and unavoidable.

6.2.7 Energy

Under maximum theoretical buildout conditions, regional growth and land use change would increase overall energy consumption compared to the proposed Plan. Increased housing would result in additional construction-related energy consumption from the use of fuel for off-road equipment, worker commutes, and electricity consumption. Operational electricity consumption and natural gas use would also increase under maximum theoretical buildout conditions. However, Impact EN-1 is based on the per capita energy consumption, which would determine whether the energy use under maximum theoretical buildout conditions is more efficient than under the existing land uses and transportation network. As discussed in Section 4.6, Energy, the per capita energy consumption rates for the proposed Plan decrease by 12.6% from 2022 to 2035, 11.8 % from 2022 to 2050, and 0.8% from 2036 to 2050, respectively. Therefore, even with the somewhat increased energy consumption under

maximum theoretical buildout conditions, population levels would be higher, and the per capita rates would continue to be lower than existing conditions. This impact would be less than significant.

Federal, State, and regional agencies will continue to implement programs that improve energy efficiency, decrease reliance on fossil fuels, and increase reliance on renewable energy sources. SANDAG efforts will continue to support State goals through 2050. SANDAG and San Diego Gas & Electric (SDG&E) will continue to make efforts at the regional and local levels to increase the amount of renewable energy to meet energy demands. As with the proposed Plan, the maximum theoretical buildout conditions would not result in an increased reliance on fossil fuels and decreased reliance on renewable energy sources, and there would be no conflict with a State or regional plan related to the increased use of renewable energy or energy efficiency. The impact would be less than significant.

6.2.8 Geology, Soils, and Paleontological Resources

Regional growth and land use changes in the buildout forecasted in the maximum theoretical scenario would result in additional structures exposed to seismic hazards such as ground shaking, fault rupture, liquefaction, and earthquake-induced landslides; however, new buildings and utilities would be constructed according to existing State and local regulations to minimize geologic hazards. As with the proposed Plan, adherence to the laws, regulations, and programs included in Section 4.7.2 and project-specific investigations following State and local standards and practices would minimize risks to people or property as a result of the maximum theoretical buildout scenario. Therefore, impacts associated with geologic and seismic risks would be less than significant for the maximum theoretical buildout scenario, such as with the proposed Plan. Further, incorporated cities and county government within the region have safety elements as part of their general plans, which contain requirements concerning the risks associated with expansive soils, landslides, subsidence, liquefaction, and other seismic and geologic hazards, as summarized in Table 4.7-3 in Section 4.7, 'Geology, Soils, and Paleontological Resources'. Impacts related to unstable soils, including expansive, collapsible, or unstable soils; landslides; and erosion or loss of topsoil would be greater under the maximum theoretical buildout scenario, as a result of the construction associated with development to accommodate regional growth and land use changes located in erosion-prone areas . Impacts would be greater than those under the proposed Plan, as a greater number of development projects would be constructed. As described in Section 4.7, Geology, Soils, and Paleontological Resources, adherence to the California Building Code (CBC), coastal zone regulations, construction general permit requirements, and local grading and erosion control ordinances would reduce the potential for substantial soil erosion or loss of topsoil, and impacts would continue to be less than significant.

The maximum theoretical buildout scenario would result in more construction than under the proposed Plan, particularly development in areas within geologic formations of moderate to high paleontological resource potential and areas containing unique geologic resources, and disturbance would occur at a lower depth than the previous development in previously graded areas, which would increase potential impacts on paleontological resources and unique geological features. Compared to the proposed Plan, this increased development under maximum theoretical buildout would cause a greater number of unique paleontological resources and unique geological features to be destroyed; this impact would continue to be significant and unavoidable.

6.2.9 Greenhouse Gas Emissions

Compared to existing conditions, the proposed Plan's GHG emissions would decrease for all horizon years (2035 and 2050). Under maximum theoretical buildout conditions, regional growth and land use change would result in some increases in GHG emissions, but there would still be net decreases compared to existing conditions.

Development under the maximum theoretical buildout scenario would be expected to largely continue in a similar pattern as under the proposed Plan, which encourages compact development, supporting rather than impeding adopted Climate Cation Plans (CAPs), GHG reduction plans, and/or sustainability plans relevant to the proposed Plan.

Under maximum theoretical buildout, development would be expected to largely continue in a similar pattern as under the proposed Plan, which encourages compact development, although per capita GHG emissions from passenger vehicles would somewhat increase. This increase could create a conflict with Senate Bill (SB) 375's per capita GHG emission reduction targets set by the California Air Resources Board for the San Diego region. The proposed Plan would be inconsistent with the State's ability to achieve the 2030 and 2045 reference points of 15.6 and 3.9 million metric tons of carbon dioxide equivalent, respectively (based on the goals of SB 32 and Assembly Bill [AB] 1279). Though a reference point could not be determined for 2050, as no statewide reduction target has been codified for that year, the proposed Plan's emissions would be greater in 2050 than the reference point derived for the AB 1279 target. Because GHG emissions would be higher under maximum theoretical buildout, these inconsistencies, which are a significant impact, would be worse. As with the proposed Plan, this would be reduced with the mitigation identified in Section 4.8, Greenhouse Gas Emissions, but impacts would remain significant and unavoidable.

6.2.10 Hazards and Hazardous Materials

The increased construction that would occur under the maximum theoretical buildout scenario would lead to an increase in the risk of hazards to the public, schools, and/or the environment through the routine use, handling, transport, or disposal of hazardous materials. As with the proposed Plan, adherence to existing regulations discussed in Section 4.9.2 would result in less-than-significant impacts related to hazardous emissions or handling hazardous materials during preconstruction, demolition, and/or construction activities for the theoretical buildout scenario. Regional growth and land use changes under the maximum theoretical buildout scenario would, similar to the proposed Plan, also result in air traffic hazards for people residing or working within an airport land use plan or within 2 miles of a public airport or public use airport. However, existing regulations, Federal Aviation Administration (FAA) procedures, Airport Land Use Compatibility Plans (ALUCPs), and Air Installation Compatible Use Zone (AICUZ) studies ensure compatibility between uses and reduce the potential for aircraft accidents and would result in a less-than-significant impact.

Additionally, regional growth and land use changes would result in development of parcels that are not proposed under the proposed Plan, and redevelopment would occur at higher densities, which would cause obstruction for emergency response vehicles or result in activities that would cause physical interference in the implementation of emergency response and evacuation plans or interfere with adequate emergency access. Associated development projects under the theoretical buildout scenario would be required to comply with existing regulations to reduce such hazards, as described in Section 4.9, Hazards and Hazardous Materials. However, as with the proposed Plan, under maximum theoretical buildout these impacts would remain significant and unavoidable.

6.2.11 Hydrology and Water Quality

The maximum theoretical buildout scenario would result in development and redevelopment throughout the region, at a greater level than under the proposed Plan. New areas of impermeable surface would be created as vacant or undisturbed areas would be paved; there would be changes in absorption rates, drainage patterns, groundwater infiltration, or the rate of surface runoff; and water and groundwater quality would be diminished. Because new construction and development would be required to comply with federal, State, and local regulations governing water quality and pollution prevention, as described in Section 4.10, Hydrology and Water Quality, as with the proposed Plan, these hydrology and water quality impacts associated with maximum theoretical buildout would be less than significant.

Development projects associated with the proposed Plan would be evaluated for the potential for damage from flooding and other associated hazards. Existing planning and design standards and regulations, such as project-specific technical studies, existing and updated emergency evacuation plans, water tank safety requirements, and other similar and applicable safety design considerations, would serve to address and minimize these potential impacts. Although a greater number of projects would be constructed under the maximum theoretical buildout scenario, and therefore a greater number of projects would be at risk from flooding, seiche, tsunami, or mudflow,

existing standards and regulations would continue to apply. Therefore, these impacts associated with hydrology and water quality would also be considered less than significant under the maximum theoretical buildout scenario.

6.2.12 Land Use and Planning

Under the maximum theoretical buildout scenario, there would be more regional growth and land use change than under the proposed Plan. Under the proposed Plan, regional growth and land use change would not physically divide an established community or cause significant impacts (not evaluated elsewhere in the EIR) due to conflicts with land use plans, and these impacts would be less than significant. Given the limited amount of additional development, regional growth and land use change impacts would continue to be less than significant under maximum theoretical buildout conditions. However, transportation network improvement land use and planning impacts relating to physical division of an established community would continue to be significant and unavoidable as with the proposed Plan.

Like the proposed Plan, because the maximum theoretical build out scenario assumes maximum development allowed under the proposed Plan, it would not conflict with land use plans, policies and regulations, including general plans, specific plans, and community plans adopted for the purpose of avoiding or mitigating an environmental effect.

6.2.13 Mineral Resources

Under the maximum theoretical buildout scenario, additional vacant or undeveloped land in areas with known mineral resources or locally important resource recovery sites would be developed, restricting the ability to extract mineral resources in those areas. As with the proposed Plan, impacts on the availability of known mineral resources or locally important resource recovery sites would be reduced with the mitigation identified in 4.12, Mineral Resources, but would remain significant and unavoidable.

6.2.14 Noise and Vibration

The maximum theoretical buildout scenario would result in more regional growth and land use change than associated with the proposed Plan. The increased development density would increase the number of persons exposed to noise levels exceeding State and local noise standards. This increase in development would also generate noise levels that would increase ambient noise levels, and further expose noise-sensitive receptors to substantial temporary and permanent increases in ambient noise levels from construction and operation. The increased level of residential and nonresidential development under the maximum theoretical buildout scenario would result in an increase of new residents, visitors, and workers in the region compared to the proposed Plan, which would thereby increase vehicle trips on area roadways, increasing traffic noise levels. Increased construction and transportation trips under the maximum buildout scenario would increase vibration and groundborne noise generated in proximity to sensitive receptors. As with the proposed Plan, impacts would be reduced with the mitigation identified in Section 4.13, Noise and Vibration, but would remain significant and unavoidable.

Compliance with local jurisdiction general plans and FAA standards would reduce noise from airstrips and ensure land use compatibility with any new development, including additional development under the maximum theoretical buildout scenario. As such, impacts would remain less than significant under the maximum theoretical buildout scenario.

6.2.15 Population and Housing

To achieve the maximum theoretical buildout scenario, an increase in the overall level of housing and nonresidential development would occur region-wide. This would induce additional unplanned growth in some areas of the San Diego Region beyond the unplanned growth anticipated with the proposed Plan. Greater levels

of development and conversion to higher densities would also lead to displacement of residents and housing units, and potentially necessitate the construction of replacement housing, as older existing residential units are replaced. As with the proposed Plan, some impacts would be reduced with the mitigation identified in Section 4.14, Population and Housing, but would remain significant and unavoidable.

6.2.16 Public Services and Utilities

Maximum theoretical buildout would lead to increased regional growth and land use change within the region. This growth would require an increase of public services and recreational facilities, such as fire and police protection, schools, and libraries. This growth would also increase demands on governmental facilities, recreational facilities, wastewater collection and treatment facilities, stormwater drainage facilities, electric power, natural gas, telecommunications, and/or solid waste facilities, which would in turn necessitate the construction of additional or improved public facilities to maintain service ratios, and/or other performance standards. As with the proposed Plan, impacts on public services would be reduced with the mitigation identified in Section 4.15, Public Services and Utilities, but would remain significant and unavoidable.

Additionally, with increased regional growth and land use changes, there would be more demand for utilities such as wastewater treatment facilities, stormwater drainage facilities, electric power, natural gas, telecommunication facilities, and/or solid waste disposal facilities under the maximum theoretical buildout scenario. The construction of new or expanded utility facilities would cause significant environmental impacts in order to maintain service levels, such as facility capacity. As with the proposed Plan, impacts on utilities would be reduced with the mitigation identified in Section 4.15 but would remain significant and unavoidable.

6.2.17 Transportation

The maximum theoretical buildout scenario would increase demand on transportation systems compared to the proposed Plan. The proposed Plan would decrease VMT per capita below Base Year (2022) conditions, but not to the levels needed to achieve State GHG reduction targets. Due to the increased regional growth and land use change under maximum theoretical buildout, this scenario, notwithstanding higher population numbers, would likely not decrease VMT per capita further beyond what is anticipated under the proposed Plan and would increase total VMT compared to the proposed Plan. Impacts under the maximum theoretical buildout scenario, as with the proposed Plan, would be significant and unavoidable, even after the mitigation measures described in Section 4.16, Transportation, are applied.

As with the proposed Plan, implementation of regional growth and land use changes under maximum theoretical buildout would not induce substantial vehicle travel because transportation network improvements would be the same. Maximum theoretical buildout would also cause a greater percentage of peak period transit and walk/bike trips to work, a greater percentage of jobs within proximity to high frequency transit stops and bike facilities, and substantially more daily transit boardings. The percentage of population within 0.5 mile of a transit stop and average peak period travel time to work on transit would increase under the maximum theoretical buildout, but the performance of public transit, bicycle, or pedestrian facilities would not decrease. As such, the characteristics of the maximum theoretical build out, as with the proposed Plan, are generally consistent with applicable plans and policies and would not conflict with them.

Implementation of the proposed Plan would not change applicable design standards and transportation network improvements would be designed consistent with those standards. Likewise, the maximum theoretical buildout is not expected to change applicable design standards either and would be consistent with applicable standards.

Finally, as with the proposed Plan, the maximum theoretical buildout scenario would not lead to a lack of parking supply that would cause significant secondary environmental impacts not already accounted for.

6.2.18 Tribal Cultural Resources

Regional growth and land use changes forecasted under the maximum theoretical buildout scenario would result in ground disturbance that would occur during redevelopment and development of most of the region, including areas that are not planned for development under the proposed Plan. The area of ground disturbance would be greater than that anticipated under the proposed Plan, as areas not planned for regional growth and land use changes under the proposed Plan would be developed to their maximum densities. Development under the proposed Plan is more concentrated than it would be under maximum theoretical buildout. The likelihood of encountering tribal cultural resources is greatest on sites that have been minimally excavated in the past (e.g., undeveloped parcels, vacant lots, and lots containing surface parking, etc.). Projects under the maximum theoretical buildout scenario could involve underground parking areas, underground tanks, new pipelines, or replacement of pipelines, all at a lower depth than the previous development in previously graded areas, and in areas that were not previously developed. As such, additional significant ground disturbances are anticipated, and it is possible that more tribal cultural resources would be disturbed.

Therefore, compared to the proposed Plan, a greater number of tribal cultural resources would experience substantial adverse changes; this impact would continue to be significant. Section 4.17, Tribal Cultural Resources, identifies mitigation measures that would reduce impacts on tribal cultural resources. However, as with the proposed Plan, under maximum theoretical buildout these impacts would remain significant and unavoidable.

6.2.19 Water Supply

The maximum theoretical buildout scenario would increase water demand compared to the proposed Plan. A greater amount of water would be needed for the construction and operation of residential and nonresidential development, developed park space, and other necessary developments to accommodate this regional growth. The increased growth under the maximum theoretical buildout scenario would lead to increased water demands such that water supplies would be inadequate to serve these demands, and new or expanded water supplies or entitlements would be required. In addition, continued growth under the maximum theoretical buildout scenario would further impede groundwater basin sustainability. As with the proposed Plan, this water supply impact would be reduced with the mitigation identified in Section 4.18, Water Supply, but would remain significant and unavoidable.

Under the proposed Plan, regional growth and land use change would result in the construction of additional new water facilities or the expansion of existing facilities to adequately meet forecasted demand or capacity needs, the construction of which would cause significant environmental effects. Increased water demands under maximum theoretical buildout would accelerate the need for new or expanded water facilities. As with the proposed Plan, this impact would be reduced with the mitigation identified in Section 4.18 but would remain significant and unavoidable.

6.2.20 Wildfire

Given the relatively large amount of area within the San Diego region considered at high risk for wildland fires, additional regional growth and land use change under the maximum theoretical buildout scenario would expose additional people and structures to a significant risk of loss, injury, or death involving wildland fires. Adherence to the regulations described in Section 4.19.2 would reduce impacts associated with wildland fires to a degree but not to a level less than significant. Also, as with the proposed Plan, impacts would be reduced with the mitigation identified in Section 4.19, Wildfire, but the following significant and unavoidable impacts would remain: increased exposure of people and structures to risk of loss, injury, or death involving wildland fires; exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; installation of infrastructure that may exacerbate fire risk; and exposing people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes.

6.3 SIGNIFICANT IRREVERSIBLE IMPACTS

Implementation of the proposed Plan would result in permanent changes to the existing environments, which have been described throughout this EIR. While the proposed Plan focuses population and employment growth in existing urban areas while also providing transportation investments that support compact land development patterns and reduce sprawl, there will still be some conversions of undeveloped land to urbanized uses. These conversions are considered a permanent irreversible change and would occur directly through construction of development on undeveloped land. Land use changes and transportation network improvements would result in significant irreversible impacts on aesthetics and visual resources, including changes to existing community character and views. Future development projects associated with the proposed Plan would result in a direct irreversible loss of sensitive vegetation communities that supports rare, threatened, or endangered species, and impacts on these resources would be significant and irreversible. The development of currently undeveloped land and other land use changes would result in significant irreversible impacts on agricultural resources and forest lands, and the availability of known mineral resources. The proposed Plan would substantially induce irreversible population growth and increased density, which would displace existing housing units, and result in additional people that would be susceptible to noise impacts. As development occurs at urban edges, additional people and structures would be at risk from wildland fires.

The proposed Plan's regional growth and land use changes would result in the irreversible consumption of nonrenewable resources. This use will have an incremental and irreversible effect on such resources. The irreversible commitment of limited resources is inherent in any development project or, in the case of the proposed Plan, aggregated development projects. Resources anticipated to be irreversibly committed over the timespan of the proposed Plan include, but are not limited to, lumber and other related forest products; sand, gravel, and concrete; petrochemicals; construction materials; steel, copper, lead, and other metals; and water. Development associated with the proposed Plan represents a long-term commitment to the consumption of fossil fuel oil and natural gas. These increased energy demands relate to construction, lighting, heating, and cooling of residences and buildings, as well as construction and operation of transit systems.

6.4 SIGNIFICANT AND UNAVOIDABLE IMPACTS

Based on the analysis detailed in Chapter 4 of this EIR, implementation of the proposed Plan would result in significant and unavoidable impacts for the resource topics shown in Table 6-2. As required by CEQA Guidelines Section 15126.1(c), significant and unavoidable impacts listed in this table are described in further detail in the relevant sections of Chapter 4. Table 6-2 identifies significant and unavoidable impacts for each horizon year (2035 and 2050).

With respect to land use changes implemented by local jurisdictions and transportation network improvements implemented by other transportation project sponsors, SANDAG has no authority to require implementing agencies to implement or enforce project-specific mitigation measures. In addition, some programmatic mitigation may not be feasible or effective for particular projects based on project or site-specific circumstances. This results in many significant impacts being significant and unavoidable.

In each resource area section, this EIR identifies mitigation measures that generally are performance standards-based, which SANDAG shall and other implementing agencies "can and should" comply with in mitigating project-specific impacts. Where applicable, SANDAG then identifies examples of project-level mitigation measures that may be required by lead agencies, to meet performance standards. Lead agencies may also identify other comparable measures capable of reducing impacts below the specified threshold. SANDAG cannot require other lead agencies to adopt mitigation, and it is ultimately the responsibility of the lead agency to determine and adopt project specific mitigation as appropriate and feasible for each individual project. As a result, this EIR concludes significant and unavoidable for many impacts where SANDAG does not have authority to implement or enforce project-specific mitigation measures, or where State action might be needed reduce impacts to less-than-significant levels.

Table 6-2 Significant and Unavoidable Impacts

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
4.1 Aesthetics and Visual Resources			
AES-1 Have a substantial adverse effect on a scenic vista Significant impact in 2035 and 2050	**AES-1a Protect Public Views of Scenic Vistas for Transportation Network Improvements** **AES-1b Protect Public Views of Scenic Vistas for Development Projects**	Significant and Unavoidable	Significant and Unavoidable
AES-2 Substantially damage scenic resources, including, but not limited to, trees, rocks, outcroppings, and historic structures within a state scenic highway or local scenic route Significant impact in 2035 and 2050	**AES-2a Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Transportation Network Improvements** **AES-2b Reduce Impacts on Scenic Routes in a State Scenic Highway and Local Scenic Routes for Development Projects**	Significant and Unavoidable	Significant and Unavoidable
AES-3 Substantially degrade the existing visual character or quality of public views of the site and its surroundings, including adding a visual element of urban character to an existing rural or open space area, or conflicting with regulations governing scenic quality Significant impact in 2035 and 2050	**AES-1a Protect Public Views of Scenic Vistas for Transportation Network Improvements** **AES-2a Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Transportation Network Improvements** **AES-2b Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Development Projects** **AES-3a Reduce Impacts on Visual Character for Transportation Network Improvements** **AES-3b Reduce Impacts on Visual Character for Development Projects**	Significant and Unavoidable	Significant and Unavoidable
AES-4 Substantially degrade the existing visual character or quality of public views of the site and its surroundings by creating a new source of light or glare that would adversely affect day or nighttime views Significant impact in 2035 and 2050	**AES-4a Minimize Effects of Light and Glare for Transportation Network Improvements** **AES-4b Minimize Effects of Light and Glare for Development Projects** **BIO-2a: Implement Design, Minimization, and Avoidance Measures for Special-Status Animal Species**	Significant and Unavoidable	Significant and Unavoidable
C-AES-1 Make a cumulatively considerable contribution to adverse effects related to aesthetics and visual resources Cumulatively considerable in 2035 and 2050	**AES-1a Protect Public Views of Scenic Vistas for Transportation Network Improvements** **AES-1b Protect Public Views of Scenic Vistas for Development Projects** **AES-2a Reduce Impacts on Scenic Resources in a State Scenic Highway and Local Scenic Routes for Transportation Routes Improvements** **AES-2b Reduce Impacts on Scenic Routes in a State Scenic Highway and Local Scenic Routes for Development Projects** **AES-3a Reduce Impacts on Visual Character for Transportation Network Improvements** **AES-3b Reduce Impacts on Visual Character for Development Projects**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
	AES-4a Minimize Effects of Light and Glare for Transportation Network Improvements **AES-4b Minimize Effects of Light and Glare for Development Projects** **BIO-2a: Implement Design, Minimization, and Avoidance Measures for Special-Status Animal Species**		
4.2 Agriculture and Forestry Resources			
AG-1 Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, or other agricultural lands to nonagricultural use Significant impact in 2035 and 2050	**AG-1a Preserve Existing Agricultural Lands** **AG-1b Reduce Transportation Network Improvement and Development Conflicts with Agricultural Operations**	Significant and Unavoidable	Significant and Unavoidable
AG-2 Conflict with existing zoning for agricultural use or a Williamson Act contract Significant impact in 2035 and 2050	**AG-1a Preserve Existing Agricultural Lands** **AG-1b Reduce Transportation Network Improvement and Development Conflicts with Agricultural Operations**	Significant and Unavoidable	Significant and Unavoidable
FR-1 Convert or result in the loss of "Forest Land" as defined in the California Forest Legacy Act of 2007 (PRC Section 12220[G]) Significant impact in 2035 and 2050	**FR-1 Reduce Impacts on Forest Lands** **BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Communities and Regulated Aquatic Resources** **BIO-1b Provide Compensatory Mitigation** **BIO-1e Implement Best Management Practices to Avoid Indirect Impacts**	Significant and Unavoidable	Significant and Unavoidable
C-AG-1 Make a cumulatively considerable contribution to adverse effects on agriculture and forestry resources Cumulatively considerable in 2035 and 2050	**AG-1a Preserve Existing Agricultural Lands** **AG-1b Reduce Transportation Network Improvement and Development Conflicts with Agricultural Operations** **FR-1 Reduce Impacts on Forest Lands** **BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Communities and Regulated Aquatic Resources** **BIO-1b Provide Compensatory Mitigation** **BIO-1e Implement Best Management Practices to Avoid Indirect Impacts**	Cumulatively Considerable	Cumulatively Considerable
4.3 Air Quality			
AQ-2 Result in an operations-related cumulatively considerable net increase in nonattainment or attainment criteria pollutants, including VOC, NOx, PM10, PM2.5, and SOx Significant impact in 2035 and 2050	**AQ-2a Secure Incentive Funding** **AQ-2b Regional Plan VMT Credit/Banking Program** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
	GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects**		
AQ-3 Result in construction-related emissions above regional mass emission thresholds Significant impact in 2035 and 2050	**AQ-3a Implement Construction Best Management Practices for Fugitive Dust** **AQ-3b Reduce Diesel Emissions During Construction from Off-Road Equipment** **AQ-3c Reduce Diesel Emissions During Construction from On-Road Vehicles** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects**	Significant and Unavoidable	Significant and Unavoidable
AQ-4 Expose sensitive receptors to substantial PM10 and PM2.5 concentrations Significant impact in 2035 and 2050	**AQ-2a Secure Incentive Funding** **AQ-2b Regional Plan VMT Credit/Banking Program** **AQ-4 Reduce Exposure to Localized Particulate and/or TAC Emissions** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects**	Significant and Unavoidable	Significant and Unavoidable
AQ-5 Expose sensitive receptors to substantial TAC concentrations Significant impact in 2035 and 2050	**AQ-2a Secure Incentive Funding** **AQ-2b Regional Plan VMT Credit/Banking Program** **AQ-4 Reduce Exposure to Localized Particulate and/or TAC Emissions** **AQ-5a Reduce Exposure to Localized Toxic Air Contaminant Emissions**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
	AQ-5b Reduce Exposure to Localized Toxic Air Contaminant Emissions during Railway Design **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4c Establish Funding Programs for Zero-Emission Vehicle Infrastructure** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects**		
C-AQ-1 Make a cumulatively considerable contribution to adverse effects related to air quality Cumulatively considerable in 2035 and 2050	**AQ-2a Secure Incentive Funding** **AQ-2b Regional Plan VMT Credit/Banking Program** **AQ-3a Implement Construction Best Management Practices for Fugitive Dust** **AQ-3b Reduce Diesel Emissions During Construction from Off-Road Equipment** **AQ-3c Reduce Diesel Emissions from On-Road Vehicles** **AQ-4 Reduce Exposure to Localized Particulate and/or TAC Emissions** **AQ-5a Reduce Exposure to Localized Toxic Air Contaminant Emissions** **AQ-5b Reduce Exposure to Localized Toxic Air Contaminant Emissions during Railway Design** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
4.4 Biological Resources			
BIO-1 Have a substantial adverse effect on any sensitive natural communities identified in local or regional plans, policies, regulations, or by CDFW or USFWS; or have a substantial adverse effect on state or federally regulated waters and wetlands through direct removal, filling, hydrological interruption, or other means Significant impact in 2035 and 2050	**BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Vegetation Communities and Regulated Aquatic Resources** **BIO-1b Provide Compensatory Mitigation** **BIO-1c Prepare a Habitat Restoration Plan** **BIO-1d Prepare Habitat/Long-Term Management Plans** **BIO-1e Implement Best Management Practices to Avoid Indirect Impacts**	Significant and Unavoidable	Significant and Unavoidable
BIO-2 Have a substantial adverse effect, either directly or indirectly, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or listed by CDFW or USFWS, including their federally designated critical habitat, or species that are considered sensitive in CEQA Guidelines Section 15380 Significant impact in 2035 and 2050	**BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Vegetation Communities and Regulated Aquatic Resources** **BIO-1b Provide Compensatory Mitigation** **BIO-1c Prepare a Habitat Restoration Plan** **BIO-1d Prepare Habitat / Long-Term Management Plans** **BIO-2a Implement Design, Minimization, and Avoidance Measures for Special-Status Animal Species** **BIO-2b Provide Compensatory Mitigation for Special-Status Plant Species** **BIO-2c Provide Compensatory Mitigation for Special-Status Animal Species**	Significant and Unavoidable	Significant and Unavoidable
BIO-3 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites Significant impact in 2035 and 2050	**BIO-3a Facilitate Wildlife Movement**	Significant and Unavoidable	Significant and Unavoidable
C-BIO-1 Make a cumulatively considerable contribution to adverse effects on biological resources Cumulatively considerable in 2035 and 2050	**BIO-1a Implement Design, Minimization, and Avoidance Measures for Sensitive Natural Vegetation Communities and Regulated Aquatic Resources** **BIO-1b Provide Compensatory Mitigation** **BIO-1c Prepare a Habitat Restoration Plan** **BIO-1d Prepare Habitat / Long-Term Management Plans** **BIO-1e Implement Best Management Practices to Avoid Indirect Impacts** **BIO-2a Implement Design, Minimization, and Avoidance Measures for Special Status Animal Species** **BIO-2b Provide Compensatory Mitigation for Special-Status Plant Species** **BIO-2c Provide Compensatory Mitigation for Special-Status Animal Species** **BIO-3a Facilitate Wildlife Movement**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
4.5 Cultural Resources			
CULT-1 Cause a substantial adverse change in the significance of a historical resource or unique archaeological resource Significant impact in 2035 and 2050	**CULT-1a Develop Project-Level Measures for Development Projects and Transportation Network Improvements** **CULT-1b Implement Monitoring and Data Recovery Programs for Development Projects and Transportation Network Improvements**	Significant and Unavoidable	Significant and Unavoidable
C-CULT-1 Make a cumulatively considerable contribution to adverse effects on cultural resources Cumulatively considerable in 2035 and 2050	**CULT-1a Develop Project-Level Measures for Development Projects and Transportation Network Improvements** **CULT-1b Implement Monitoring and Data Recovery Programs for Development Projects and Transportation Network Improvements**	Cumulatively Considerable	Cumulatively Considerable
4.6 Energy			
Not applicable		Not applicable	Not applicable
4.7 Geology, Soils, and Paleontological Resources			
GEO-5 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature Significant impact in 2035 and 2050	**GEO-5a Identify the Potential for Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements** **GEO-5b Impacts on Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements**	Significant and Unavoidable	Significant and Unavoidable
C-PALEO-1 Make a cumulative considerable contribution to adverse effects on paleontological resources Cumulatively considerable in 2035 and 2050	**GEO-5a Identify the Potential for Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements** **GEO-5b Impacts on Unique Paleontological Resources or Unique Geologic Features for Development Projects or Transportation Network Improvements**	Cumulatively Considerable	Cumulatively Considerable
4.8 Greenhouse Gas Emissions			
GHG-4 Be inconsistent with the state's ability to achieve the 2030 reduction target of SB 32 and 2045 reduction goal of AB 1279 Significant impact in 2030, 2045, and 2050	**GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects.** **AQ-3b Reduce Diesel Emissions During Construction From Off-Road Equipment** **AQ-3c Reduce Diesel Emissions During Construction From On-Road Vehicles**	Significant and Unavoidable (Year 2030)	Significant and Unavoidable (Years 2045 and 2050)

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
	TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects **WS-1a Implement Water Conservation Measures for Transportation Network Improvements** **WS-1b Implement Water Conservation Measures for Development Projects**		
C-GHG-1 Make a cumulative considerable contribution to adverse effects to GHG emissions Cumulatively considerable in 2030, 2035, 2045, and 2050	**GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans** **GHG-4c Allocate Funding for Zero-Emission Vehicle Infrastructure** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects** **AQ-3b Reduce Diesel Emissions During Construction From Off-Road Equipment** **AQ-3c Reduce Diesel Emissions During Construction From On-Road Vehicles.** **TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects** **WS-1a Implement Water Conservation Measures for Transportation Network Improvements** **WS-1b Implement Water Conservation Measures for Development Projects**	Cumulatively Considerable	Cumulatively Considerable
4.9 Hazards and Hazardous Materials			
HAZ-4 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or result in inadequate emergency access Significant impact in 2035 and 2050	**HAZ-4: Demonstrate Consistency with Adopted Emergency Response or Evacuation Plans or Emergency Access**	Significant and Unavoidable	Significant and Unavoidable
C-HAZ-1 Make a cumulatively considerable contribution to adverse effects related to emergency response and evacuation plans and emergency access Cumulatively considerable in 2035 and 2050	**HAZ-4: Demonstrate Consistency with Adopted Emergency Response or Evacuation Plans or Emergency Access**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
4.10 Hydrology and Water Quality			
Not applicable	Not applicable	Not applicable	Not applicable
4.11 Land Use			
LU-1 Physically divide an established community Significant impact in 2050	**LU-1a Provide Access and Connections for Transportation Network Improvements**	Less than Significant	Significant and Unavoidable
C-LU-1 Make a cumulatively considerable contribution to adverse impacts related to land use and planning Cumulatively considerable in 2050	**LU-1a Provide Access and Connections for Transportation Network Improvements**	Not Cumulatively Considerable	Cumulatively Considerable
4.12 Mineral Resources			
MR-1 Result in the loss of availability of known aggregate and mineral resources supply sites that would be of value to the region and the residents of the state, or result in the loss of availability of a locally-important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan Significant impact in 2035 and 2050	**MR-1a Conserve Aggregate and Mineral Resources During Planning and Design of Development Projects** **MR-1b Conserve Aggregate and Mineral Resources During Planning and Design of Transportation Network Improvements**	Significant and Unavoidable	Significant and Unavoidable
C-MR-1 Make a cumulatively considerable contribution to adverse effects related to mineral resources Cumulatively considerable in 2035 and 2050	**MR-1a Conserve Aggregate and Mineral Resources During Planning and Design of Development Projects** **MR-1b Conserve Aggregate and Mineral Resources During Planning and Design of Transportation Network Improvements**	Cumulatively Considerable	Cumulatively Considerable
4.13 Noise and Vibration			
NOI-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or generate a substantial absolute increase in ambient noise Significant impact in 2035 and 2050	**NOI-1a Implement Construction Noise Reduction Measures for Development Projects and Transportation Network Improvements** **NOI-1b Implement Operational Noise Reduction Measures for Transportation Network Improvements** **NOI-1c Implement Operational Noise Reduction Measures for Development Projects**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
NOI-2 Generation of excessive groundborne vibration or groundborne noise levels Significant impact in 2035 and 2050	**NOI-2a Implement Construction Groundborne Vibration and Noise Reduction Measures** **NOI-2b Implement Groundborne Vibration and Noise Reduction Measures for Rail Operations**	Significant and Unavoidable	Significant and Unavoidable
C-NOI-1 Make a cumulatively considerable contribution to adverse effects related to noise and vibration Cumulatively considerable in 2035 and 2050	**NOI-1a Implement Construction Noise Reduction Measures for Development Projects and Transportation Network Improvements** **NOI-1b Implement Operational Noise Reduction Measures for Transportation Network Improvements** **NOI-1c Implement Operational Noise Reduction Measures for Development Projects** **NOI-2a Implement Construction Groundborne Vibration and Noise Reduction Measures** **NOI-2b Implement Groundborne Vibration and Noise-Reduction Measures for Rail Operations**	Cumulatively Considerable	Cumulatively Considerable
4.14 Population and Housing			
POP-1 Induce substantial unplanned population growth to areas of the region either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., by extending roads and other infrastructure) Significant impact in 2035 and 2050	**POP-1a Coordinate with Local Jurisdictions to Reduce Substantial Unplanned Population Growth**	Significant and Unavoidable	Significant and Unavoidable
POP-2 Displace substantial numbers of people or housing units, which would necessitate the construction of replacement housing elsewhere Significant impact in 2035 and 2050	**POP-2a Design Development Projects to Reduce Displacement** **POP-2b Design Transportation Network Improvement Projects to Reduce Displacement**	Significant and Unavoidable	Significant and Unavoidable
C-POP-1 Make a cumulatively considerable contribution to adverse effects related to population and housing Cumulatively considerable in 2035 and 2050	**POP-1a Coordinate with Local Jurisdictions to Reduce Substantial Unplanned Population Growth** **POP-2a Design Development Projects to Reduce Displacement** **POP-2b Design Transportation Network Improvement Projects to Reduce Displacement**	Cumulatively Considerable	Cumulatively Considerable
4.15 Public Services, Recreation, and Utilities			
PS-1 Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered (i.e., expanded) public facilities, in order to maintain adequate fire and police protection,	**PS-1 Implement Mitigation Measures for New/Expanded Public Service Facilities**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
emergency services, schools, libraries, and recreation facilities Significant impact in 2035 and 2050			
REC-1 Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated Significant impact in 2035 and 2050	**REC-1 Implement Mitigation Measures for Parks and Other Recreational Facilities**	Significant and Unavoidable	Significant and Unavoidable
U-1 Result in the expansion, relocation, or construction of wastewater collection and treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities to adequately meet projected capacity needs, the construction of which could cause significant environmental impacts Significant impact in 2035 and 2050	**U-1a Implement Mitigation Measures for New/Expanded Wastewater, Stormwater, Electrical, Natural Gas, and Telecommunications Facilities Associated with Development Projects** **U-1b Implement Mitigation Measures for New/Expanded Stormwater Facilities Associated with Transportation Network Improvements**	Significant and Unavoidable	Significant and Unavoidable
U-2 Generate solid waste in excess of state or local standards or in excess of the capacity of local infrastructure; impair the attainment of solid waste reduction goals; or fail to comply with federal, state, and local management and reduction statutes and regulations related to solid waste Significant impact in 2035 and 2050	**U-2a Implement Mitigation Measures for New/Expanded Solid Waste Facilities** **U-2b Reduce Construction Waste** **U-2c Reduce Operational Waste**	Significant and Unavoidable	Significant and Unavoidable
C-PS-1 Make a cumulatively considerable contribution to adverse effects related to public services Cumulatively considerable in 2035 and 2050	**PS-1 Implement Mitigation Measures for New/Expanded Public Service Facilities**	Cumulatively Considerable	Cumulatively Considerable
C-U-1 Make a cumulatively considerable contribution to adverse effects related to utilities Cumulatively considerable in 2035 and 2050	**U-1a Implement Mitigation Measures for New/Expanded Wastewater, Stormwater, Electrical, Natural Gas, and Telecommunications Facilities Associated with Development Projects** **U-1b Implement Mitigation Measures for New/Expanded Stormwater Facilities Associated with Transportation Network Improvements** **U-2a Implement Mitigation Measures for New/Expanded Solid Waste Facilities** **U-2b Reduce Construction Waste** **U-2c Reduce Operational Waste**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
C-REC-1 Make a cumulatively considerable contribution to adverse effects related to recreational resources Cumulatively considerable in 2035 and 2050	**REC-1 Implement Mitigation Measures for Parks and Other Recreational Facilities**	Cumulatively Considerable	Cumulatively Considerable
4.16 Transportation			
TRA-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3 by not achieving the substantial VMT reductions needed to help achieve statewide GHG reduction goals Significant impact in 2030, 2035, 2045, and 2050	**TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects** **AQ-2b Regional Plan VMT Credit/Banking Program** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects**	Significant and Unavoidable (2030 and 2035)	Significant and Unavoidable (2045 and 2050)
C-TRA-1 Make a cumulatively considerable contribution to adverse effects to transportation Cumulatively considerable in 2030, 2035, 2045,and 2050	**TRA-2 Achieve Further VMT Reductions for Transportation and Development Projects** **AQ-2b Regional Plan VMT Credit/Banking Program** **GHG-4a Allocate Grant Funding to Projects that Reduce GHG Emissions** **GHG-4b Coordination and Support to SANDAG Member Agencies to Adopt, Update, and Monitor GHG Reduction Plans** **GHG-4d Implement Measures to Reduce GHG Emissions from Transportation Projects** **GHG-4e Implement Measures to Reduce GHG Emissions from Development Projects**	Cumulatively Considerable (2030 and 2035)	Cumulatively Considerable (2045 and 2050)
4.17 Tribal Cultural Resources			
TCR-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is either (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or (2) determined by the lead agency, in its discretion and supported by	**TCR-1a Implement Tribal Cultural Resources Mitigation Measures for Development Projects and Transportation Network Improvements** **TCR-1b Implement Monitoring and Mitigation Programs for Development Projects and Transportation Network Improvements**	Significant and Unavoidable	Significant and Unavoidable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 Significant impact in 2035 and 2050			
C-TCR-1 Make a cumulatively considerable contribution to adverse effects on tribal cultural resources Cumulatively considerable in 2035 and 2050	**TCR-1a Implement Tribal Cultural Resources Mitigation Measures for Development Projects and Transportation Network Improvements** **TCR-1b Implement Monitoring and Mitigation Programs for Development Projects and Transportation Network Improvements**	Cumulatively Considerable	Cumulatively Considerable
4.18 Water Supply			
WS-1 Not have sufficient water supplies available to serve the projected regional demand during normal, dry and multiple dry years Significant impact in 2050	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements** **WS-1b Implement Water Conservation Measures for Development Projects** **WS-1c Ensure Adequate Water Supply for Development Projects**	Not applicable	Significant and Unavoidable
WS-2 Substantially decrease groundwater supplies, or interfere substantially with groundwater recharge such that the proposed Plan would impede sustainable management of groundwater basins or obstruct implementation of a sustainable groundwater management plan Significant impact in 2035 and 2050.	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements** **WS-1b Implement Water Conservation Measures for Development Projects** **WS-2 Implement Groundwater Measures to Ensure Sustainable Yield for Development Projects**	Significant and Unavoidable	Significant and Unavoidable
WS-3 Require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects Significant impact in 2035 and 2050	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements** **WS-1b Implement Water Conservation Measures for Development Projects** **WS-2 Implement Groundwater Measures to Ensure Sustainable Yield for Development Projects** **WS-3 Implement Measures for New or Expanded Water Facilities**	Significant and Unavoidable	Significant and Unavoidable
C-WS-1 Make a cumulatively considerable contribution to adverse effects to water supply Cumulatively considerable impact in 2035 and 2050	**WS-1a Implement Water Conservation Measures for Transportation Network Improvements** **WS-1b Implement Water Conservation Measures for Development Projects** **WS-1c Ensure Adequate Water Supply for Development Projects** **WS-2 Implement Groundwater Measures to Ensure Sustainable Yield for Development Projects** **WS-3 Implement Measures for New or Expanded Water Facilities**	Cumulatively Considerable	Cumulatively Considerable

Impacts of the Proposed Plan in 2035 and 2050	Mitigation Measures	Level of Significance After Mitigation	
		2035	2050
4.19 Wildfire			
WF-1 Increase risk of wildland fire ignition and directly or indirectly expose people or structures to significant risk of loss, injury, or death involving wildland fires Significant impact in 2035 and 2050	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects**	Significant and Unavoidable	Significant and Unavoidable
WF-2 Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire Significant impact in 2035 and 2050	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects**	Significant and Unavoidable	Significant and Unavoidable
WF-3 Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. Significant impact in 2035 and 2050	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects** **WF-3 Reduce Wildfire Risk Related to New or Expanded Infrastructure Required to Support Regional Growth and Land Use Development**	Significant and Unavoidable	Significant and Unavoidable
WF-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes Significant impact in 2035 and 2050	**WF-4 Reduce Post-Fire Risks Related to Flooding, Landslides, Slope Instability, or Drainage Changes for Development and Transportation Projects**	Significant and Unavoidable	Significant and Unavoidable
C-WF-1 Make a cumulatively considerable contribution to adverse effects related to wildfire Cumulatively considerable in 2035 and 2050	**WF-1 Reduce Wildfire Risk for Development and Transportation Projects** **WF-3 Reduce Wildfire Risk Related to New or Expanded Infrastructure Required to Support Regional Growth and Land Use Development** **WF-4 Reduce Post-Fire Risks Related to Flooding, Landslides, Slope Instability, or Drainage Changes for Development and Transportation Projects**	Cumulatively Considerable	Cumulatively Considerable

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7 REFERENCES

Executive Summary

No references used in this chapter.

Chapter 1 Introduction

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2023. *Amendment to the 2021 Regional Plan*. Available: https://www.sandag.org/regional-plan/2021-regional-plan/final-2021-regional-plan. Accessed July 29, 2025.

Chapter 2 Project Description

California Transportation Commission. 2024. *2024 Regional Transportation Plan Guidelines*. Available: https://catc.ca.gov/-/media/ctc-media/documents/programs/transportation-planning/2024-rtp-guidelines/2024-rtp-guidelines-for-rtpas-final.pdf. Accessed August 2024.

CTC. *See* California Transportation Commission.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2023. *San Diego Forward: The 2021 Regional Plan*. Final plan and amendment documents. Available: https://www.sandag.org/regional-plan/2021-regional-plan/final-2021-regional-plan. Accessed August 4, 2025.

———. 2025a (May). *Draft 2025 Regional Plan*. Available: https://www.sandag.org/~/-/media/C26FA38C209D483DAC75C9D1E57A2AD1.ashx. Accessed August 4, 2025.

———. 2025b. "Appendix F: Regional Growth Forecast with Sustainable Communities Land Use Pattern." *Draft 2025 Regional Plan*. Available: https://www.sandag.org/~/-/media/10C998A6E17E42B3B6EEE218B1528CDA.ashx. Accessed August 5, 2025.

———. 2025c. "Appendix B: Sustainable Communities Strategy Documentation and Related Information." *Draft 2025 Regional Plan*. Available: https://www.sandag.org/~/-/media/22977C036B624D999E62E2467A88F1C2.ashx. Accessed August 5, 2025.

———. 2025d. "Appendix M: Travel Demand Modeling Tools." *Draft 2025 Regional Plan*. Available: https://www.sandag.org/~/-/media/A571E24905644B328708328395E734E6.ashx. Accessed August 5, 2025.

———. 2025e. "Appendix A: Transportation, Projects, Programs, Policies, and Phasing." *Draft 2025 Regional Plan*. Available: https://www.sandag.org/~/-/media/E90F578ED11B47708563760A7AC85689.ashx. Accessed August 5, 2025.

Chapter 3 Environmental Setting

CEP and SDF. *See* Climate Education Partners and San Diego Foundation.

Climate Education Partners and San Diego Foundation. 2015. *San Diego, 2050 Is Calling, How Will We Answer? Facing the Future: How Science Can Help Prepare San Diego Regional Leaders for Climate Change*. San Diego, CA.

Jennings, M. K., D. Cayan, J. Kalansky, A. D. Pairis, D. M. Lawson, A. D. Syphard, U. Abeysekera, R. E. S. Clemesha, A. Gershunov, K. Guirguis, J. M. Randall, E. D. Stein, and S. Vanderplank. 2018. *Summary Report, San Diego County Ecosystems: Ecological Impacts of Climate Change on a Biodiversity Hotspo*t. Climate Science Alliance. San Diego, CA.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. California's Fourth Climate Change Assessment: San Diego Region Report. Available: http://www.climateassessment.ca.gov/regions/docs/20180827-SanDiego.pdf. Accessed July 29, 2025.

Ocean Protection Council. 2024. *State of California Sea-Level Rise Guidance*. Available: https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf. Accessed July 29, 2025.

OPC. *See* Ocean Protection Council.

San Diego Association of Governments 2025. "Appendix K: Active Transportation." Draft 2025 Regional Plan. Available: https://www.sandag.org/regional-plan/-/media/38F922B8B963462199102BB1CF343429.ashx. Accessed July 29, 2025.

Chapter 4 Environmental Impact Analysis Approach

BLM. *See* Bureau of Land Management.

Bureau of Land Management. 2007 (November). *Proposed Eastern San Diego County Resource Management Plan and Final Environmental Impact Statement*.

California Air Resources Board. 2022. *California's 2022 Scoping Plan for Achieving Carbon Neutrality*. Available: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf. Accessed January 16, 2025.

California Department of Finance. 2024. County Population Projections 2020-2070. Available: https://dof.ca.gov/forecasting/demographics/projections/. Accessed March 5, 2025.

California Department of Transportation. 2021 (February). *California-Baja California Border Master Plan*. Available: https://sandagbmpazurestorage.blob.core.windows.net/bmp-docs/2021-BMP_Final_Report_03152021.pdf. Accessed January 16, 2025.

California High Speed Rail Authority. 2024 (March). *High-Speed Rail: Southern California at a Glance*. Available: https://hsr.ca.gov/wp-content/uploads/2024/03/Southern-California-Factsheet-030624-A11Y.pdf. Accessed January 16, 2025.

CARB. *See* California Air Resources Board.

Caltrans. *See* California Department of Transportation.

City of San Diego. n.d.-a. San Diego Sports Arena Redevelopment. Available: https://www.sandiego.gov/economic-development/real-estate/midway-rising. Accessed April 25, 2025.

———. n.d.-b. North City Pure Water Facility and Pump Station. Available: https://www.sandiego.gov/public-utilities/sustainability/pure-water-sd/phase-1-projects/university-city-eastgate-mall/north-city-pure-water-facility-and-pump-station. Accessed April 24, 2025.

County of San Diego. 2024 (September). *Final 2024 Climate Action Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/sustainability/docs/final2024cap/Final2024CAP.pdf. Accessed February 5, 2025.

City of Tijuana Metropolitan Planning Institute. 2013. *2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan*. Available: https://implanplayasderosarito.gob.mx/wp-content/uploads/2021/06/PEM_Documento_V4_Feb_2012.pdf. Accessed February 5, 2025.

DOF. *See* California Department of Finance.

EPA. *See* U.S. Environmental Protection Agency.

HSRA. *See* California High Speed Rail Authority.

IMPLAN. *See* City of Tijuana Metropolitan Planning Institute.

Institute of the Americas. n.d. *Baja California Energy Outlook 2020–2025*. Available: https://iamericas.org/wp-content/uploads/2022/02/Baja_Energy_Outlook_2020_2025.pdf. Accessed August 13, 2025.

Navy. *See* U.S. Department of the Navy.

Port. *See* San Diego Unified Port District.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2021a. *San Diego Forward: The 2021 Regional Plan*. Available: https://www.sandag.org/regional-plan/2021-regional-plan/final-2021-regional-plan. Accessed July 29, 2025.

———. 2021b. *Final Environmental Impact Report: San Diego Forward: The 2021 Regional Plan*. State Clearinghouse No.: 2010041061. Available: https://www.sandag.org/regional-plan/2021-regional-plan/environmental-impact-report. Accessed July 29, 2025.

———. 2024. Series 15 Regional Growth Forecast. Available: https://opendata.sandag.org/Forecast/Series-15-Forecasts-Population-by-Subregional-Area/wpt4-futw/about_data. Accessed March 5, 2025.

San Diego County Regional Airport Authority. 2008. *Airport Master Plan*. Available: https://www.san.org/Airport-Projects/2008-Airport-Master-Plan#3134211-adopted-master-plan. Accessed January 16, 2025.

———. 2011. *Regional Aviation Strategic Plan*. Available: https://www.san.org/DesktopModules/Bring2mind/DMX/API/Entries/Download?EntryId=14180&Command=Core_Download&language=en-US&PortalId=0&TabId=185. Accessed January 16, 2025.

———. 2019. *SDIA Aviation Activity Forecasts Final Technical Memorandum*. April. Available: https://www.san.org/Portals/0/Documents/Airport%20Development%20Plan/Forecast%20Reports/2019_SAN_MP_Forecast.pdf. Accessed February 5, 2025.

———. 2021. *Regional Aviation Strategic Plan Implementation Report*. Available: https://www.san.org/DesktopModules/Bring2mind/DMX/API/Entries/Download?EntryId=14267&Command=Core_Download&language=en-US&PortalId=0&TabId=185. Accessed January 16, 2025.

———. 2025. *New T1 Fact Sheet*. Available: https://newt1.com/wp-content/uploads/2024/09/New-T1-Fact-Sheet-English-Sep-2024.pdf. Accessed January 16, 2025.

San Diego County Water Authority. 2024. *2024 Regional Water Facilities Optimization and Master Plan Update*. Available: https://www.sdcwa.org/sites/default/files/2017-05/master-plan-fs.pdf. Accessed February 5, 2025.

San Diego Gas & Electric. 2012. *San Diego Gas & Electric Company 2012 Long-Term Procurement Plan*. Available: https://www.sdge.com/sites/default/files/LTPP_Complete_Master_1.pdf. Accessed February 5, 2025.

San Diego Unified Port District. 2016. *Tenth Avenue Marine Terminal Redevelopment Environmental Impact Report (TAMT EIR)*. Available: https://www.portofsandiego.org/projects/tenth-avenue-marine-terminal-redevelopment. Accessed March 6, 2025.

———. 2024a (February). *Port Master Plan Update*. Available: https://pantheonstorage.blob.core.windows.net/waterfront-development/Final-Draft-PMPU-Approved-by-BPC-2_28_2024.pdf. Accessed March 6, 2024.

———. 2024b. *Port Master Plan Update Final Environmental Impact Report. Volume 2*. Available: pantheonstorage.blob.core.windows.net/waterfront-development/Final-Environmental-Impact-Report-EIR-for-Final-Draft-Port-Master-Plan-Update-February-2024-Volume-2-of-4-Part-2-of-3.pdf. Accessed November 13, 2024.

———. 2024c (July). *Port Master Plan*. Available: https://pantheonstorage.blob.core.windows.net/waterfront-development/Port-Master-Plan.pdf. Accessed March 6, 2025.

SCAG. *See* Southern California Association of Governments.

SDCRAA. *See* San Diego County Regional Airport Authority.

SDG&E. *See* San Diego Gas & Electric.

Southern California Association of Governments. 2024. *Connect SoCal (2024–2045 Regional Transportation Plan/Sustainable Communities Strategy).* Available: https://scag.ca.gov/sites/main/files/file-attachments/23-2987-connect-socal-2024-final-complete-040424.pdf?1714175547. Accessed January 16, 2025.

U.S. Department of the Navy. 2021 (May). *Navy Old Town Campus Revitalization Draft Environmental Impact Report.* Available: https://navwar-revitalization.com/assets/uploads/27%20-%20Purpose%20and%20Need%20Fact%20Sheet.pdf. Accessed January 16, 2025.

U.S. Environmental Protection Agency. 2021 (May). *Border 2025: United States – Mexico Environmental Program*. Available: https://www.epa.gov/sites/default/files/2021-05/documents/final_us_mx_border_2025_final_may_6.pdf. Accessed February 5, 2025.

U.S. Forest Service. 2006. *Cleveland National Forest Plan*. Available: https://www.fs.usda.gov/detail/cleveland/landmanagement/planning/?cid=fsbdev7_016561. Accessed February 5, 2025.

USFS. *See* U.S. Forest Service.

U.S. Marine Corps. 2018 (June). *MCAS Miramar Integrated Natural Resources Management Plan*. Available: https://www.miramar-ems.marines.mil/Divisions/Conservation/Natural-Resources/. Accessed February 5, 2025.

———. 2024 (May). *Final MCB Camp Pendleton Integrated Natural Resources Management Plan*. Available: https://www.pendleton.marines.mil/Portals/98/2024%20CamPen%20INRMP%20FINAL%20May%202024%20Public_1.pdf. Accessed February 5, 2025.

Section 4.1 Aesthetics

California Department of Transportation. 2008. *Scenic Highway Guidelines.*

———. 2019. *California Scenic Highways Map*. Available: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed January 13, 2025.

California Department of Transportation and Secretariat of Infrastructure, Urban Development, and Territorial Reorganization. 2021 (February). *California-Baja California Border Master Plan*. Available: https://sandagbmpazurestorage.blob.core.windows.net/bmp-docs/2021-BMP_Final_Report_03152021.pdf. Accessed May 16, 2025.

California High Speed Rail Authority. 2005. *Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System.* Available: https://hsr.ca.gov/programs/environmental-planning/program-eir-eis-documents-for-the-statewide-high-speed-rail-system-tier-1/final-program-environmental-impact-report-environmental-impact-statement-eir-eis-for-the-proposed-california-high-speed-train-system-2005/. Accessed May 16, 2025.

Caltrans. *See* California Department of Transportation.

Caltrans and SIDURT. *See* California Department of Transportation and Secretariat of Infrastructure, Urban Development, and Territorial Reorganization.

City of Carlsbad. 2019. *General Plan: Land Use and Community Design Element*. Available: https://www.carlsbadca.gov/home/showpublisheddocument/236/637425974089530000. Accessed January 13, 2025.

———. n.d. Village & Barrio Design Review Committee. Available: https://www.carlsbadca.gov/city-hall/meetings-agendas/boards-commissions/village-barrio-design-review-committee. Accessed May 14, 2025.

City of Chula Vista. 2005. *General Plan: Land Use and Transportation Element*. Available: https://www.chulavistaca.gov/home/showpublisheddocument/9325/636192049254870000. Accessed January 13, 2025.

———. n.d. Development Services Department – About Us. Available: https://www.chulavistaca.gov/departments/development-services/about-us. Accessed May 14, 2025.

City of Coronado. 1999 (October 5). *City of Coronado General Plan, Scenic Highway Element*. Available: https://www.coronado.ca.us/DocumentCenter/View/1057/General-Plan-PDF?bidId=. Accessed January 13, 2025.

———. 2005. *Local Coastal Program Plan*. Available: https://www.coronado.ca.us/DocumentCenter/View/1060/Local-Coastal-Program-Land-Use-Plan-PDF?bidId=. Accessed January 13, 2025.

———. 2023. Design Review Commission Overview. Available: https://www.coronado.ca.us/DocumentCenter/View/1015/Design-Review-Commission-Overview-PDF. Accessed May 14, 2025.

City of Del Mar. 1993. *Local Coastal Program – Land Use Plan*. Available: https://www.delmar.ca.us/DocumentCenter/View/261/Land-Use-Plan-5919?bidId= Accessed January 13, 2025.

———. 1999. *City of Del Mar Community Plan.* Available: https://www.delmar.ca.us/DocumentCenter/View/622/Community-Plan-1976?bidId=. Accessed January 13, 2025.

———. 2001. *Local Coastal Program, Implementing Ordinances.* Available: https://www.delmar.ca.us/DocumentCenter/View/262/Local-Coastal-Plan-Implementing?bidId=. Accessed January 13, 2025.

———. n.d. Design Review Board. Available: https://www.delmar.ca.us/141/Design-Review-Board. Accessed May 14, 2025.

City of El Cajon. 2001. *General Plan*. Available: https://www.cityofelcajon.us/home/showdocument?id=140. Accessed January 13, 2025.

———. n.d. Community Development Department. Available: https://www.elcajon.gov/your-government/departments/community-development. Accessed May 14, 2025.

City of Encinitas. 2011. *City of Encinitas General Plan, Resource Management Element*. Available: https://portal.laserfiche.com/Portal/PDF10/049148dc-625c-455f-b58c-7b0380112758/835470. Accessed January 13, 2025.

———. n.d. Development Services Department – Planning Division. Available: https://www.encinitasca.gov/government/departments/development-services/planning. Accessed May 14, 2025.

City of Escondido. 2012 (May). *City of Escondido General Plan, Resource Conservation Element.* Available: https://www.escondido.gov/DocumentCenter/View/2503/Chapter-VII---Resource-Conservation-PDF. Accessed January 13, 2025.

———. n.d. Planning Commission. Available: https://www.escondido.gov/850/Planning-Commission. Accessed May 14, 2025.

City of Imperial Beach. 2018. *Imperial Beach General Plan/Local Coastal Plan and Commercial Zoning Amendment Project*. Available: https://www.imperialbeachca.gov/DocumentCenter/View/355/2018-General-Plan-and-Local-Coastal-Plan-PDF?bidId=. Accessed January 13, 2025.

———. n.d. Design Review Board. Available: https://www.imperialbeachca.gov/393/Design-Review-Board#:~:text=The%20Design%20Review%20Board%20is,Zoning%20Standards%2C%20and%20Design%20Review. Accessed May 14, 2025.

City of La Mesa. 2012. *City of La Mesa General Plan*. Available: https://www.cityoflamesa.us/DocumentCenter/View/6197/03LaMesaGPLandUseUrbanDesign-CD?bidId=. Accessed January 13, 2025.

———. n.d. Design Review Board. Available: https://www.cityoflamesa.us/254/Design-Review-Board. Accessed May 14, 2025.

City of Lemon Grove. 2025. *Building* Division. Available: https://www.lemongrove.ca.gov/our-government/community-development-department/building-division/. Accessed May 14, 2025.

City of National City. 2024. *General Plan: Housing Element Update*. Available: https://www.nationalcityca.gov/home/showpublisheddocument/33957/638700401826330000. Accessed January 13, 2025.

———. n.d. Planning. Available: https://www.nationalcityca.gov/government/community-development/planning. Accessed May 14, 2025.

City of Oceanside. 2002. *General Plan: Environmental Resource Management Element*. Available: https://www.ci.oceanside.ca.us/home/showpublisheddocument/3862/637952805772100000. Accessed January 13, 2025.

———. n.d. Plan Review Process. Available: https://www.ci.oceanside.ca.us/government/development-services/engineering/land-development/plan-review-process. Accessed May 14, 2025.

City of Poway. 1991 (November). *Poway Comprehensive Plan: General Plan, Natural Resources Element*. Available: https://docs.poway.org/WebLink/DocView.aspx?id=49302&dbid=1&repo=CityofPoway. Accessed January 13, 2025.

———. n.d. Development Services. Available: https://poway.org/167/Development-Services. Accessed May 14, 2025.

City of San Diego. 2024. *Final Program Environmental Impact Report: Blueprint San Diego Initiative – Hillcrest Focused Plan Amendment and University Community Plan Update*. Available: https://www.sandiego.gov/sites/default/files/2024-07/final_peir_blueprint-sd-initiative_hillcrest-fpa_university-cpu_0.pdf. Accessed January 13, 2025.

———. n.d. What Parties Are Involved in the Development Review Process? Available: https://www.sandiego.gov/planning/about/overview/drprocess#:~:text=City%20Staff,-There%20are%20two&text=MDT%20members%20are%20staff%20responsible,provide%20alternatives%20for%20the%20consideration. Accessed May 15, 2025.

City of San Marcos. 2012 (February 14). *City of San Marcos General Plan: Related Regulations, Plans, and Programs. Conservation and Open Space Element.* Available: https://www.san-marcos.net/home/showdocument?id=8478. Accessed January 13, 2025.

———. n.d. Welcome to the Planning Division. Available: https://www.san-marcos.net/departments/development-services/planning. Accessed May 15, 2025.

City of Santee. 2003 (August). *Santee 2020 General Plan, Conservation Element.* Available: https://www.cityofsanteeca.gov/documents/planning-building/general-plan/gp-conservation-element.pdf. Accessed January 13, 2025.

———. n.d. Planning and Building Department. Available: https://www.cityofsanteeca.gov/departments/planning-building. Accessed January 13, 2025.

City of Solana Beach. 2013. *Solana Beach General Plan, Conservation and Open Space Element.* February. Available: https://www.codepublishing.com/CA/SolanaBeach/#!/SolanaBeachGP/SolanaBeachGP03.html. Accessed January 13, 2025.

———. n.d. Planning. Available: https://www.cityofsolanabeach.org/en/government/departments/community-development/planning. Accessed May 15, 2025.

City of Vista. 2012. *General Plan 2030: Resource Conservation and Sustainability Element*. Available: https://records.vista.gov/WebLink/PDF/ehr0tux3ifvrcnaujex5vdx3/11/cc%202030%20GENERAL%20PLAN%20resource%20conservation%20_%20sustainability%20element.pdf. Accessed January 13, 2025.

———. n.d. Community Development. Available: https://www.vista.gov/departments/community-development. Accessed May 15, 2025.

County of San Diego. 2011. *General Plan: Conservation and Open Space Element*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/GP/ConservationandOpenSpace.pdf. Accessed January 13, 2025.

———. 2013. *Summary of the "B" Designator Community Design Review Area Regulations*. Available: https://www.sandiegocounty.gov/pds/zoning/formfields/PDS-225.pdf. Accessed May 15, 2025.

Groundwork San Diego. 2022. *Chollas Creek Watershed Regional Park Master Plan*. Available: https://groundworksandiego.org/chollas-creek-watershed-regional-park-master-plan. Accessed January 13, 2025.

HSRA. *See* California High Speed Rail Authority.

National Park Service. 2023. *National Trails System FAQs***.** Available: https://www.nps.gov/subjects/nationaltrailssystem/faqs.htm#:~:text=As%20a%20result%2C%2011%20national,have%20been%20recognized%20by%20the. Accessed January 31, 2025.

NPS. *See* National Park Service.

Pacific Crest Trail Association. n.d. Pacific Crest Trail Maps. Available: https://www.pcta.org/discover-the-trail/maps/. Accessed May 14, 2025.

PCTA. *See* Pacific Crest Trail Association.

San Diego County Regional Airport Authority. 2019 (September). *Airport Development Plan Recirculated Draft Environmental Impact Report.* Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245263-adp-draft-eir. Accessed May 16, 2025.

San Diego Foundation. 2020. *Parks for Everyone.* Available: https://www.sdfoundation.org/wp-content/uploads/2022/05/Parks-for-Everyone-2020.pdf. Accessed January 17, 2025.

SCAG. *See* Southern California Association of Governments.

SDCRAA. *See* San Diego County Regional Airport Authority.

Southern California Association of Governments. 2020. *Program Environmental Impact Report for the Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy).* Available: https://scag.ca.gov/peir. Accessed May 16, 2025.

Section 4.2 Agricultural and Forestry Resources

Aldo Leopold Wilderness Research Institute, Arthur Carhart National Wilderness Training Center, and University of Montana. 2018. *San Mateo Canyon Wilderness.* Available: https://www.wilderness.net/NWPS/wildView?WID=524. Accessed July 2025.

Ascent. 2025. Agricultural and Land Use Data. June 18, 2025.

Beckler, M. F., and P. Brueggeman. 2014. *Palomar Mountain Past and Present,* 3rd edition. San Diego, CA. Available: http://www.peterbrueggeman.com/palomarhistory/beckler.pdf. Accessed January 3, 2025.

Brueggeman, P. 2024. *Palomar Mountain Logging and Lumbering*. https://peterbrueggeman.com/palomarhistory/sawmill.pdf. Accessed January 2025.

CAL FIRE. *See* California Department of Forestry and Fire Protection.

California Department of Conservation. 2025a. *Land Conservation Act (Williamson Act) Questions and Answers***.** Available: https://www.conservation.ca.gov/dlrp/wa/Pages/LCA_QandA.aspx. Accessed January 13, 2025.

———. 2025b. *Farmland Mapping and Monitoring Program.* Available: http://www.conservation.ca.gov/dlrp/fmmp. Accessed January 14, 2025.

———. 2025c. *Williamson Act/Land Conservation Act.* Available: http://www.conservation.ca.gov/dlrp/lca. Accessed January 14, 2025.

———. 2025d. *Farmland Conversion Report 2016-2018*. Available: https://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2016-2018/FCR/FCR_1618_Report.pdf. Accessed February 4, 2025.

———. 2023. Williamson Act Enrollment for the State of California. Available: https://gis.conservation.ca.gov/portal/home/item.html?id=c608c0e32810424f8f4f9d39570cc45b Accessed April 4, 2025.

California Department of Forestry and Fire Protection. 2025a. *California Department of Forestry and Fire Protection's Fire and Resource Assessment Program*. Available: http://frap.fire.ca.gov/. Accessed January 14, 2025.

———. 2025b. *Forest Legacy Grants*. Available: https://www.fire.ca.gov/what-we-do/grants/forest-legacy. Accessed January 14, 2025.

California High Speed Rail Authority. 2005. *Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System*. August.

California State Parks. 2025a. *Palomar Mountain State Park*. Available: https://www.parks.ca.gov/?page_id=637. Accessed January 3, 2025.

———. 2025b. Cuyamaca Rancho State Park. Available: https://www.parks.ca.gov/?page_id=667. Accessed January 3, 2025.

California Strategic Growth Council, California Climate Investments, and California Housing and Community Development. 2025 (February 26). Affordable Housing and Sustainable Communities Program: Round 9 Program Guidelines. Available: https://sgc.ca.gov/grant-programs/ahsc/docs/20250303-5_Guidelines_Adopted.pdf. Accessed June 23, 2025.

County of San Diego. 2013. *County of San Diego Strategic Energy Plan 2013-2015*. Available: https://www.sandiegocounty.gov/content/dam/sdc/common_components/images/dgs/Documents/Energy_StrategicEnergyPlan.pdf. Accessed February 4, 2025.

———. 2023a. *2023 Crop Statistics & Annual Report.* Available: https://awmsdcropreport.com/PDF/AWM-2023-Crop-Statistics-and-Annual-Report.pdf. Accessed June 18, 2025.

———. 2023b. *Alphabetical List of Individual Land Uses.* Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/zoning/ALPHABETICAL%20LIST%20OF%20INDIVIDUAL%20LAND%20USES.pdf. Accessed January 3, 2025.

———. 2025. *County of San Diego Mitigation Banks*. Available: https://www.sandiegocounty.gov/content/sdc/pds/mitbnks.html. Accessed July 15, 2025.

———. n.d. Agriculture Weights and Measures. Available: https://www.sandiegocounty.gov/content/sdc/awm.html. Accessed March 2025.

CSP. *See* California State Parks.

DOC. *See* California Department of Conservation.

IID. *See* Imperial Irrigation District.

Imperial Irrigation District. 2023. Annual Inventory of Areas Receiving Water. Available: https://www.iid.com/home/showpublisheddocument/21937/638415987377170000. Accessed February 4, 2025.

HSRA. *See* California High Speed Rail Authority.

Martin, A. 1990. *Aguatibia Ecosystem Report*. Available: https://research.fs.usda.gov/sites/default/files/2024-02/psw-aguatibia-er.pdf. Accessed January 3, 2025.

National Agriculture Statistics Service. 2022. San Diego County 2022 Census of Agriculture. Available: https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/California/cp06073.pdf. Accessed January 27, 2025.

SACOG. *See* Sacramento Area Council of Government

Sacramento Area Council of Government. 2025. 2025 Blueprint Draft Environmental Impact Report. Available: https://www.sacog.org/home/showpublisheddocument/3065/638850807642200000. Accessed July 16, 2025.

SANDAG. *See* San Diego Association of Governments

San Diego Association of Governments. n.d. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/regional-plan/sustainable-growth-and-development/land-use/land-use-definitions.pdf. Accessed July 10, 2025.

San Diego County Regional Airport Authority. 2019. *Airport Development Plan Recirculated Draft Environmental Impact Report.* September. Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245263-adp-draft-eir. Accessed May 16, 2025.

San Diego County Farm Bureau. 2025a. San Diego Agriculture. Available: https://www.sdfarmbureau.org/san-diego-agriculture/. Accessed January 3, 2025.

———. 2025b. San Diego County Farm Bureau. Available: https://www.sdfarmbureau.org/. Accessed January 3, 2025.

San Diego Geographic Information Source. 2025a. Zoning Base of City of San Diego. Available: https://geo.sandag.org/server/rest/directories/downloads/Zoning_Base_SD_filegdb.zip Accessed March 3, 2025.

———. 2025b. Zoning for unincorporated County of San Diego. Available: https://geo.sandag.org/server/rest/directories/downloads/Zoning_Unincorporated_filegdb.zip Accessed June 17, 2025.

San Diego Management and Monitoring Program. 2025. Vegetation map of San Diego County. Available: https://sdmmp.com/view_article.php?cid=SDMMP_CID_71_60904b2f1a54e. Available : March 17, 2025.

SanGIS. *See* San Diego Geographic Information Source.

SCAG. *See* Southern California Association of Governments.

SDCRAA. *See* San Diego County Regional Airport Authority.

SDMMP. *See* San Diego Management and Monitoring Program.

Southern California Association of Governments. 2020. *Program Environmental Impact Report for the Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy).* Available: https://scag.ca.gov/peir. Accessed May 16, 2025.

State of California. n.d. Sustainable Agricultural Land Conservation Program Awards (SALC). Available: https://sandbox.data.ca.gov/dataset/sustainable-agricultural-land-conservation-program-awards-salc. Accessed June 23, 2025.

Torrey Pines State Natural Reserve. 2025. History Overview. Available: https://torreypine.org/history2/overview/. Accessed January 3, 2025.

U.S. Forest Service. 2017. *Forest Legacy Program Implementation Guidelines*. Available: https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/15541-forest-service-legacy-program-508.pdf. Accessed January 14, 2025.

———. 2025a. Cleveland National Forest: About the Forest. Available: https://www.fs.usda.gov/main/cleveland/about-forest. Accessed January 3, 2025.

———. 2025b. Cleveland National Forest Recreation Area. Available: https://www.fs.usda.gov/recarea/cleveland/recarea/?recid=75038. Accessed January 3, 2025.

USFS. *See* U.S. Forest Service.

Section 4.3 Air Quality

BAAQMD. See Bay Area Air Quality Management District.

Baldauf R.W., R. B. Devlin, P. Gehr, R. Giannelli, B. Hassett-Sipple, H. Jung, G. Martini, J. McDonald, J. D. Sacks, and K. Walker. 2016 (October 28). "Ultrafine Particle Metrics and Research Considerations: Review of the 2015 UFP Workshop." *International Journal of Environmental Research and Public Health* 13(11): 1054. Available: https://pmc.ncbi.nlm.nih.gov/articles/PMC5129264/. Accessed April 14, 2025.

Bay Area Air Quality Management District. 2023. 2022 CEQA Guidelines – Appendix E: Recommended Methods for Screening and Modeling Local Risks and Hazards. Available: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/appendix-e-recommended-methods-for-screening-and-modeling-local-risks-and-hazards_final-pdf.pdf?rev=b8917a27345a4a629fc18fc8650951e4&sc_lang=en. Accessed June 23, 2025.

Bell, M. L., A. McDermott, S. L. Zeger, J. M. Samet., and F. Dominici. 2004. *Ozone and Short-Term Mortality in 95 U.S. Urban Communities, 1987-2000.* Available: https://pmc.ncbi.nlm.nih.gov/articles/PMC3546819/. Accessed April 14, 2025.

Bigazzi, A., and M. Figliozzi. 2012. *Impacts of Freeway Traffic Conditions on In-Vehicle Exposure to Ultrafine Particulate Matter.* Available: https://www.sciencedirect.com/science/article/abs/pii/S1352231012006929. Accessed March 19, 2025.

California Air Resources Board. CARB. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.* Available: https://ww3.arb.ca.gov/sites/default/files/classic/diesel/documents/rrpfinal.pdf. Accessed April 15, 2025.

California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April. Available: https://ww3.arb.ca.gov/ch/handbook.pdf. Accessed March 19, 2025

———. 2006. *Current Issues in Ultrafine Particle Research: The ARB's Health and Exposure Research Program.* Available: https://ww3.arb.ca.gov/board/books/2006/072006/06-7-1pres.pdf. Accessed March 19, 2025.

———. 2016a (July). *California Sustainable Freight Action Plan.* Available: https://ww2.arb.ca.gov/sites/default/files/2019-10/CSFAP_FINAL_07272016.pdf. Accessed March 19, 2025.

———. 2016b. *Revised Proposed 2016 State Strategy for the State Implementation Plan*. Available: https://ww2.arb.ca.gov/sites/default/files/classic/planning/sip/2016sip/rev2016statesip.pdf. Accessed July 30, 2025.

———. 2017. *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*. Available: https://ww3.arb.ca.gov/ch/landuse.htm. Accessed March 19, 2025.

———. 2020a. California Takes Bold Step to Reduce Truck Pollution. Available: https://ww2.arb.ca.gov/news/california-takes-bold-step-reduce-truck-pollution#:~:text=This%20new%20rule%20directly%20addresses%20disproportionate%20risks,%E2%80%9Clast%2Dmile%E2%80%9D%20delivery%20trucks%20and%20vans%20by%202040.&text=Statewide%2C%20the%20Advanced%20Clean%20Truck%20regulation%20will%20lower%20related%20premature%20deaths%20by%201%2C000. Accessed March 19, 2025.

———. 2020a. Proposed San Diego 8-Hour Ozone State Implementation Plan Submittal. Available: https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2020/res20-29.pdf. Accessed April 14, 2025.

———. 2021. *Overview: Diesel Exhaust & Health*. Available: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed March 19, 2025.

———. 2021b. Inhalable Particulate Matter and Health ($PM_{2.5}$ and PM_{10}). Available: https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health. Accessed July 15, 2021.

———. 2022 (November 16). *2022 Scoping Plan for Achieving Carbon Neutrality*. Available: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf. Accessed March 20, 2025.

———. 2023. Maps of State and Federal Area Designations. Available: https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations. Accessed March 19, 2025.

———. 2024a. *Table of Ambient Air Quality Standards.* Available: https://ww2.arb.ca.gov/sites/default/files/2024-08/AAQS%20Table_ADA_FINAL_07222024.pdf. Accessed March 19, 2025.

———. 2024b. Basic Information about Lead Air Pollution. Available: https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution. Accessed July 28, 2025.

———. 2024c. *iADAM: Air Quality Data Statistics*. Available: https://www.arb.ca.gov/adam/. Accessed February 25, 2025.

———. 2024d *Staff Report: $PM_{2.5}$ Area Designation Recommendations for the 2024 Annual $PM_{2.5}$ National Ambient Air Quality Standard*. Available: https://ww2.arb.ca.gov/sites/default/files/2024-12/Staff_Report_$PM_{2.5}$_Area_Designation_Recommendations_2024_Annual_$PM_{2.5}$_NAAQS.pdf. Accessed July 10, 2025.

———. 2024e. CEPAM2019v1.04 - Standard Emission Tool. Available: https://ww2.arb.ca.gov/applications/cepam2019v1-04-standard-emission-tool. Accessed November 16, 2024.

———. 2024f. $PM_{2.5}$ Information. Available: https://ww2.arb.ca.gov/our-work/programs/state-and-federal-area-designations/federal-area-designations/pm2-5. Accessed July 15, 2025.

———. 2024g. Proposed Low Carbon Fuel Standard Amendments. Available: https://ww2.arb.ca.gov/rulemaking/2024/lcfs2024. Accessed July 10, 2025.

———. 2024h. California State Priority Action Plan. Available: https://ww2.arb.ca.gov/sites/default/files/2024-03/California%20CPRG%20Priority%20Climate%20Action%20Plan%202024%20March%201_0.pdf. Accessed July 10, 2025.

———. 2025a. Carbon Monoxide & Health. Available: https://ww2.arb.ca.gov/resources/carbon-monoxide-and-health. Accessed February 24, 2025.

———. 2025b. Summary: Diesel Particulate Matter Health Impacts. Available: https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts#footnote1_zjnp8x0. Accessed February 25, 2025

———. 2025c. Air Monitoring Sites Interactive Map. Available: https://ww2.arb.ca.gov/applications/air-monitoring-sites-interactive-map. Accessed February 24, 2025.

———. 2025d. $PM_{2.5}$ State and Federal Area Designations. Available: https://ww2.arb.ca.gov/our-work/programs/state-and-federal-area-designations/federal-area-designations/pm2-5#:~:text=States%20and%20Tribal%20Authorities%20will,area%20designations%20by%20February%202026. Accessed March 17, 2025.

———. 2025d. *History [of California Air Resources Board]*. Available: https://ww2.arb.ca.gov/about/history. Accessed February 25, 2025.

———. 2025e. *Notice to the U.S. Environmental Protection Agency of California Air Resources Board's Withdrawal of the Advanced Clean Fleets Waiver Request.* Available: https://www.epa.gov/system/files/documents/2025-01/ca-acf-carb-withdrawal-ltr-2025-1-13.pdf. Accessed March 17, 2025.

———. 2025f. Advanced Clean Fleets Regulation information webpage. Available: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets. Accessed March 17, 2025.

———. 2025g. Inhalable Particulate Matter and Health ($PM_{2.5}$ and PM_{10}). Available: https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health. Accessed March 17, 2025.

———. 2025h. Letter From California Air Resources Board withdrawing its authorization request regarding those portions of the Transport Refrigeration Unit regulation on which the EPA did not take action in its authorization decision on January 3, 2025. Available: https://www.epa.gov/system/files/documents/2025-01/ca-tru-carb-withdrawal-ltr-2025-1-13.pdf. Accessed April 16, 2025

California Natural Resources Agency. 2018 (January). *Safeguarding California Plan: 2018 Update. California's Climate Adaptation Strategy*. Available: https://resources.ca.gov/CNRALegacyFiles/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf. Accessed March 20, 2025.

California Department of Public Health. 2025. County Health Status Profiles 2025, California Department of Public Health. https://www.cdph.ca.gov/Programs/CHSI/Pages/County-Health-Status-Profiles.aspx. Accessed July 30, 2025.

California Office of Environmental Health Hazard Assessment. 2015 (February). *Air Toxics Hot-Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* Available: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. Accessed March 19, 2025.

———. 2023. CalEnviroScreen Version 4.0. Available: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40. Accessed April 16, 2025.

CARB. *See* California Air Resources Board.

CDPH. *See* California Department of Public Health

CNRA. *See* California Natural Resources Agency.

County of San Diego. 2007. *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements.* Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/ProjectPlanning/docs/AQ-Guidelines.pdf. Accessed September 24, 2020.

———. 2025. About Environmental Odors. Available: https://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs/community_epidemiology/south-region-health-concerns/about-environmental-odors.html#about-h2s. Accessed July 29, 2025.

European Commission Joint Research Centre. 2018 (March 16). "Climate Change Promotes the Spread of Mosquito and Tick-Borne Viruses." *Science Daily*.

DieselNet. 2025. *United States: Cars and Light-Duty Trucks*. Available: https://www.dieselnet.com/standards/us/ld.php. Accessed February 24, 2025.

EPA. *See* U.S. Environmental Protection Agency.

Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency. 2018. *California's Fourth Climate Change Assessment: Statewide Summary Report*.

Gryparis, A., B. Forsberg, K. Katsouyanni, A. Analitis, G.Touloumi, J.Schwartz, E. Samoli, S. Medina, H. R. Anderson, E. M. Niciu, H. E. Wichmann, B. Kriz, M. Kosnik, J. Skorkovsky, J. M. Vonk, and Z. Dörtbudak. 2004. *Acute Effects Of Ozone on Mortality from the "Air Pollution and Health: A European Approach" Project.* Available: https://pubmed.ncbi.nlm.nih.gov/15282198/. Accessed April 14, 2025.

Health Effects Institute. 2013. *Understanding the Health Effects of Ambient Ultrafine Particles.* Available: https://www.healtheffects.org/system/files/Perspectives3.pdf. Accessed March 19, 2025.

Intergovernmental Panel on Climate Change. 2014. *Climate Change 2014: Synthesis Report Summary for Policy Makers*.

———. 2023. *Climate Change 2023 Synthesis Report.* Available: https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf. Accessed July 29, 2025.

IPCC. *See* Intergovernmental Panel on Climate Change.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *California's Fourth Climate Change Assessment: San Diego Region Report.* Available: http://www.climateassessment.ca.gov/regions/docs/20180827-SanDiego.pdf. Accessed July 29, 2025.

Lim, C. C., R. B. Hayes, J. Ahn, Y. Shao, D. T. Silverman, R. R. Jones, C. Garcia, M. L. Bell, and G. D. Thurston. 2019. *Long-Term Exposure to Ozone and Cause-Specific Mortality Risk in the United States.* Available: https://pmc.ncbi.nlm.nih.gov/articles/PMC6794108/. Accessed April 14, 2025.

Linn W. S., E. L. Avol, R. C. Peng, D. A. Shamoo, and J. D. Hackney. 1987. "Replicated Dose-Response Study of Sulfur Dioxide Effects in Normal, Atopic, and Asthmatic Volunteers." *American Review of Respiratory Disease* 136 (5): 1127–1134. Available: https://pubmed.ncbi.nlm.nih.gov/3674575/. Accessed April 14, 2025.

Lister, B. C., and A. Garcia. 2018. "Climate-Driven Declines in Arthropod Abundance Restructure in a Rainforest Food Web." *PNAS* 115 (44): E10397–E10406.

McConnell, R., K. Berhane, F. Gilliland, S. J. London, T. Islam, W. J. Gauderman, E. Avol, H. G. Margolis, and J. M. Peters. 2002. "Asthma in Exercising Children Exposed to Ozone: A Cohort Study." *Lancet* 359(9304): 386–391.

Metropolitan Transit System. 2025. Zero Emissions Bus Program. Available: https://www.sdmts.com/inside-mts/current-projects/zero-emissions-bus-program. Accessed April 14, 2025.

National Highway Traffic Safety Administration. 2024. USDOT Finalizes New Fuel Economy Standards for Model Years 2027-2031. Available: https://www.nhtsa.gov/press-releases/new-fuel-economy-standards-model-years-2027-2031. Accessed February 25, 2025.

National Oceanic and Atmospheric Administration. 2024 (January 17). 2023 Was the Warmest Year in the Modern Temperature Record.

NHTSA. *See* National Highway Traffic Safety Administration.

NOAA. See National Oceanic and Atmospheric Administration.

Nogueira, L .M., K. R. Yabroff, and A. Bernstein. 2020. Climate Change and Cancer. Available: https://doi.org/10.3322/caac.21610. *CA: A Cancer Journal for Clinicians* 70(4): 239–244. Accessed July 29, 2025.

OEHHA. *See* California Office of Environmental Health Hazard Assessment.

Ocean Protection Council. 2024. *State of California Sea-Level Rise Guidance.* Available: https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf. Accessed July 29, 2025.

OPC. *See* Ocean *Protection* Council.

OPR et al. *See* Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency.

Padhy, S. K., S. Sarkar, M. Panigrahi, and S. Paul. 2015. "Mental Health Effects of Climate Change." *Indian Journal of Occupational and Environmental Medicine* 19(1): 3–7.

Panis, L. I., B. de Geus, G. Vandenbulcke, H. Willems, B. Degraeuwe, N. Bleux, V. Mishra, I. Thomas, and R. Meeusen. 2010. "Exposure to Particulate Matter in Traffic: A Comparison of Cyclists and Car Passengers." *Atmospheric Environment* 44(19): 2263–2270. Available: https://www.sciencedirect.com/science/article/abs/pii/S1352231010003225. Accessed March 19, 2025.

Pu, B., Q. Jin, P. Ginoux, and Y. Yu. 2022. "Compound Heat Wave, Drought, and Dust Events in California." *Journal of Climate* 35: 8133–8152, Available: https://journals.ametsoc.org/view/journals/clim/35/24/JCLI-D-21-0889.1.xml. Accessed August 11, 2025.

Reidmiller, D. R., C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. M. Lewis, T. K. Maycock, and B. C. Stewart. 2018. *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II.* U.S. Global Change Research Program. Washington, DC. Available: https://www.doi.org/10.7930/NCA4.2018. Accessed July 29, 2025.

Sacramento Metropolitan Air Quality Management District. 2020. *Construction-Generated Criteria Air Pollutant and Precursor Emissions.* Available: https://www.airquality.org/LandUseTransportation/Documents/Ch3Construction4-30-2020.pdf. Accessed August 11, 2025.

San Diego Air Pollution Control District. 2005 (December). *Measures to Reduce Particulate Matter in San Diego County*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/JVR/AdminRecord/IncorporatedByReference/Section-2-2---Air-Quality-References/SDAPCD%202005.pdf. Accessed March 20, 2025.

———. 2009 (June 24). *Rule 55: Fugitive Dust Control*. Available: https://www.sdapcd.org/content/dam/sdc/apcd/PDF/Rules_and_Regulations/Prohibitions/APCD_R55.pdf. Accessed March 19, 2025.

———. 2020. *2020 Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County*. Available: https://www.sdapcd.org/content/dam/sdapcd/documents/grants/planning/Att%20A%20(Attainment%20Plan)_ws.pdf. Accessed March 19, 2025.

———. 2022. *2022 Regional Air Quality Strategy*. Available: https://www.sdapcd.org/content/dam/sdapcd/documents/grants/planning/Att.%20A%20-%202022%20RAQS.pdf. Accessed April 16, 2025.

———. 2023. Notice of Determination for the 2022 Regional Air Quality Strategy Revision for San Diego County. Available: https://files.ceqanet.lci.ca.gov/286117-1/attachment/-kFrhgrOO62UN2-Y-fDMgHNQuFSGdTKNYEK815rrdQ-sWpC2JKTWADiL9gFw-iYNW8G5fyRfG4QO3iXH. Accessed April 16, 2025.

———. 2024a. *Annual Air Quality Monitoring Network Report 2023.* Available: https://www.sdapcd.org/content/dam/sdapcd/documents/monitoring/2023-Network-Report.pdf. Accessed February 24, 2025.

———. 2024b. *2023 California Air Toxics "Hot Spots" Annual Report*. Available: https://www.sdapcd.org/content/dam/sdapcd/documents/permits/air-toxics/2023-Air-Toxics-Hot-Spots-Annual-Report-Approved.pdf. Accessed February 25, 2025.

———. SDAPCD. n.d. Community Air Protection Program (AB 617). Available: https://www.sdapcd.org/content/sdapcd/community/community-air-protection-program.html. Accessed April 16, 2025.

San Diego Association of Governments. 2024. *Series 15 Regional Growth Forecast.* Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/data-and-research/socioeconomics/estimates-and-forecasts/sr-15-infobits-2024-04-01.pdf. Accessed July 12, 2025.

SCAQMD. See South Coast Air Quality Management District.

SDAPCD. *See* San Diego Air Pollution Control District.

South Coast Air Quality Management District. 2007. *Mitigation Measure Examples: fugitive Dust from Construction and Demolition*. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/mitigation-measures-and-control-efficiencies/fugitive-dust/fugitive-dust-overview.pdf. Accessed March 19, 2025.

———. 2022. *2022 Air Quality Management Plan.* Available: https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=edcebd61_16.

Uchitel, Kirsten. Associate Planner, SANDAG, San Diego, CA—December 28, 2024, email to Kathie Washington, Project Manager, San Diego, CA, and others.

United Nations. 2015. Paris Agreement.

U.S. Environmental Protection Agency. 2004. *Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel*. Available: https://www.gpo.gov/fdsys/pkg/FR-2004-06-29/pdf/04-11293.pdf. Accessed March 19, 2025.

———. 2006. *Master List of Compounds Emitted by Mobile Sources.* Available: https://nepis.epa.gov/Exe/ZyPDF.cgi/P1004KHZ.PDF?Dockey=P1004KHZ.PDF. Accessed April 14, 2025.

———. 2007 (February 26). "Control of Hazardous Air Pollutants From Mobile Sources." Final Rule. *Federal Register* 72(37): 8430.

———. 2009. *Emission Factors for Locomotives.* Available: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100500B.PDF?Dockey=P100500B.PDF. Accessed March 19, 2025.

———. 2016. Final Rule for Phase 2 Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles. Available: https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-phase-2-greenhouse-gas-emissions-standards. Accessed March 19, 2025.

———. 2023. *California Waiver Requests for Heavy-Duty Vehicle Emission Regulations.* Available: https://www.govinfo.gov/content/pkg/FR-2023-04-06/pdf/2023-07184.pdf. Accessed July 1, 2025

———. 2024a. Ground-level Ozone Basics. Available: https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics#wwh Accessed February 24, 2025.

———. 2024b. Basic Information about NO_2. Available: https://www.epa.gov/no2-pollution/basic-information-about-no2#What%20is%20NO2. Accessed February 24, 2025.

———. 2024c. Particulate Matter (PM) Basics. Available: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics. Accessed February 24, 2025

———. 2024d. Health and Environmental Effects of Particulate Matter (PM). Available: https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm. Accessed February 24, 2025.

———. 2024e. *Sulfur Dioxide (SO_2) Pollution*. Last Updated April 2, 2019. Available: https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects. Accessed February 24, 2025.

——— 2024f. Greenbook. Available: https://www.epa.gov/green-book. Accessed February 24, 2025.

———. 2024g. *General Information for Transportation and Conformity.* Available: https://www.epa.gov/state-and-local-transportation/general-information-transportation-and-conformity. Accessed February 24, 2025.

———. 2024h. 1990 Clean Air Act Amendment Summary: Title I Provisions for Attainment and Maintenance of National Ambient Air Quality Standards. Available: https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-i. Accessed February 24, 2025.

———. 2024i. Emission standards for light-duty vehicles, light-duty trucks and medium-duty passenger vehicles. Available: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-86/subpart-S/section-86.1811-04. Accessed February 24, 2025.

———. 2024j. *AERMOD Implementation Guide.* Available: https://gaftp.epa.gov/Air/aqmg/SCRAM/models/preferred/aermod/aermod_implementation_guide.pdf. Accessed April 22, 2025

———. 2024k. *Estimating $PM_{2.5}$ and Ozone-Attributable Health Benefits: 2024 Update*. Availablehttps://www.epa.gov/system/files/documents/2024-06/estimating-pm2.5-and-ozone-attributable-health-benefits-tsd-2024.pdf. Accessed August 8, 2025

———. 2025a. Ground Level Ozone Basics. Available: https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics#formation. Accessed April 22, 2025

———. 2025b. Greenbook. Available: https://www.epa.gov/green-book. Accessed February 24, 2025.

———. 2025c Interactive Map of Air Quality Monitors. Available: https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=5f239fd3e72f424f98ef3d5def547eb5&extent=-146.2334,13.1913,-46.3896,56.5319. Accessed March 11, 2025.

———. 2025d (January 8). Monitor Values Report. Available: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. Accessed March 11, 2025.

———. 2025e (February 28). Emission Standards Reference Guide for On-road and Nonroad Vehicles and Engines. Available: https://www.epa.gov/emission-standards-reference-guide. Accessed March 11, 2025.

———.2025f. "Pollution Control Standards; In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets." Notice of Decision. *Federal Register* 90:b2000.

———.2025g. *User's Manual for the CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA).* Available: https://www.epa.gov/system/files/documents/2025-03/cobra-user-manual-v5.2.pdf. Accessed August 8, 2025.

Western Governors' Association. 2006 (September 7). *WRAP Fugitive Dust Handbook*.

Western Fire Chiefs Association. 2024. *Wildfires and Rain: What You Need to Know*. Available: https://wfca.com/wildfire-articles/wildfire-and-rain/. Accessed July 29, 2025.

WGA. *See* Western Governors' Association.

Section 4.4 Biological Resources

Aspen Environmental Group. 2008 (October). *Final Environmental Impact Report/Environmental Impact Statement and Proposed Land Use Amendment*. San Diego Gas & Electric Company Application for the Sunrise Powerlink Project.

Bailey E. A., and P. J. Mock. 1998 (July). "Dispersal Capability of the California Gnatcatcher: A Landscape Analysis of Distribution Data." *Western Birds* 29: 351–360.

Baldwin, B. G., D. H. Goldwin, J. K. Keil, R. Patterson, J. Rosatti, J., and D. H. Wilken. 2012. *The Jepson Manual*. Second edition. University of California Press. Berkeley, CA.

Barbour, M., T. Keeler-Wolf, and A. A. Schoenherr. 2007. *Terrestrial Vegetation of California*. Third edition. University of California Press. Berkeley, CA.

Bauder E. T., and S. McMillan. 1986. "Current Distribution and Historical Extent of Vernal Pools in Southern California and Baja Mexico." In *Ecology, Conservation, and Management of Vernal Pool Ecosystems – Proceedings from a 1996 Conference,* edited by C. W. Witham, E. Bauder, D. Belk, W. Ferren, and R. Ornduff. California Native Plant Society, Sacramento, CA.

Beier, P., and R. F. Noss. 1998. "Do Habitat Corridors Provide Connectivity?" *Conservation Biology* 12(6): 1241–1252.

Biogeographic Information and Observation System. 2025a. Focused Planning Areas – Northwestern San Diego County – MHCP [ds2770]. Available: https://map.dfg.ca.gov/metadata/ds2770.html. Retrieved June 18, 2025.

———. 2025b. Multiple Species Conservation Program Cores and Linkages [ds2771]. Available: https://map.dfg.ca.gov/metadata/ds2771.html. Retrieved June 18, 2025.

BIOS. *See* Biogeographic Information and Observation System.

Bradford, M. A., W. R. Wieder, G. B. Bonan, N. Fierer, P. A. Raymond, and T. W. Crowther. 2016. "Managing Uncertainty in Soil Carbon Feedbacks to Climate Change." *Nature Climate Change* 6(8): 751–758.

Brennan-Kane, T. J., and J. E. Keeley. 2020 (May 28). Vegetation Type Conversion in Chaparral in San Diego County, California, USA between 1953 and 2016: U.S. Geological Survey Data Release. Available: https://doi.org/10.5066/P91J4DFH. Retrieved August 20, 2025.

Brehme, C. S., J. A. Tracey, L. R. McClenaghan, and R. N. Fisher. 2013 "Permeability of Roads to Movement of Scrubland Lizards and Small Mammals." *Conservation Biology* 27(4): 710–720.

California Coastal Commission. 1994. *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone*.

California Department of Fish and Wildlife. 2025. Current California Ocean Recreational Fishing Regulations. 34°27 N. Latitude (Point Conception, Santa Barbara County) to the U.S. - Mexico Border. Summary of Recreational Groundfish Regulations, Southern Management Area. Accessed August 11, 2025.

California Department of Transportation and Secretariat of Infrastructure, Urban Development, and Territorial Reorganization. 2021 (February). *California-Baja California Border Master Plan*. Available: https://www.calibajabmp.org/reports. Accessed January 22, 2025.

California High Speed Rail Authority. 2005. *Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System*. Available: https://hsr.ca.gov/programs/environmental-planning/program-eir-eis-documents-for-the-statewide-high-speed-rail-system-tier-1/final-program-environmental-impact-report-environmental-impact-statement-eir-eis-for-the-proposed-california-high-speed-train-system-2005/. Accessed March 2025.

California Native Plant Society. n.d. California Rare Plant Ranks. Available: https://www.cnps.org/rare-plants/california-rare-plant-ranks#:~:text=Plants%20with%20a%20California%20Rare,)%20and/or%20%C2%A715380. Accessed August 20, 2025.

California Natural Diversity Database. 2025. CNDDB Maps and Data. California Department of Fish and Wildlife, Biogeographic Data Branch. Sacramento. Available: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Retrieved April 2, 2025.

Caltrans *See* California Department of Transportation.

CBI. *See* Conservation Biology Institute.

CCC. *See* California Coastal Commission.

CDFW. *See* California Department of Fish and Wildlife.

CEP and SDF. See Climate Education Partners and San Diego Foundation.

Chesser, R. T., S. M. Billerman, K. J. Burns, C. Cicero, J. L. Dunn, B. E. Hernández-Baños, R. A. Jiménez, O. Johnson, A. W. Kratter, N. A. Maston, P. C. Rasmussen, and J. V. Remsen, Jr. 2024. Checklist of North and Middel American Birds. American Ornithological Society. Available: https://checklist.americanornithology.org/taxa/. Accessed August 20, 2025.

City of Carlsbad. 2004. *Habitat Management Plan for natural Communities in the City of Carlsbad.* December 1999 as amended. Final approval November 2004.

———. 2015. *Carlsbad General Plan.* Available: https://www.carlsbadca.gov/departments/community-development/planning/general-plan. Accessed January 13, 2025.

———. 2025 (June 24). *Carlsbad Municipal Code.* Available: https://ecode360.com/44157599. Accessed August 20, 2025.

City of Chula Vista. 2003 (May). *The City of Chula Vista MSCP Subarea Plan.* ———. 2005 (December 13). *City of Chula Vista General Plan*. Available: https://www.chulavistaca.gov/departments/development-services/planning/planning-digital-library/general-plan. Accessed August 20, 2025.

———. 2022. Chula Vista Municipal Code. Available: https://chulavista.municipal.codes/CVMC. Accessed August 20, 2025.

City of Coronado. 2003. *Coronado General Plan*. Available: https://www.coronado.ca.us/DocumentCenter/View/1580/General-Plan-PDF. Accessed January 13, 2025.

———. 2025. *City of Coronado Municipal Code*. Available: https://coronado.municipal.codes/. Accessed August 20, 2025.

City of Del Mar. 1976. *The Community Plan*. Available: https://www.delmar.ca.us/DocumentCenter/View/250/Community-Plan?bidId=. Accessed August 20, 2025.

———. 2025. City of Del Mar Municipal Code. Available: https://library.municode.com/ca/del_mar/codes/municipal_code. Accessed August 20, 2025.

City of El Cajon. 2001. *General Plan 2000*. Available: https://www.elcajon.gov/your-government/departments/community-development/planning-division/adopted-planning-code-information. Accessed January 17, 20225.

———. 2025. City of El Cajon Municipal Code. Available: https://ecode360.com/EL4925. Accessed August 20, 2025.

City of Encinitas. 1995. *City of Encinitas General Plan*. Available: https://portal.laserfiche.com/Portal/browse.aspx?id=665622&repo=r-d8c5c08d. Accessed January 13, 2025.

———. 2025. City of Encinitas Municipal Code. Available: https://ecode360.com/EN5042. Accessed August 20, 2025.

City of Escondido. 2012 (May). *Escondido General Plan.* Available: https://escondido.gov/1106/Policy-and-Regulatory-Documents. Accessed January 2025.

———. 2025. City of Escondido Municipal Code. Available: https://ecode360.com/ES4926. Accessed August 20, 2025.

City of Imperial Beach. 2019 (March 25). *City of Imperial Beach General Plan/Local Coastal Program Land Use Plan*. Available: https://www.imperialbeachca.gov/DocumentCenter/View/401/Imperial-Beach-Implementation-Plan-User-Guide-Final-Draft-PDF. Accessed August 20, 2025.

———. 2025. City of Imperial Beach Municipal Code. Available: https://qcode.us/codes/imperialbeach/. Accessed August 20, 2025.

City of La Mesa. 2000 (January). *MSCP. City of La Mesa Subarea Plan*. U.S. Fish and Wildlife Services.

———. 2013. *2012 General Plan*. Available: https://www.cityoflamesa.us/953/General-Plan. Accessed January 13, 2025.

———. 2025. City of La Mesa Code of Ordinances. Available: https://library.municode.com/ca/la_mesa/codes/code_of_ordinances. Accessed August 20, 2025.

City of Lemon Grove. 1996 (October). *General Plan*. Available: https://www.lemongrove.ca.gov/media/ni2dcask/lemon-grove-general-plan.pdf. Accessed August 20, 2025.

———. 2025. Lemon Grove Municipal Code. Available: https://ecode360.com/LE4958. Accessed August 20, 2025.

City of National City. 2011 (June 7). *City of National City General Plan Open Space and Agriculture Element*. Available: https://www.nationalcityca.gov/government/community-development/planning. Accessed January 20, 2025.

———. 2025. City of National City Code of Ordinances. Available: https://library.municode.com/ca/national_city/codes/code_of_ordinances. Accessed August 20, 2025.

City of Oceanside. 2002. *General Plan*. Available: https://www.ci.oceanside.ca.us/government/development-services/planning/general-plan. Accessed January 13, 2025.

_____. 2021. Subarea Plan Administration. Policy Number 2021-2. Development Services Department (DSD). Implemented December 16. 2021.

———. 2025. *City of Oceanside Municipal Code*. Available: https://library.municode.com/ca/oceanside/codes/code_of_ordinances. Accessed August 20, 2025.City of Poway. 1991. Poway Comprehensive Plan. Available: https://poway.org/286/General-Plan. Accessed January 20, 2025.

———. 1996 (April). *Poway Subarea Habitat Conservation Plan/Natural Community Conservation Plan.* Prepared for the City of Poway Planning Department by Ogden Environmental.

———. 2025. Poway Municipal Code. Available: https://www.codepublishing.com/CA/Poway/. Accessed August 20, 2025.

City of San Diego. 1997 (March). *Multiple Species Conservation Program, City of San Diego MSCP Subarea Plan*, Prepared by the City of San Diego Community and Economic Development Department. ———. 2017 (October). *Final Vernal Pool Habitat Conservation Plan*. City of San Diego Planning Department.

———. 2018 (February 27). *North City Project Pure Water San Diego Program. Environmental Impact Report/Environmental Impact Statement*. State Clearinghouse No. #2016081016. PTS #499621. Prepared for the Development Services Department.

———. 2020 (February). *Climate Change Vulnerability Assessment.* Prepared for the City of San Diego by ICF.

———. 2024 (July). *City of San Diego General Plan.* Available: https://www.sandiego.gov/sites/default/files/2024-07/general-plan_01_introduction_july-2024.pdf. Accessed August 20, 2025.

———. 2025a. City of San Diego Municipal Code. Available: https://www.sandiego.gov/city-clerk/officialdocs/municipal-code. Accessed August 20, 2025.

———. 2025b. *Midway Rising Project Draft Subsequent Environmental Impact Report*. State Clearinghouse No. 2023120451. Available: https://files.ceqanet.lci.ca.gov/293830-2/attachment/SzMA9aX8WujVG8AaIvNz_Ifus7FywSUptmMED3X3pFdiI4OffQ6pW_7DDTMcPA7AoNXlWUOO5okO1j9C0. Accessed August 20, 2025.

City of San Marcos. *City of San Marcos General Plan*. Available: https://www.san-marcos.net/work/economic-development/general-plan.

———. 2025. *City of San Marcos Municipal Code*. Available: https://library.municode.com/ca/san_marcos/codes/code_of_ordinances. Accessed August 20, 2025.

City of Santee 2003. *General Plan*. Available at https://www.cityofsanteeca.gov/departments/city-clerk/document-central/planning-building/general-plan. Accessed January 20, 2025.

———. 2025. City of Santee Municipal Code. Available: https://ecode360.com/SA5010. Accessed August 20, 2025.

City of Solana Beach. 2014. *General Plan.* Available: https://www.codepublishing.com/CA/SolanaBeach/html/pdfs/solbeachgenplanfullcode.pdf. Accessed August 20, 2025.

———. 2025. Solana Beach Municipal Code. Available: https://www.codepublishing.com/CA/SolanaBeach/ Accessed August 20, 2025.

City of Vista. 2012 (February 28). *General Plan*. Available: https://www.vista.gov/departments/community-development/permits-forms/vista-general-plan-2030. Accessed January 20, 2025.

———. 2025. City of Vista Municipal Code. Available: https://portal.laserfiche.com/Portal/Browse.aspx?id=43616&repo=r-3f0b2553. Accessed August 20, 2025.

Climate Education Partners and San Diego Foundation. 2015. *San Diego, 2050 Is Calling, How Will We Answer? Facing the Future: How Science Can Help Prepare San Diego Regional Leaders for Climate Change*. San Diego, CA.

CNDDB. See California Natural Diversity Database.

CNPS. *See* California Native Plant Society.

Coachella Valley Association of Governments. 2007 (September). *Final Recirculated Coachella Valley MSHCP Environmental Impact Report/Statement*.

Commission for Environmental Cooperation. 2010 (November 10). *Strategic Plan of the Commission for Environmental Cooperation 2010-2015*. Montréal, Québec. Available: https://www.cec.org/files/documents/strategic_plans/10115_strategic_plan_2011_en.pdf. Accessed August 20, 2025.

———. 2021. *Strategic Plan 2021-2025*. Available: https://www.cec.org/files/documents/strategic_plans/cec-strategic-plan-2021-2025.pdf. Accessed August 11, 2025

Conservation Biology Institute. 2003 (January). *Review of Regional Habitat Linkage Monitoring Locations*. Prepared for the Multiple Species Conservation Program.

———. 2004 (September). "Las California Binational Conservation Network." In *Las Californias Binational Conservation Initiative: A Vision for Habitat Conservation in the Border Region of California and Baja California,* 20–43. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch2.3/2014-12-19_CBI2004_Part5.pdf. Accessed August 20, 2025.

County of Riverside. 2003. *Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP).* Available: https://rctlma.org/western-riverside-county-multiple-species-habitat-conservation-plan-mshcp-1. Accessed August 20, 2025.

County of San Diego. 1997 (October 22). *Multiple Species Conservation Program South County Subarea Plan.* Prepared by the County of San Diego in conjunctions with the U.S. Fish and Wildlife Service and California Department of Fish and Game.

———. 1998 (August). *Final Multiple Species Conservation Program: MSCP Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/mscp/docs/SCMSCP/FinalMSCPProgramPlan.pdf. Accessed August 20, 2025.

———. 2010. *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements: Biological Resources*.

———. 2011. *County of San Diego General Plan.* Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/docs/GP/GENERAL%20PLAN_April2022_PRINT.pdf. Accessed August 20, 2025.

———. 2019 (December). *North County Multiple Species Conservation Plan Status Review and Options Assessment*. Prepared by ICF.

———. 2021 (March). Planning Agreement by and among the County of San Diego, Department of Fish and Wildlife, and United States Fish and Wildlife Services regarding the North and East County Multiple Species Conservation Program Plans: Natural Community Conservation Program Plans and Habitat Conservation Plans. Third Reinstated and Amended.

———. 2025. *San Diego County Ordinances*. Available: https://codelibrary.amlegal.com/codes/san_diego/latest/overview. Accessed August 20, 2025. Crooks, K. R. 1999. "Mammalian Carnivores, Mesopredator Release, and Avifaunal Extinctions in a Fragmented System." PhD thesis. University of California, Santa Cruz.

———. 2002. "Relative Sensitivities of Mammalian Carnivores to Habitat Fragmentation." *Conservation Biology* 16: 488–502.

Crooks, K. R., and M. E. Soulé. 1999. "Mesopredator Release and Avifaunal Extinctions in a Fragmented System." *Nature* 400 (5).

Dickson, B. G., and P. Beier. 2002. "Home-Range Selection by Adult Cougars in Southern California." *The Journal of Wildlife Management* 66(4): 1235–1245.

Diffendorfer, J. E., R. E. Chapman, J. M. Duggan, G. M. Fleming, M. Mitrovitch, M. E. Rahn, and R. del Rosario. 2002. *Coastal Sage Scrub Response to Disturbance. A Literature Review and Annotated Bibliography*. Prepared for California Department of Fish and Game, Department of Biology, San Diego State University.

Dobson, A. P, J. P. Rodriguez, W. M. Roberts, and D. S. Wilcove. 1997. "Geographic Distribution of Endangered Species in the United States." *Science* 275: 550–553.

EcoAdapt. 2017. *Southern California Sage Scrub Habitats: Climate Change Vulnerability Assessment Synthesis. Assessment of the Southern California Climate Adaptation Project*.

Faber, P. M., E. Keller, A. Sands, and B. M. Massey. 1989. *The Ecology of Riparian Habitats of the Southern California Coastal Region: A Community Profile.* U.S. Department of the Interior, Fish and Wildlife Service, Research and Development, National Wetlands Research Center. Washington, DC.

Fedriani, J. M., T. K. Fuller, R. M. Sauvajot, and E. C. York. 2000. "Competition and Intraguild Predation among Three Sympatric Carnivores." *Oecologia* 125: 258–270.

Gamble, Justin. Sustainability Project Director, City of Oceanside. March 3, 2025–email to Chistina Schaefer, President of Ecological Solutions, regarding the City of Oceanside City Council's decision to not formally adopt the City of Oceanside Draft MHCP Subarea Plan but instead implement but instead implement the policies through the General Plan Update.

George, S. L., and K. R. Crooks. 2006. "Recreation and Large Mammal Activity in an Urban Nature Reserve." *Biological Conservation* 133: 107–117.

Hatfield, J. L., and J. H. Prueger. 2015. "Temperature Extremes: Effect on Plant Growth and Development." *Weather and Climate Extremes* 10: 4–10.

Heberger M., H. Cooley, P. Herrera, P. H. Gleick, and E. Moore. 2009. *The Impacts of Sea-Level Rise on the California Coast.* Final. CA. Prepared for the California Energy Commission by the Pacific Institute, Oakland, CA.

Hilberg, L. E., W. A. Reynier, and J. M. Kershner. 2017. *Southern California Riparian Habitats: Climate Change Vulnerability Assessment Synthesis*. Version 1.0. Prepared for the Southern California Climate Adaptation Project by EcoAdapt. Bainbridge Island, WA.

Hoang, Dai. Senior Planner, Development Services. City of Chula Vista. July 21, 2025—email to Phi V. Ngo, Senior GIS Specialist of Ascent, regarding Multiple Species Conservation Program (MSCP) open space preserve for the City of Chula Vista.

Holland, R. F. 1986 (October). *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame Heritage Program, California Department of Fish and Game.

HSRA. *See* California High Speed Rail Authority.

ICLEI—Local Governments for Sustainability. 2012. *Sea Level Rise Adaptation Strategy for San Diego Bay.* San Diego, CA. Prepared for the San Diego Bay Public Agency Steering Committee.

Jennings, M. K., D. Cayan, J. Kalansky, A. D. Pairis, D. M. Lawson, A. D. Syphard, U. Abeysekera, R. E. S. Clemesha, A. Gershunov, K. Guirguis, J. M. Randall, E. D. Stein, and S. Vanderplank. 2018. *Summary Report, San Diego County Ecosystems: Ecological Impacts of Climate Change on a Biodiversity Hotspo*t. Climate Science Alliance. San Diego, CA.

Jennings, M. K., E. Conlisk, E. Haeuser, and R. L. Lewison. 2019. *Climate Resilient Connectivity for the South Coast Ecoregion of California.* Institute of Ecological Monitoring and Management, San Diego State University. Available: https://databasin.org/datasets/b3de45cbc8804e21b668d96b6100a938/. Retrieved April 14, 2025.

Jennings, M. K., E. Haeuser, D. Foote, R. L. Lewison, and E. Conlisk. 2020. "Planning for Dynamic Connectivity: Operationalizing Robust Decision-Making and Prioritization Across Landscapes Experiencing Climate and Land-Use Change." *Land* 2020(9): 341. Available: https://www.mdpi.com/2073-445X/9/10/341. Accessed August 20, 2025.

Jepson Flora Project. 2025. Jepson eFlora. Available: http://ucjeps.berkeley.edu/IJM.html. Retrieved April 17, 2025.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *California's Fourth Climate Change Assessment: San Diego Region Report.* Available: https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-009_SanDiego_ADA.pdf. Accessed July 17, 2025.

Keeler-Wolf, T., D. R. Elam, and S. Flint. 1995. *California Vernal Pool Assessment Preliminary Report.* Department of Fish and Game, Sacramento, CA.

Keeley J., and P. Mantgem. 2022. *Vegetation Type Conversion in the Southwest: Observations and Management Takeaways*. USGS Western Ecological Research Center Research Spotlight.

Lidicker, W. Z. Jr., and J. A. Peterson. 1999. "Response of Small Mammals to Habitat Edges." In *Landscape Ecology of Small Mammals,* editing by Barrett, G. W. and J. D. Peles*,* 221–227. Springer, New York.

Lippitt C. L., D. A. Stow, J. F. O'Leary, and J. Franklin. 2013. "Influence of Short-Interval Fire Occurrence on Post-Fire Recovery of Fire-Prone Shrublands in California, USA." *International Journal of Wildland Fire* 22: 184-193.

Lyren, L., G. Turschak, E. Ambat, C. Haas, J. Tracey, E. Boydston, S. Hathaway, R. Fisher, and K. Crooks. 2006. *Carnivore Activity and Movement in a Southern California Protected Area, the North/Central Irvine Ranch*. USGS technical report prepared for The Nature Conservancy.

McNab, W. H., D. T. Cleland, J. A. Freeouf, J. E. Keys Jr., G. J. Nowacki, and C. A. Carpenter. 2005. *Description of Ecological Subregions: Sections of the Conterminous United States*. U.S. Forest Service. Washington, DC.

McTigue, N., J. Davis, A. B. Rodrigues, B. McKee, A. Atencio, and C. Currin. 2019. "Sea Level Rise Explains Changing Carbon Accumulation Rates in a Salt Marsh Over the Past Two Millennia." *Journal of Geophysical Research: Biogeosciences*, 124.

Meng, R., P. E. Dennison, C. M. D'Antonio, and M. A. Moritz. 2014. "Remote Sensing Analysis of Vegetation Recovery Following Short-Interval Fires in the Southern California Shrublands." *PLOS ONE* 9(10).

Messner, S., S. C. Miranda, K. Green, C. Phillips, J. Dudley, D. Cayan, and E. Young. 2011. *Climate Change-Related Impacts in the San Diego Region by 2050*. Prepared for the California Energy Commission.

Morin, D. J. 2007. "Does Urbanization Impact Coyotes, Mesopredators and Their Small Mammal Prey? A Test of Mesopredator Release Hypothesis in Coastal Sage Scrub." Master's thesis. San Diego State University.

Moser, S., and J. Ekstrom. 2012. *Developing Adaptation Strategies for San Luis Obispo County: Preliminary Climate Change Vulnerability Assessment for Social Systems*. Prepared for the California Energy Commission

Moser, S., J. Ekstrom, and G. Franco. 2012. *Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California*. CEC-500-2012-007. Prepared for the California Energy Commission.

Murphy, S. 2018. "Climate Change Threatens Bird Migrations, Habitats In San Diego County." KPBS. Available: https://www.kpbs.org/news/environment/2018/04/02/climate-change-threatens-bird-migration-habitats-s. Accessed July 17, 2025.

National Audubon Society. 2025. Important Bird Areas Database, Boundary Digital Data Set. Retrieved April 17, 2025.

National Fish, Wildlife and Plants Climate Adaptation Partnership. 2012. *National Fish, Wildlife and Plants Climate Adaptation Strategy*. Association of Fish and Wildlife Agencies, Council on Environmental Quality, Great Lakes Indian Fish and Wildlife Commission, National Oceanic and Atmospheric Administration, and U.S. Fish and Wildlife Service. Washington, DC.

National Hydrography Dataset. 2023. Hydrologic features from National Hydrography Dataset for the State of California. Available: https://prd-tnm.s3.amazonaws.com/StagedProducts/Hydrography/NHD/State/GDB/NHD_H_California_State_GDB.zip. Retrieved December 27, 2023.

National Oceanic and Atmospheric Administration Fisheries. 2025. Essential Fish Habitat Mapper. Available: https://www.habitat.noaa.gov/apps/efhmapper. Retrieved August 20, 2025.

Natural Resource Conservation Service. 2010. *Conservation Practice Standard. Riparian Forest Buffer. Code 391*. Natural Resource Conservation Service

Natural Resources Agency. 2010 (June). *State of the State's Wetlands – 10 Years of Challenges and Progress*. Natural Resources Agency State of California.

NatureServe. 2025. NatureServe Explorer. Available: https://explorer.natureserve.org/. Retrieved April 17, 2025.

NHD. *See* National Hydrography Dataset. NOAA Fisheries. *See* National Oceanic and Atmospheric Administration Fisheries.

NRCS. Natural Resource Conservation Service.

Oberbauer, T. A., and J. M. Vanderwier. 1991. "The Vegetation and Geologic Substrate Association and Its Effect on Development in Southern California." In *Environmental Perils, San Diego Region*, edited by P. L. Abbot and W. J. Elliot, 203–212. San Diego Association of Geologists.

Oberbauer, T., M. Kelly, and J. Buegge. 2008. *Draft Vegetation Communities of San Diego County.* Based on *Preliminary Descriptions of the Terrestrial Natural Communities of California*, Robert F. Holland, PhD, October 1986. Available: http://www.co.san-diego.ca.us/dplu/docs/Veg_Comm_SD County_2008.pdf. Accessed August 20, 2025.

Ocean Protection Council. 2024. *State of California Sea-Level Rise Guidance*. Available: https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf. Accessed July 17, 2025.

OPC. *See* Ocean Protection Council.

Peck, S. 1993. *Landscape Conservation Planning: Preserving Ecosystems in Open Space Networks.* Integrated Hardwood Range Management Program, University of California Cooperative Extension, Department of Environmental Science, Policy and Management. Berkeley.

Rebman, J. P., and M. G. Simpson. 2014. *Checklist of the Vascular Plants of San Diego County*. Fifth edition. San Diego Natural History Museum. San Diego.

Ren, W., K. Banger, B. Tao, J. Yang, Y. Huang, and H. Tian. 2020. "Global Pattern and Change of Cropland Soil Organic Carbon During 1901-2010: Roles of Climate, Atmospheric Chemistry, Land Use and Management." *Geography and Sustainability* 1(1): 59–69.

Riley, S. P. D. 2006. "Spatial Ecology of Bobcats and Gray Foxes in Urban and Rural Zones of a National Park." *Journal of Wildlife Management* 70(5): 1425–1435.

Riley, S. P. D., R. M. Sauvajot, T. K. Fuller, E. C. York, D. A. Kamradt, C. Bromley, and R. K. Wayne. 2003. "Effects of Urbanization and Habitat Fragmentation on Bobcats and Coyotes in Southern California." *Conservation Biology* 17(2): 566–576.

Riley, S. P. D., J. P. Pollinger, R. M. Sauvajot, E. C. York, C. Bromley, T. K. Fuller, and R. K. Wayne. 2006. "A Southern California Freeway Is a Physical and Social Barrier to Gene Flowin Carnivores." *Molecular Ecology* 15: 1733–1741.

Rogers, J., E. Stein, M. Beck, and R. Ambrose. 2020. "The Impact of Climate Change Induced Alterations of Streamflow and Stream Temperature on the Distribution of Riparian Species." *PLOS One* 15(11): e0242682

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2003 (March). *Final Multiple Habitat Conservation Program Plan – Volume I.* March. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/environment/regional-habitat-conservation/volume-1-final-multiple-habitat-conservation-program-plan-2003-03-01.pdf. Accessed August 20, 2025.

———. 2025. *Transnet Environmental Mitigation Program.* Available: https://www.sandag.org/projects-and-programs/environment/regional-habitat-conservation/transnet-environmental-mitigation-program. Accessed August 20, 2025.

San Diego County Regional Airport Authority. 2008 (April). *Final Environmental Impact Report: Airport Master Plan San Diego International Airport*. SDCRAA # EOR=06-01. State Clearinghouse No. 2005091105.

San Diego County Water Authority. 2010 (October). *San Diego County Water Authority Subregional Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP*). Prepared by RECON Environmental.

———. 2011 (September 28). *Implementing Agreement for the San Diego County Water Authority Natural Community Conservation Plan/Habitat Conservation Plan*. By and between San Diego County Water Authority, United States Fish and Wildlife Service, and California Department of Fish and Game.

San Diego Gas and Electric. 1995 (December 18). S*an Diego Gas & Electric Company Subregional Natural Community Conservation Plan Implementing Agreement/CESA Memorandum of Understanding.* Entered into by and among the United States Fish and Wildlife Service, the California Department of Fish and Game, and San Diego Gas & Electric Company.

San Diego Geographic Information Source. 2025a. Points and polygons (SANBIOS) for a catalog of species observations for the County of San Diego. Available: https://geo.sandag.org/portal/apps/experiencebuilder/experience/?id=fad9e9c038c84f799b5378e4cc3ed068&page=Home. Retrieved April 3, 2025.

———.2025b. The City of San Diego Multi-Habitat Area (MHPA). Available: https://geo.sandag.org/portal/apps/experiencebuilder/experience/?id=fad9e9c038c84f799b5378e4cc3ed068&page=Home. Accessed June 23, 2025.

San Diego Management and Monitoring Program. 2017. *Management and Monitoring Strategic Plan for Conserved Lands in Western San Diego County: A Strategic Habitat Conservation Roadmap*. Prepared for the San Diego Association of Governments by SDMMP and The Nature Conservancy.

———. 2020. *PAMA Lands for MSCP, MHCP, and Draft North County Plan*. Available: https://geo.sandag.org/portal/apps/experiencebuilder/experience/?id=fad9e9c038c84f799b5378e4cc3ed068&page=Home>. Retrieved June 23, 2025.

———. 2021. Vegetation Map 2021. Available: https://sdmmp.com/view_article.php?cid=SDMMP_CID_71_60904b2f1a54e. Retrieved February 11, 2025.

———. 2024. Conserved Lands San Diego 2024. Available: https://sdmmp.com/view_article.php?cid=SDMMP_CID_71_6603419c92f44. Retrieved March 20, 2025.

———. 2025. Email received from Emily Perkins of San Diego Management and Monitoring Program (SDMMP), U.S. Geological Survey, Western Ecological Research Center, regarding Sensitive plants and animals for County of San Diego to Phi V. Ngo of Ascent in March of 2025.

San Diego Unified Port District. 2024 (June 17). *Port Master Plan Update Project.* UPD #EIR-2017-035. State Clearinghouse No. 2017031070. San Diego Unified Port District Document No. 76466.

SANGIS. *See* San Diego Geographic Information Source.

SCAG. *See* Southern California Association of Governments.

Schaefer, J., F. J. Mazzotti, and C. Huegel. 2003. *Highways and Wildlife: Problems and Solutions*. IFAS WEC-172.

SCW. *See* South Coast Wildlands.

SDCRAA. *See* San Diego County Regional Airport Authority.

SDCWA. *See* San Diego County Water Authority.

SDG&E. *See* San Diego Gas and Electric.

SDMMP. *See* San Diego Management and Monitoring Program.

Seavy, N. E., T. Gardali, G. H. Golet, F. T. Griggs, C. A. Howell, R. Kelsey, S. l. Small, J. H. Viers, and J. F. Weigand. 2009 (September). "Why Climate Change Makes Riparian Restoration More Important than Ever: Recommendations for Practice and Research." *Ecological Restoration* 27(3).

Spencer, W. D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Sproul, F. T., T. Keeler-Wolf, P. Gordon-Reedy, J. Dunn, A. Klein, and K. Harper. 2011. *Vegetation Classification Manual for Western San Diego County (First).* San Diego, CA.

South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. Available: http://www.scwildlands.org/reports/scmlregionalreport.pdf. Accessed August 20, 2025.

Southern California Association of Governments. 2024. *Final Program Environmental Impact Report For Connect SoCal 2024 (2024–2050 Regional Transportation Plan/Sustainable Communities Strategy).* Available: https://scag.ca.gov/peir. Accessed January 22, 2025.

State Water Resources Control Board. 2019. *Staff Report: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State.* State Clearinghouse No. 2011012009. Available: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffrpt_conformed.pdf. Accessed August 20, 2025.

———. 2020 (May 28). *California Water Board Wetlands Policy: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures)*.

———. 2021. State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. State Water Resources Control Board. Adopted April 2, 2019, revised April 6, 2021.

Stein, B. A., L. S. Kutner, and J. S. Adams. 2000. *Precious Heritage: The Status of Biodiversity in the United States*. Oxford University Press.

Sutton-Grier, A. E. and A. Moore. 2016. "Leveraging Carbon Services of Coastal Ecosystems for Habitat Protection and Restoration." *Coastal Management* 44(3): 259–277.

Sutula, M., J. N. Collins, R. Clark, C. Roberts, E. Stein, C. Grosso, A. Wiskind, C. Solek, M. May, K. O'Connor, E. Fetscher, J. L. Grenier, S. Pearce, A. Robinson, C. Clark, K. Rey, S. Morrissette, A. Eicher, R. Pasquinelli, and K. Ritter. 2008. *California's Wetland Demonstration Program Pilot – A Final Project Report to the California Resources Agency*. Technical Report 572. Southern California Coastal Water Research Project. Costa Mesa, CA.

Thorne, K., G. MacDonald, F. Chavez, and P. Barnard. 2024. "Significant Challenges to the Sustainability of the California Coast Considering Climate Change." *PNAS* 121 (32): e2310077121.

Tigas, L. A., D. H. Van Vuren, and R. M. Sauvajot. 2002. "Behavioral Responses of Bobcats and Coyotes to Habitat Fragmentation and Corridors in an Urban Environment." *Biological Conservation* 108: 299–306.

Trombulak, S. C., and C. A. Frissell. 2000. "Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities." *Conservation Biology* 14: 18–30.

USACE and EPA. *See* U.S. Army Corps of Engineers and U.S. Environmental Protection Agency.

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. 2023 (September 8). "Revised Definition of "Waters of the United States"; Conforming." Final Rule. *Federal Register* 88: 61964.

U.S. Navy. n.d. Navy's 70+ Acre Old Town Campus Revitalization Moves Forward. Available: https://navwar-revitalization.com/development/. Accessed August 20, 2025.

U.S. Fish and Wildlife Service. 2010. *Coastal California Gnatcatcher 5-Year Review: Summary and Evaluation*. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, California.

———. 2016. USDA Ecoregion Sections. Remote Sensing Lab, California. Pacific Southwest Region. Available: https://databasin.org/datasets/81a3a809a2ae4c099f2e495c0b2ecc91/. Retrieved April 24, 2025.

———. 2017. N*ative Endangered & Threatened Species Habitat Conservation Plan Endangered & Threatened Wildlife, Permit Number TE26660C-O*. Issuing Office: Department of the Interior U.S. Fish and Wildlife

Service Endangered Species Permit Office. Permittee: San Diego Gas and Electric Company. Effective date March 15, 2017.

———. 2021. *Otay Tarplant* (Deinandra conjugens) *5-Year Review: Summary and Evaluation*. Prepared by the Carlsbad Fish and Wildlife Office, Carlsbad, CA.

———. 2024. Multiple species occurrences within jurisdiction of the Carlsbad Fish and Wildlife Office. https://www.fws.gov/media/gis-species-occurrence-data-updated-august-2024. Accessed November 19, 2024.

———. 2025a. National Wetland Inventory database for the State of California. Available: https://www.fws.gov/program/national-wetlands-inventory/data-download. Retrieved January 14, 2025.

———. 2025b. FWS HQ ES Critical Habitat. Available: https://fws.maps.arcgis.com/home/item.html?id=794de45b9d774d21aed3bf9b5313ee24. Retrieved February 14, 2025.

U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration. 2025 (April 17). "Rescinding the Definition of 'Harm' Under the Endangered Species Act." Proposed Rule. *Federal Register,* 90: 16102.

USFWS. *See* U.S. Fish and Wildlife Service.

USFWS and NOAA. *See* U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration.

U.S. Geologic Survey. 2025. National Hydrology. National Hydrography Dataset. U.S. Geological Survey in cooperation with U.S. Environmental Protection Agency, USDA Forest Service, and other Federal, State and local partners. Available: https://apps.nationalmap.gov/downloader/#/. Retrieved August 20, 2025.

USGS. See U.S. Geological Survey.

Windham-Myers, L., W.-J. Cai, S.R. Alin, A. Andersson, J. Crosswell, K. H. Dunton, J. M. Hernandez-Ayon, M. Herrmann, A. L. Hinson, C. S. Hopkinson, J. Howard, X. Hu, S. H. Knox, K. Kroeger, D. Lagomasino, P. Megonigal, R. G. Najjar, M.-L. Paulsen, D. Peteet, E. Pidgeon, K. V. R. Schäfer, M. Tzortziou, Z.A. Wang, and E. B. Watson. 2018. "Chapter 15: Tidal Wetlands and Estuaries." In *Second State of the Carbon Cycle Report (SOCCR2): A Sustained Assessment Report*, edited by N. Cavallaro, G. Shrestha, R. Birdsey, M. A. Mayes, R. G. Najjar, S. C. Reed, P. Romero-Lankao, and Z. Zhu, 596–658. U.S. Global Change Research Program. Available: https://www.researchgate.net/publication/329197423_Second_State_of_the_Carbon_Cycle_Report_Chapter_15_Tidal_wetlands_and_estuaries. Accessed August 20, 2025.

Witter, M., R. S. Taylor, and S. Davis. 2007. "Vegetation Response to Wildfire and fire History in the Santa Monica Mountains., California." In *Flora and Ecology of the Santa Monica Mountains: Proceedings of the 32nd Annual Southern California Botanists Symposium*.

Section 4.5 Cultural Resources

Akins, D. B., and W. J. Bauer. 2021. *We Are the Land: A History of Native California.* University of California Press, Oakland.

Bean, L. J., and F. C. Shipek. 1978. "Luiseno." In *California*. *Handbook of North American Indians*, *Vol. 8*, edited by Robert F. Heizer, 550–563. Smithsonian Institution. Washington, DC.

Byrd, B. F., and L. M. Raab. 2007. "Prehistory of the Southern Bight: Models for a New Millennium." In *California Prehistory: Colonization, Culture, and Complexity,* edited by L. Jones and K. A. Klar, 215–227. Altamira Press. Lanham, MD.

Byrd, B. F., and S. N. Reddy. 2002. "Late Holocene Adaptations along the Northern San Diego Coast: New Perspectives on Old Paradigms." In *Catalysts to Complexity: Late Holocene Societies on the California Coast: Perspectives in California Archaeology No. 6*, edited by J. M. Erlandson and T. L. Jones, 40–42. University of California. Los Angeles.

California Department of Transportation. 2021. *California-Baja California Border Master Plan*. Available: https://www.calibajabmp.org/reports. Accessed April 15, 2025.

California High Speed Rail Authority. 2005. *Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System*. Available: https://hsr.ca.gov/programs/environmental-planning/program-eir-eis-documents-for-the-statewide-high-speed-rail-system-tier-1/final-program-environmental-impact-report-environmental-impact-statement-eir-eis-for-the-proposed-california-high-speed-train-system-2005/. Accessed May 30, 2025.

California Nations Indian Gaming Association. 2012. *Economic Impact Study: Tribal Gaming a Powerful Economic Engine for California Generating 7.5 Billion for State's Economy.* Available: https://cniga.com/press_releases/economic-impact-study-tribal-gaming-a-powerful-economic-engine-for-california-generating-7-5-billion-for-states-economy/. Accessed June 26, 2025.

California Native American Heritage Commission. 2016. Native American Heritage Commission Tribal Consultation Policy. Available: https://nahc.ca.gov/wp-content/uploads/2020/09/Signed-NAHC-Tribal-Consultation-Policy.pdf. Accessed June 26, 2025.

———. 2020. Digital Atlas of California Native Americans. Available: https://nahc.ca.gov/cp/. Accessed June 26, 2025.

California State Parks. n.d.-*a Context Statement Scope. California Office of Historic Preservation*. https://ohp.parks.ca.gov/pages/1054/files/Context-Statement-Scope.pdf. Accessed June 26, 2025.

———. n.d.-b. California Historical Landmarks Registration. California Office of Historic Preservation. Available: https://ohp.parks.ca.gov/?page_id=21747. Accessed August 7, 2025.

———. n.d.-c. California Points of Historical Interest. California Office of Historic Preservation. Available: https://ohp.parks.ca.gov/?page_id=21750. Accessed August 7, 2025.

———. n.d.-d. California Historical Resources. California Office of Historic Preservation. Available: https://ohp.parks.ca.gov/listedresources/. Accessed August 7, 2025.

———. n.d.-e. National Register of Historic Places. California Office of Historic Preservation. Available: https://ohp.parks.ca.gov/?page_id=21237. Accessed August 7, 2025.

Carrico, R. 2008. *Strangers in a Stolen Land: Indians of San Diego County from Prehistory to the New Deal.* Sunbelt Publications, San Diego.

Champagne, D., and C. Goldberg. 2021. *A Coalition of Lineages: The Fernandeño Tataviam Band of Mission Indian*s. University of Arizona Press, Tucson.

City of San Diego. n.d. North City Pure Water Facility and Pump Station. Available: https://www.sandiego.gov/public-utilities/sustainability/pure-water-sd/phase-1-projects/university-city-eastgate-mall/north-city-pure-water-facility-and-pump-station. Accessed April 24, 2025.

CNIGA. *See* California Nations Indian Gaming Association.

Cook, S. F. 1976. *The Population of the California Indians 1769-1970.* University of California Press. Berkeley.

County of San Diego. 2011 (August). *County of San Diego General Plan Update EIR.* Available: www.sandiegocounty.gov/content/sdc/pds/gpupdate/environmental.html. Accessed May 30, 2025.

Dana, R. H. 1995. *Two Years Before the Mast: A Personal Narrative of Life at Sea*. Reader's Digest Association. Pleasantville, NY.

Dunmire, W. W. 2004. *Gardens of New Spain: How Mediterranean Plants and Food Changed America*. University of Texas Press. Austin, TX.

Engstrand, I. W., and R. Brandes. 1976. *Old Town San Diego, 1821–1874: A Brief History and Descriptive Guide to Historic Sites.* Alcalá Press. San Diego.

Erlandson, J. M., T. C. Rick, T. L. Jones, and J. F. Porcasi. 2007. "One if by Land, Two if by Sea: Who Were the First Californians?" In *California Prehistory: Colonization, Culture, and Complexity,* edited by L. Jones and K. A. Klar, 53–62. Altamira Press. Lanham, MD.

Ford, L. R. 2005. *America's New Downtowns: Revitalization or Reinvention?* Johns Hopkins University Press. Baltimore, MD.

Gallegos, D. 1985. "Batiquitos Lagoon Revisited." *Cultural Resource Management Casual Papers* 2 (1): 1–13.

Hackel, S. W. 2005. *Children of Coyote, Missionaries of Saint Francis: Indian-Spanish Relations in Colonial California, 1769*-1850. Published for the Omohundro Institute of Early American History and Culture, Williamsburg, VI. University of North Carolina Press, Chapel Hill.

Hoover, M. B., H. E. Rensch, E. G. Rensch, and W. N. Abeloe. 2002. *Historic Spots in California.* Fifth edition. Revised by D. E. Kyle. Stanford University Press. Stanford, CA. Originally published in 1932.

HSRA. *See* California High Speed Rail Authority.

Inkpen, R. 2004. *Atmospheric Pollution, Climate Change and Historic Buildings.* Available: http://www.buildingconservation.com/articles/atmospheric/atmospheric.htm. Accessed May 30, 2025.

Johnson, J. R., and D. Crawford. 1999. "Contributions to Luiseno Ethnohistory Based on Mission Register Research." *Pacific Coast Archaeological Society Quarterly* 35 (4).

Jones, D. S. 2015. "Death, Uncertainty, and Rhetoric." In *Beyond Germs: Native Depopulation in North America*, edited by Catherine M. Cameron, P. Kelton, and A C. Swedlund, 1649. University of Arizona Press. Tucson.

Jones, T. L., A. W. Schwitalla, M. A. Pilloud, J. R. Johnson, R. R. Paine, and B. F. Codding. 2021. "Historic and Bioarchaeological Evidence Supports Late Onset of Post-Columbian Epidemics in Native California." *Proceedings of the National Academy of Sciences* 118(28): e2024802118. Available: https://doi.org/10.1073/pnas.2024802118. Accessed June 2025.

Kroeber, A. L. 1925. "Handbook of Indians of California." *Bureau of American Ethnology Bulletin 78.* Smithsonian Institution. Washington, DC.

Lennox, Jamie. 2025, personal communication, South Coastal Information Center, San Diego State University. January 22, 2025—Email to with Evelyn Chandler, archaeologist with Bargas Consulting.

Lightfoot, K. G. 2005. *Indians, Missionaries, and* Merchants*: The Legacy of Colonial Encounters on the California Frontiers*. University of California Press. Berkeley.

Luomala, K. 1978. "Tipai-Ipai." In *California*. *Handbook of North American Indians*, *Vol. 8*, edited by R. F. Heizer, 492–609. Smithsonian Institution. Washington, DC.

Madley, B. 2016. *American Genocide: The United States and the California Indian Catastrophe*. Yale University Press, New Haven, CT.

Masters, P. M., and I. W. Aiello. 2007. "Postglacial Evolution of Coastal Environments." In *California Prehistory: Colonization, Culture, and Complexity,* edited by T. L. Jones and K. A. Klar, 35–51. AltaMira Press. Lanham, MD.

Masters, P. M., and D. R. Gallegos. 1997. "Environmental Change and Coastal Adaptations in San Diego County during the Middle Holocene." In *Archaeology of the California Coast during the Middle Holocene*. *Perspectives in California Archaeology No. 4.*, edited by L. Jones and K. A. Klar, 11–21. Institute of Archaeology, University of California. Los Angeles.

Mayer, R. 1978. *San Diego: A Chronological & Documentary History, 1535–1976*, *American Cities Chronology Series.* Oceana Publications. Dobbs Ferry, NY.

McKeever, M. 1985. *A Short History of San Diego*. First edition. Lexikos Publishing. San Francisco.

Mills, J. R. 1960. "San Diego: Where California Began." *San Diego History Center Quarterly* VI(1).

NAHC. *See* California Native American Heritage Commission.

National Park Service. 1997. "How to Apply the National Register Criteria for Evaluation." *National Register Bulletin No. 15*. Government Printing Office. Washington, DC. Available: https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf. Accessed April 10, 2025.

———. 2023. *Historic American Buildings Survey: Guidelines for Historical Reports*. Available: https://www.nps.gov/subjects/heritagedocumentation/upload/HABS-Guidelines-Historical-Reports_508.pdf. Accessed April 11, 2025.

National Register of Historic Places. 2025a. Spreadsheet of NRHP List (Listings up to July 2024). Available: https://www.nps.gov/subjects/nationalregister/data-downloads.htm. Accessed April 11, 2025.

———. 2025b. Spreadsheet of National Historic Landmarks (Designations up to July 2024). Available: https://www.nps.gov/subjects/nationalregister/data-downloads.htm. Accessed April 11, 2025.

Newland, J. D. 1992. *The Americanization of the Cultural Landscape of Frontier San Diego 1846–1872*. Master's thesis. San Diego State University.

NRHP. *See* National Register of Historic Places.

Pourade, R. F. 1961. *The History of San Diego: Time of the Bells*. Union-Tribune Publishing Company. San Diego, CA.

———. 1963. *The History of San Diego: The Silver Dons*. Union-Tribune Publishing Company. San Diego, CA.

Pryde, P. R. 1992. *San Diego: An Introduction to the Region*. Third edition. Kendall/Hunt Publishing Company. Dubuque, IA.

Rolle, A. 1956. *An American in California: The Biography of William Heath Davis, 1822–1909*. The Huntington Library Press.

San Diego County Regional Airport Authority. 2020. *Airport Development Plan Final Environmental Impact Report*. Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245314-adp-final-eir. Accessed May 30, 2025.

San Diego Integrated Regional Water Management. 2013. *San Diego IRWM Tribal Engagement and Cultural Resources Report*. Available: http://www.sdirwmp.org/. Accessed May 30, 2025.

San Diego State University. 2024. *Tribal Programs, Initiative and Collaborations*. Division of Student Affairs and Campus Diversity. Available: http://www.sdirwmp.org/. Accessed June 26, 2025.

SCAG. *See* Southern California Association of Governments.

SCIC. *See* South Coastal Information Center.

Scott, E. R. 1976. *San Diego County Soldier-Pioneers, 1846–1866*. County of San Diego. National City, CA.

SDCRAA. *See* San Diego County Regional Airport Authority.

Shipek, F. C. 1988. *Pushed into the Rocks.* University of Nebraska Press. Lincoln, NB.

Southern California Association of Governments. 2024. *2024-2050 Regional Transportation Plan/Sustainable Communities Strategy Final Program Impact Report*. Available: https://scag.ca.gov/program-environmental-impact-report-0. Accessed May 30, 2025.

Starr, K. 2005. *California: A History.* Modern Library. New York.

True, D. L., and R. Pankey. 1985. "Radiocarbon Dates for the Pauma Complex Component at the Pankey Site, Northern San Diego County, California." *Journal of California and Great Basin Anthropology* 7: 240–244.

True, D. L., and G. Waugh. 1982. "Proposed Settlement Shifts during San Luis Rey Times: Northern San Diego County, California." *Journal of California and Great Basin Anthropology* 4: 34–54.

U.S. Department of the Navy. 2020. F*inal Environmental Impact Statement for the Navy Old Town Campus Revitalization*. Prepared by Naval Facilities Engineering Command Southwest. Available: https://navwar-revitalization.com/draft-eis/. Accessed July 8, 2025.

Warren, C. N. 1964. Cultural Change and Continuity on the San Diego Coast. Unpublished PhD dissertation. Department of Anthropology, University of California. Los Angeles.

———. 1968. "Cultural Tradition and Ecological Adaptation on the Southern California Coast." *Archaic Prehistory in the Western United States. Eastern New Mexico University Contributions in Anthropology* 1 (3).

Warren, C. N., D. L. True, and A. A. Eudey. 1961. "Early Gathering Complexes of Western San Diego County: Results and Interpretations of an Archaeological Survey." *University of California, Los Angeles, Archaeological Survey Annual Report 1960–1961*: 1–106.

Section 4.6 Energy

Bedsworth, L., D. Cayan, G. Franco, L. Fisher, and S. Ziaja. 2018. *California's Fourth Climate Change Assessment: State Summary Report*. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. Accessed July 27, 2025.

BLM. *See* U.S. Bureau of Land Management.

California Air Resources Board. 2008. *Final Scoping Plan.* Available: https://ww3.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed June 20, 2025.

———. 2020. Press Release: California takes bold step to reduce truck pollution. Available: https://ww2.arb.ca.gov/news/california-takes-bold-step-reduce-truck-pollution. Accessed June 20, 2025.

———. 2021. Governor Newsom's Zero-Emission by 2035 Executive Order (N-79-20). Available: https://ww2.arb.ca.gov/resources/fact-sheets/governor-newsoms-zero-emission-2035-executive-order-n-79-20. Accessed April 17, 2025.

———. 2022a. *2022 Scoping Plan for Achieving Carbon Neutrality*. Available: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents. Accessed February 24, 2025.

———. 2022b. *2022 Progress Report: California's Sustainable Communities and Climate Protection Act.* Available: https://ww2.arb.ca.gov/sites/default/files/2023-05/2022%20SB%20150%20CA%20Sustainable%20Communities%20Report%20ADA.pdf. Accessed April 17, 2025.

———. 2025a. CARB Receives Direction on Finalizing Low Carbon Fuel Standard Amendments. Available: https://ww2.arb.ca.gov/news/carb-receives-direction-finalizing-low-carbon-fuel-standard-amendments#:~:text=On%20November%208%2C%202024%2C%20the,of%20zero%2Demission%20infrastructure%20and. Accessed April 17, 2025.

———. 2025b. Notice to the U.S. Environmental Protection Agency of California Air Resources Board's Withdrawal of the Advanced Clean Fleets Waiver Request. Available: https://www.epa.gov/system/files/documents/2025-01/ca-acf-carb-withdrawal-ltr-2025-1-13.pdf. Accessed March 17, 2025.

———. CARB 2025c. Advanced Clean Fleets Regulation information webpage. Available: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets. Accessed March 17, 2025. California Energy Commission. 2025. *2024-2025 Investment Plan Update for Clean Transportation Program*

Commission Report. Available: https://efiling.energy.ca.gov/GetDocument.aspx?tn=261539. Accessed March 17, 2025.

California Department of Fish and Wildlife. 2025. Cobalt Solar Project. Available: https://ceqanet.lci.ca.gov/2018031027/11. Accessed July 24, 2025.

California Energy Commission. 2018. Pio Pico Energy Center. Available: https://www.energy.ca.gov/powerplant/simple-cycle/pio-pico-energy-center. Accessed July 24, 2025.

———. 2021. *2022 Building Energy Efficiency Standards Summary*. Available: https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf. Accessed March 17, 2025.

———. 2024a. *Commission Final Report*. California Energy Demand 2024-2040 Revised Forecast. CEC-200-2024-001-CMF. Available: https://www.energy.ca.gov/publications/2024/2024-integrated-energy-policy-report-update. Accessed June 15, 2025.

———. 2024b. SDG&E Power Content Label. Available: 2022_PCL_San_Diego_Gas_&_Electric_ADA.pdf. Accessed February 10, 2025.

———. 2024c. 2023 California Annual Retail Fuel Outlet Report Results. Available: https://www.energy.ca.gov/media/3874. Accessed June 16, 2025.

———. 2024d. *2023 Integrated Energy Policy Report*. Available: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report-iepr/2023-integrated-energy-policy-report. Accessed June 16, 2025.

———. 2024e. Energy Commission Adopts Updated Building Standards Expanding Requirements for Heat Pumps and Electric-Ready Buildings. Available: https://www.energy.ca.gov/news/2024-09/energy-commission-adopts-updated-building-standards-expanding-requirements-heat. Accessed March 17, 2025.

———. 2024f. Black Rock Geothermal Project. Available: https://www.energy.ca.gov/powerplant/steam-turbine/black-rock-geothermal-project-brgp. Accessed July 24, 2025.

———. 2025a. Electricity Consumption by County. Available: https://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed February 10, 2025.

———. 2025b. Gas Consumption by County. Available: https://ecdms.energy.ca.gov/gasbycounty.aspx. Accessed February 10, 2025.

California High-Speed Rail Authority. 2005. *Program EIR/EIS Documents for the Statewide High-Speed Rail System*. Available: https://hsr.ca.gov/programs/environmental-planning/program-eir-eis-documents-for-the-statewide-high-speed-rail-system-tier-1/final-program-environmental-impact-report-environmental-impact-statement-eir-eis-for-the-proposed-california-high-speed-train-system-2005/. Accessed June 20, 2025.

CARB. *See* California Air Resources Board.

CDFW. *See* California Department of Fish and Wildlife.

CEA. *See* Clean Energy Alliance.

CEC. *See* California Energy Commission.

City of Carlsbad. 2024 (November). *City of Carlsbad Climate Action Plan Update*. Available: https://www.carlsbadca.gov/home/showpublisheddocument/19484/638717809348600000. Accessed June 3, 2025.

City of Chula Vista. 2017. *Climate Action Plan*. Adopted by City Council in September 2017. Available: https://www.chulavistaca.gov/home/showpublisheddocument/15586/636428706054030000. Accessed June 3, 2025.

City of Coronado. 2022 (March). City of Coronado Climate Action Plan. Available: https://commentcoronado.org/7712/widgets/23394/documents/29172. Accessed June 3, 2025.

City of Del Mar. 2016. *Climate Action Plan*. Available: https://www.delmar.ca.us/DocumentCenter/View/6101. Accessed June 3, 2025.

City of El Cajon. 2020. *El Cajon Sustainability Initiative: Policies to Reduce Greenhouse Gas Emissions*. Available:https://destinyhosted.com/agenda_publish.cfm?id=35225&mt=ALL&fp=swagit&get_month=8&get_year=2021&dsp=agm&seq=992&rev=0&ag=88&ln=4266&nseq=998&nrev=0&pseq=994&prev=0#. Accessed June 3, 2025.

City of Encinitas. 2020. *Climate Action Plan January 2018 Interim Revision November 2020*. Available: https://www.encinitasca.gov/home/showpublisheddocument/1698/637999947050530000. Accessed June 11, 2025.

City of Escondido. 2021 (March). *Final 2021 Climate Action Plan*. Available: https://www.escondido.gov/DocumentCenter/View/2226/Full-Document-PDF. Accessed June 3, 2025.

City of Imperial Beach. 2019. F*inal Draft Local Coastal Program Resilient Imperial Beach Climate Action Plan*. Available: https://ca-imperialbeach.civicplus.com/DocumentCenter/View/410/Approved-Climate-Action-Plan---Resolution-2019-8054-PDF. Accessed June 3, 2025.

City of La Mesa. 2024 (November). *City of La Mesa Climate Action Plan Update*. Available: https://www.cityoflamesa.us/DocumentCenter/View/23700/Climate-Action-Plan-Update-Nov-2024. Accessed June 3, 2025.

City of Lemon Grove. 2020 (January). *Climate Action Plan*. Available: https://www.lemongrove.ca.gov/media/vesngpxc/lg-cap_combined-2020-01-13.pdf. Accessed June 3, 2025.

City of National City. 2011 (May). *Climate Action Plan*. Available: https://www.ca-ilg.org/sites/main/files/file-attachments/climate_action_plan.pdf?1472518681. Accessed June 3, 2025.

City of Oceanside. 2019. *Climate Action Plan*. Available: https://www.ci.oceanside.ca.us/civicax/filebank/blobdload.aspx?blobid=48919. Accessed May 19, 2021.

City of San Diego. 2018. *North City Project Pure Water San Diego Program Final EIR*. Available: https://www.sandiego.gov/sites/default/files/north_city_project_final_eir-eis_-_part_1.pdf. Accessed June 20, 2025.

City of San Marcos. 2020. *Final Climate Action Plan*. Available: https://www.san-marcos.net/home/showpublisheddocument/25084/637435406644270000. Accessed June 3, 2025.

City of Santee. 2019 (December). *Sustainable Santee Plan*. Available: https://www.cityofsanteeca.gov/documents/planning-building/sustainable-santee-plan.pdf. Accessed June 3, 2025.

City of Solana Beach. 2024. *Climate Action Plan*. Available: https://www.cityofsolanabeach.org/sites/default/files/Solana%20Beach/Environmental%20Sustainability/SolanaBeachCAP.Final_10.29.24.pdf. Accessed June 3, 2025.

City of Vista. 2021 (October). *Climate Action Plan*. Available: https://www.cityofvista.com/home/showpublisheddocument/24574/637699911232170000. Accessed June 3, 2025.

Clean Energy Alliance. 2025. *Background*. Available: https://thecleanenergyalliance.org/background/. Accessed March 13, 2025.

DOI. See U.S. Department of the Interior.

EPA. *See* U.S. Environmental Protection Agency.

Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency. 2018. *California's Fourth Climate Change Assessment Statewide Summary Report.* Available: https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. Accessed April 17, 2025.

HSRA. *See* California High-Speed Rail Authority.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *California's Fourth Climate Change Assessment: San Diego Region Report*. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-009_SanDiego_ADA.pdf. Accessed July 26, 2025.

Kennedy, R. 2023. "California's Electricity Duck Curve Is Deepening." *PV magazine*. Available: https://pv-magazine-usa.com/2023/07/05/californias-electricity-duck-curve-is-deepening/#:~:text=The%20phenomenon%20of%20the%20%E2%80%9Cduck%20curve%E2%80%9D%20is,and%20valleys%20of%20this%20mismatch%20throughout%20a. Accessed July 28, 2025.

OPR et al. *See* Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency.

National Highway Traffic Safety Administration. 2024. USDOT Finalizes New Fuel Economy Standards for Model Years 2027-2031. Available: https://www.nhtsa.gov/press-releases/new-fuel-economy-standards-model-years-2027-2031. Accessed February 25, 2025.

Navy. *See* U.S. Department of the Navy.

NHTSA. See National Highway Traffic Safety Administration.

OPR. *See* Governor's Office of Planning and Research.

Pesantez, G., G. E. Wackerman, and A. S. Stillwell. 2023. *Analysis of single- and multi-family residential electricity consumption in a large urban environment: Evidence from Chicago, IL*. Available: https://doi.org/10.1016/j.scs.2022.104250. Accessed June 15, 2025.

Port of San Diego. 2013. *Port of San Diego Climate Action Plan.* Available: https://pantheonstorage.blob.core.windows.net/environment/Port-of-San-Diego-Climate-Action-Plan.pdf. Accessed June 3, 2025.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2014. *Regional Energy Strategy for the San Diego Region.* Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/environment/regional-energy-planning/regional-energy-strategy-2014-06-01.pdf. Accessed April 17, 2025.

———. 2024 (March). *San Diego Regional Priority Climate Action Plan*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/environment/climate/priority-climate-action-plan/pcap-san-diego-regional-pcap-2024.pdf. Accessed March 13, 2025.

———. *2022. Climate Action Plan.* Available:
https://www.sandiego.gov/sites/default/files/san_diegos_2022_climate_action_plan_0.pdf. Accessed June 3, 2025.

San Diego Community Power. 2025. About. Available: https://sdcommunitypower.org/about/about-sdcp/. Accessed February 24, 2025.

San Diego Gas & Electric. 2025. Our company. Available: https://www.sdge.com/more-information/our-company#:~:text=SDG&E%20is%20a%20regulated%20public,Diego%20and%20southern%20Orange%20counties. Accessed March 13, 2025.

San Diego Regional Airport Authority. 2020. *Sustainability Management Program*. Available: https://www.san.org/Portals/0/Documents/Environmental/2020_SAN_SMP_Summary.pdf?ver=2020-09-04-095753-707. Accessed June 3, 2025.

SDCP. *See* San Diego Community Power.

SDG&E. *See* San Diego Gas & Electric.

SCAG. *See* Southern California Association of Governments.

Southern California Association of Governments. 2024. *Program Environmental Impact Report for the Connect SoCal (2024-2050 Regional Transportation Plan/Sustainable Communities Strategy) 2024*. Available: https://scag.ca.gov/peir. Accessed January 2025.

United Nations. 2015. *Paris Agreement*. Available: https://unfccc.int/sites/default/files/english_paris_agreement.pdf. Accessed March 2019.

U.S. Bureau of Land Management. 2024. BLM Approves Camino Solar Project in Kern County. Available: https://www.blm.gov/press-release/blm-approves-camino-solar-project-kern-county. Accessed July 24, 2025.

———. 2025. Victory Pass Solar Project. Available: https://eplanning.blm.gov/eplanning-ui/project/1502795/510. Accessed July 24, 2025.

U.S. Department of the Interior. 2024. Interior Department Announces Full Operation of Palen Solar Project in California. Available: https://www.doi.gov/pressreleases/interior-department-announces-full-operation-palen-solar-project-california. Accessed July 24, 2025.

U.S. Department of the Navy. 2021. *Draft EIS for the Navy Old Town Campus Revitalization*. Available: https://navwar-revitalization.com/assets/uploads/47%20-%20Navy%20OTC%20Draft%20EIS%20MAY%202021.pdf. Accessed June 20, 2025.

U.S. Energy Information Administration. 2025a. State Profile and Energy Estimates. California. Profile Data. Consumption and Expenditures. Available: https://www.eia.gov/state/data.php?sid=CA. Accessed February 6, 2025.

———. 2025b. State Profile and Energy Estimates. California. Profile Data. Analysis. Available: https://www.eia.gov/state/analysis.php?sid=CA. Accessed February 6, 2025.

U.S. Environmental Protection Agency. 2016. *EPA and NHTSA Adopt Standards to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles for Model Year 2018 and Beyond*. Available: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100P7NL.PDF?Dockey=P100P7NL.PDF. Accessed February 6, 2025.

———. 2017. Climate Impacts on Energy. Available: https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-energy_.html. Accessed July 27, 2025.

———. 2023. "California State Motor Vehicle and Engine Pollution Control Standards; Heavy-Duty Vehicle and Engine Emission Warranty and Maintenance Provisions; Advanced Clean Trucks; Zero Emission Airport Shuttle; Zero- Emission Power Train Certification; Waiver of Preemption; Notice of Decision." *Federal Register* 88: 20688.

———. 2024. "California State Motor Vehicle Pollution Control Standards; Advanced Clean Fleets Regulation; Request for Waiver of Preemption and Authorization." *Federal Register* 89: 57120.

———. 2025. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act. Available: https://www.epa.gov/climate-change/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a. Accessed April 17, 2025.

Western Fire Chiefs Association. 2024. The Link Between Power Lines and Wildfires. Available: https://wfca.com/wildfire-articles/power-lines-and-wildfires/. Accessed June 16, 2025.

WFCA. See Western Fire Chiefs Association.

White House. 2025. Executive Order: Protecting American Energy from State Overreach. Available: https://www.whitehouse.gov/presidential-actions/2025/04/protecting-american-energy-from-state-overreach/. Accessed April 24, 2025.

Young, E., N. Hedge, A. Brakke, and S. Thailing. 2024. "San Diego's Changing Climate: A Regional Wake-Up Call." The San Diego Foundation. Available: https://www.sdfoundation.org/wp-content/uploads/2015/10/2009-Focus2050glossySDF-ClimateReport.pdf#:~:text=meet%20our%20energy%20needs.%20In%20the%20San,weather%20causing%20about%207%25%20of%20the%20increase. Accessed July 27, 2025.

USEIA. *See* U.S. Energy Information Administration.

Section 4.7 Geology, Soils, and Paleontological Resources

California Geologic Survey. 2018. *Earthquake Fault Zones, A Guide for Government Agencies, Property Owners/Developers and Geoscience Practitioners for Assessing Fault Rupture Hazards in California*. Special Publication 42.

California Department of Transportation and Secretariat of Infrastructure, Urban Development, and Territorial Reorganization. 2021 (February). *California-Baja California Border Master Plan*. Available: https://www.calibajabmp.org/reports. Accessed January 22, 2025.

California Department of Transportation. 2025. "Chapter 8: Paleontology." *Standard Environmental Reference, Environmental Handbook: Volume 1: Guidance for Compliance*.

Caltrans *See* California Department of Transportation.

Caltrans and SIDURT. *See* California Department of Transportation and Secretariat of Infrastructure, Urban Development, and Territorial Reorganization.

California High Speed Rail Authority. 2005. *Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System*. Available: https://hsr.ca.gov/programs/environmental-planning/program-eir-eis-documents-for-the-statewide-high-speed-rail-system-tier-1/final-program-environmental-impact-report-environmental-impact-statement-eir-eis-for-the-proposed-california-high-speed-train-system-2005/. Accessed March 2025.

City of Carlsbad. 2015a. *Carlsbad General Plan Open Space and Conservation Element.* Available: https://www.carlsbadca.gov/departments/community-development/planning/general-plan. Accessed January 17, 2025.

———. 2015b. *Carlsbad Local Coastal Program*. Available: https://www.carlsbadca.gov/home/showpublisheddocument/236/637425974089530000. Accessed February 2025.

———. 2024. *Carlsbad General Plan Safety Element.* Available: https://www.carlsbadca.gov/departments/community-development/planning/general-plan. Accessed January 17, 2025.

City of Chula Vista. 2021 (July 13). *Chula Vista Vision 2020 Environment Element.* Available" https://www.chulavistaca.gov/departments/development-services/planning/planning-digital-library/general-plan. Accessed January 17, 2025.

City of Coronado. 1994 (November 15). *City of Coronado General Plan Conservation Element.* Available: https://www.coronado.ca.us/269/Planning-Zoning. Accessed January 17, 2025.

———. 2005 (February 15). *City of Coronado General Plan Safety Element*. Available: https://www.coronado.ca.us/269/Planning-Zoning. Accessed January 17, 2025

City of Del Mar. 1985. *The Community Plan for the City of Del Mar, California*. Available: https://www.delmar.ca.us/164/City-Development-Documents. Accessed January 17, 2025.

———. 2024 (October 23). Del Mar Municipal Code. Available: https://library.municode.com/ca/del_mar/codes/municipal_code?nodeId=15557. Accessed January 17, 2025.

City of El Cajon. 2001. *General Plan 2000*. Available: https://www.elcajon.gov/your-government/departments/community-development/planning-division/adopted-planning-code-information. Accessed January 17, 20225.

———. 2021 (July). *City of El Cajon General Plan Safety Element*. Available: https://www.elcajon.gov/your-government/departments/community-development/planning-division/adopted-planning-code-information. Accessed January 17, 2025.

City of Encinitas. 1995. *City of Encinitas General Plan Public Safety Element*. Available: https://www.encinitasca.gov/government/general-plan. Accessed January 17, 2025.

———. 2011. *City of Encinitas General Plan Resource Management Element*. Available: https://www.encinitasca.gov/government/general-plan. Accessed January 17, 2025.

———. 2012. *Encinitas General Plan, Resource Management Element*. Available: https://portal.laserfiche.com/Portal/DocView.aspx?id=835470&repo=r-d8c5c08d. Accessed February 2025.

City of Escondido. 2012 (May). *Escondido General Plan*. Available: https://escondido.gov/1106/Policy-and-Regulatory-Documents. Accessed January 2025.

City of Imperial Beach. 2024 (June). *City of Imperial Beach General Plan & Local Coastal Plan*. Available: https://imperialbeachca.gov/260/Planning-Division. Accessed January 20, 2025.

City of La Mesa. 2013 (July 9). *2012 Centennial General Plan*. Available: https://www.cityoflamesa.us/953/General-Plan. Accessed January 17, 2025.

City of Lemon Grove. 1996 (October 22). *Lemon Grove General Plan*. Available: https://www.lemongrove.ca.gov/our-government/community-development/planning-zoning/. Accessed January 17, 2025.

City of National City. 2011 (June 7). *City of National City General Plan Open Space and Agriculture Element*. Available: https://www.nationalcityca.gov/government/community-development/planning. Accessed January 20, 2025.

———. 2024 (March 19). *City* of National City General Plan Safety Element. Available: https://www.nationalcityca.gov/government/community-development/planning. Accessed January 20, 2025.

City of Oceanside 2002. *General Plan Public Safety Element*. Available: https://www.ci.oceanside.ca.us/government/development-services/planning/general-plan. Accessed January 20, 2025.

———. 2024 (June). *General Plan Public Review Draft*. Available: https://onwardoceanside.com/project-documents. Accessed January 20, 2025.

City of Poway. 1991. *Poway Comprehensive Plan*. Available: https://poway.org/286/General-Plan. Accessed January 20, 2025.

———. 1996 (April). *Poway Subarea Habitat Conservation Plan/Natural Community Conservation Plan.* Available: https://poway.org/323/Planning-Reference-Documents. Accessed January 20, 2025.

———. 2002. *City of Poway General Plan.* Available: https://poway.org/286/General-Plan. Accessed September 2025.

City of San Diego. 2007. *Draft General Plan Final Program EIR*. Available: http://www.sandiego.gov/planning/genplan/pdf/peir/eir3p4geologicfinal.pdf. Accessed March 2025.

———. 2018. *Pure Water San Diego Program, North City Project Final EIR/EIS (PTS No. 499621).* Available: https://www.sandiego.gov/sites/default/files/north_city_project_final_eir-eis_part_3_-_compressed.pdf. Accessed March 2025.

———. 2024a (March 14). *Draft Program Environmental Impact Report for Blueprint SD Initiative, Hillcrest Focused Plan Amendment To The Uptown Community Plan, and University Community Plan and Local Coastal Program Update*.

———. 2024b (July). *City of San Diego General Plan.* Available: https://www.sandiego.gov/planning/work/general-plan#2024GenPlan. Accessed January 20, 2025.

City of San Marcos. 2012. *City of San Marcos General Plan.* Available: https://www.san-marcos.net/departments/development-services/general-plan. Accessed January 20, 2025.

City of Santee 2003. *General Plan.* Available at https://www.cityofsanteeca.gov/departments/city-clerk/document-central/planning-building/general-plan. Accessed January 20, 2025.

City of Solana Beach. 2014. *General Plan.* Available: https://www.cityofsolanabeach.org/en/government/departments/community-development/planning/general-plan. Accessed January 20, 2025.

———. 2019. *City of Solana Beach Local Costal Plan.* Available: https://www.cityofsolanabeach.org/en/government/departments/community-development/shoreline-management. Accessed January 20, 2025.

City of Vista. 2012 (February 28). *General Plan.* Available: https://www.vista.gov/departments/community-development/permits-forms/vista-general-plan-2030. Accessed January 20, 2025.

Colorado Geological Survey. 2025. Expansive Soil and Rock. Available: https://coloradogeologicalsurvey.org/hazards/expansive-soil-rock/. Accessed June 30, 2025.

County of San Diego. 1975. *County of San Diego General Plan.*

———. 2007. *Guidelines for Determining Significance: Unique Geology*. Department of Planning and Land Use and Department of Public Works.

———. 2009. *Guidelines for Determining Significance: Paleontological Resources*. Department of Planning and Land Use and Department of Public Works.

———. 2011a. *San Diego County General Plan Update.* Available: https://www.sandiegocounty.gov/content/sdc/pds/generalplan.html. Accessed January 2025.

———. 2011b. *San Diego County General Plan Update Final Environmental Impact Report*. Available: https://www.sandiegocounty.gov/content/sdc/pds/generalplan/GP-EIR.html#EIR. Accessed January 2025.

———. 2023. *Multi-Jurisdictional Hazard Mitigation Plan*.

———. 2025 (February 1). *Local Agency Management Program (LAMP) for Onsite Wastewater Treatment Systems.*

Congressional Research Service Report for Congress. 1998. Fossils on Federal Lands: Current Federal Laws and Regulations.

DeFrisco, M. 2021 (September 23). *California Geological Survey Fault Evaluation Report 265: The Rose Canyon Fault Zone in the Point Loma and La Jolla 7.5 Minute Quadrangles San Diego County, California*.

Federal Highway Administration. 1981 (January 29). "Rules and Regulations: Department of Transportation Federal Highway Administration 23 CFR Part 765—Archeological and Paleontological Salvage; Recision of Regulation." *Federal Register* 46(19): 9570.

FHWA. *See* Federal Highway Administration.

HSRA. *See* California High Speed Rail Authority.

Kuhn, G. G., and F. P. Shepard. 1984. *Sea Cliffs, Beaches, and Coastal Valleys of San Diego*. University of California Press. Berkeley, CA. Available: https://publishing.cdlib.org/ucpressebooks/view?docId=ft0h4nb01z&brand=ucpress. Accessed January 20, 2025.

Johnsson, M. 2003 (January 16). *Establishing Development Setbacks from Coastal Bluffs.* California Coastal Commission. Memorandum.

Jones, A. D., E. V. Wright, M. A. House, C. I. Heap, S. Newton, D. A. Brooks, and S. Skinner. 2025. "Chapter 15: Peninsular Ranges." In *Geology of California.* Academic Senate of California Community Colleges Open Educational Resource Initiative. Sacramento, CA.

Natural Resources Conservation Service. 2000 (March). *Erosion and Sedimentation on Construction Sites.* Urban Technical Note No. 1. Soil Quality Institute.

NRCS. *See* Natural Resources Conservation Service.

Olive, W. W., A. F. Chleborad, C. W. Frahme, J. Shlocker, R. R. Schneider, and R. I Schuster. 1989. *Swelling Clays Map of the Conterminous United States*. U.S. Geological Survey. Miscellaneous Investigations Series Map I-1940. U.S. Geological Survey, Supported by the National Cooperative Geologic Mapping Program. Available: https://ngmdb.usgs.gov/Prodesc/proddesc_10014.htm. Accessed January 20, 2025.

Peterson, G. L. 1977. "The Geologic Setting of San Diego and Vicinity." In *Geologic Hazards in San Diego,* edited by P. L. Abbot and J. K. Victoria. San Diego Society of Natural History.

Ryan, K. C., A. T. Jones, C. L. Koerner, and K. M. Lee. 2012. *Wildland Fire in Ecosystems: Effects of Fire on Cultural Resources and Archaeology.* Gen. Tech. Rep. RMRS-GTR-42-vol. 3. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Fort Collins, CO.

San Diego County Regional Airport Authority. 2020. *Airport Development Plan Final Environmental Impact Report*. Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245314-adp-final-eir. Accessed March 2025.

San Diego Natural History Museum. 2025. Search of the online paleontological collection database. Accessed March 2025.

SCAG *See* Southern California Association of Governments.

SDCRAA. *See* San Diego County Regional Airport Authority.

Society of Vertebrate Paleontology. 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources.* Available: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf. Accessed March 2025.

Southern California Association of Governments. 2024. *Final Program Environmental Impact Report For Connect SoCal 2024 (2024–2050 Regional Transportation Plan/Sustainable Communities Strategy).* Available: https://scag.ca.gov/peir. Accessed January 22, 2025.

State Water Resources Control Board. 2022. Construction Stormwater General Permit Order 2022-0057-DWQ. Available: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html. Accessed January 20, 2025.

SVP. *See* Society of Vertebrate Paleontology.

SWRCB *See* State Water Resources Control Board.

University of California Museum of Paleontology. 2025. Search of the online paleontological locality database. Accessed March 2025.

U.S. Department of the Navy. 2021. *Navy Old Town Campus Revitalization Draft Environmental Impact Statement*. Available: https://navwar-revitalization.com/draft-eis/. Accessed March 2025.

U.S. Geological Survey. 2005. *Southern California Landslides—An Overview*.

———. 2016 (November 30). The San Andreas Fault. Available: https://pubs.usgs.gov/gip/earthq3/safaultgip.html. Accessed January 20, 2025.

USGS *See* U. S. Geological Survey.

Section 4.8 Greenhouse Gas Emissions and Climate Change

CalEPA et al. *See* California Environmental Protection Agency, California Natural Resources Agency, California Department of Food and Agriculture, California Air Resources Board, and California Strategic Growth Council.

California Air Pollution Control Officers Association. 2024. *Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. Available: https://www.caleemod.com/handbook/index.html. Accessed June 13, 2025.

California Air Resources Board. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. Available: https://ww3.arb.ca.gov/sites/default/files/classic/diesel/documents/rrpfinal.pdf. Accessed April 15, 2025.

———. 2008. California's Diesel Risk Reduction Plan: Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines. Available at: https://www.arb.ca.gov/diesel/documents/rmg.htm. Accessed June 2025.

———. 2008. *Climate Change Scoping Plan*. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed February 25, 2025.

———. 2017b. *Final Short-Lived Climate Pollutant Reduction Strategy*. Available: https://ww2.arb.ca.gov/resources/documents/slcp-strategy-final. Accessed February 25, 2025.

———. 2018a. *Updated Final Staff Report Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets*. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/SB375_Updated_Final_Target_Staff_Report_2018.pdf. Accessed July 8, 2025.

———. 2018b. *SB 375 Regional Greenhouse Gas Emissions Reduction Targets*. Approved by the California Air Resources Board March 22, 2018. Available: https://ww2.arb.ca.gov/sites/default/files/2020-06/SB375_Final_Targets_2018.pdf. Accessed February 25, 2025.

———. 2019a. *Final Sustainable Communities Strategy Program and Evaluation Guidelines*. Available: https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Report.pdf. Accessed February 25, 2025.

———. 2019b. *Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms*. Available: https://ww2.arb.ca.gov/sites/default/files/2021-02/ct_reg_unofficial.pdf. Accessed April 22, 2025.

———. 2020. LCFS Basics. Available: https://ww2.arb.ca.gov/resources/documents/lcfs-basics. Accessed February 25, 2025.

———. 2021a. 2020 Mobile Source Strategy. Available: https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy. Accessed February 25, 2025.

———. 2021b. *Fact Sheet: Advanced Clean Trucks Accelerating Zero-Emission Truck Markets*. Available: 200625factsheet_ADA.pdf. Accessed February 25, 2025.

———. 2022a. *Final 2022 Scoping Plan Update and Appendices*. Available https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents. Accessed February 25, 2025.

———. 2022b. CARB. 2022. *2022 Progress Report: California's Sustainable Communities and Climate Protection Act*. Available: https://ww2.arb.ca.gov/sites/default/files/2023-05/2022%20SB%20150%20CA%20Sustainable%20Communities%20Report%20ADA.pdf. Accessed April 17, 2025.

———. 2023. Overview: Diesel Exhaust and Health. Available: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health#:~:text=CARB%20anticipates%20that%20newly%20adopted,and%20non%2Dcancer%20health%20effects. Accessed June 13, 2025.

———. 2024a. *2000-2022 GHG Inventory* (2024 Edition). Available: https://ww2.arb.ca.gov/ghg-inventory-data. Accessed February 25, 2025.

———. 2024b. *The State of California's Priority Climate Action Plan*. Available: https://ww2.arb.ca.gov/sites/default/files/2024-03/California%20CPRG%20Priority%20Climate%20Action%20Plan%202024%20March%201_0.pdf. Accessed May 22, 2025.

———. 2024c. SB 375 Regional Targets. Available: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/sb-375-regional-targets. Accessed June 13, 2025.

———. 2025a. Short Lived Climate Pollutants. Available: https://ww2.arb.ca.gov/our-work/programs/slcp/about#:~:text=Fluorinated%20gases%E2%80%94especially%20HFCs%E2%80%94are,%2C%20residential%2C%20and%20transportation%20sectors. Accessed February 25, 2025.

———. 2025b GHGs Descriptions and Sources in California. Available: https://ww2.arb.ca.gov/ghg-descriptions-sources. Accessed February 25, 2025.

———. 2025e. *CARB Receives Direction on Finalizing Low Carbon Fuel Standard Amendments*. Available: https://ww2.arb.ca.gov/news/carb-receives-direction-finalizing-low-carbon-fuel-standard-amendments#:~:text=On%20November%208%2C%202024%2C%20the,of%20zero%2Demission%20infrastructure%20and. Accessed April 17, 2025.

———. 2025c. *Notice to the U.S. Environmental Protection Agency of California Air Resources Board's Withdrawal of the Advanced Clean Fleets Waiver Request*. Available: https://www.epa.gov/system/files/documents/2025-01/ca-acf-carb-withdrawal-ltr-2025-1-13.pdf. Accessed March 17, 2025.

———. 2025d. *Notice to the U.S. Environmental Protection Agency of California Air Resources Board's Withdrawal of the In-Use Locomotive Regulation Request for Authorization*. Available: https://www.epa.gov/system/files/documents/2025-01/ca-loco-carb-withdrawal-loco-ltr-2025-1-13.pdf. Accessed August 11, 2025.

———. 2025e. Advanced Clean Fleets Regulation. Available: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets. Accessed March 17, 2025. California Energy Commission. 2025. *2024-2025 Investment Plan Update for Clean Transportation Program Commission Report.* Available: https://efiling.energy.ca.gov/GetDocument.aspx?tn=261539. Accessed March 17, 2025.

———. 2025f. CARB Announces Latest LCFS Updates Will Be Implemented Next Month. Available: https://ww2.arb.ca.gov/news/carb-announces-latest-lcfs-updates-will-be-implemented-next-month. Accessed August 11, 2025.

California Energy Commission. 2021. *2022 Building Energy Efficiency Standards Summary*. Available: https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf. Accessed March 17, 2025.

———. 2024a. *2024 Integrated Energy Policy Report Update*. Available: https://www.energy.ca.gov/publications/2024/2024-integrated-energy-policy-report-update. Accessed March 17, 2025

———. 2024b. Energy Commission Adopts Updated Building Standards Expanding Requirements for Heat Pumps and Electric-Ready Buildings. Available: https://www.energy.ca.gov/news/2024-09/energy-commission-adopts-updated-building-standards-expanding-requirements-heat. Accessed March 17, 2025.

———. 2024c. 2022 Power Content Label – San Diego Gas & Electric. Available: https://www.energy.ca.gov/filebrowser/download/6064. Accessed March 17, 2025.

California Energy Demand. 2023 – 2040. Available: https://www.energy.ca.gov/data-reports/reports/2023-integrated-energy-policy-report/2023-iepr-workshops-notices-and-2. Accessed July 8, 2025.

California Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency. 2018. *California's Fourth Climate Change Assessment: San Diego Report*. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-009_SanDiego_ADA.pdf

California Natural Resources Agency. 2018. *Safeguarding California Plan: 2018 Update*. Available: http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf. Accessed March 17, 2025.

———. 2022. *Natural Working Lands Climate Smart Strategy.* Available: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Expanding-Nature-Based-Solutions/CNRA-Report-2022---Final_Accessible.pdf. Accessed April 21, 2025.

California State Transportation Agency. 2025. *CAPTI 2.0: Climate Action Plan for Transportation Infrastructure*. Available: https://calsta.ca.gov/-/media/calsta-media/documents/capti-2025-a11y.pdf. Accessed March 17, 2025.

CalSTA. *See* California State Transportation Agency.

City of Carlsbad. 2024 (November). *City of Carlsbad Climate Action Plan Update.* Available: https://www.carlsbadca.gov/home/showpublisheddocument/19484/638717809348600000. Accessed June 3, 2025.

CARB. *See* California Air Resources Board.

Center for Resource Efficient Communities and The Center for the Built Environment. 2021. *Zero-Carbon Buildings in California: A Feasibility Study*. Available: https://www.researchgate.net/profile/Carrie-Brown-12/publication/359931845_Zero-Carbon_Buildings_in_California_A_Feasibility_Study/links/649caec295bbbe0c6efda59e/Zero-Carbon-Buildings-in-California-A-Feasibility-Study.pdf. Accessed June 13, 2025.

City of Chula Vista. 2017. *Climate Action Plan.* Adopted by City Council in September 2017. Available: https://www.chulavistaca.gov/home/showpublisheddocument/15586/636428706054030000. Accessed June 3, 2025.

City of Coronado. 2022 (March). *City of Coronado Climate Action Plan*. Available: https://commentcoronado.org/7712/widgets/23394/documents/29172. Accessed June 3, 2025.Clean Energy Alliance. n.d. Your Options. Available: https://thecleanenergyalliance.org/your-options/. Accessed March 17, 2025.

City of Del Mar. 2016. *Climate Action Plan.* Available: https://www.delmar.ca.us/DocumentCenter/View/6101. Accessed June 3, 2025.

City of El Cajon. 2020. *El Cajon Sustainability Initiative: Policies to Reduce Greenhouse Gas Emissions.* Available: https://destinyhosted.com/agenda_publish.cfm?id=35225&mt=ALL&fp=swagit&get_month=8&get_year=2021&dsp=agm&seq=992&rev=0&ag=88&ln=4266&nseq=998&nrev=0&pseq=994&prev=0#. Accessed June 3, 2025.

City of Encinitas. 2020. *Climate Action Plan January 2018 Interim Revision November 2020*. Available: https://www.encinitasca.gov/home/showpublisheddocument/1698/637999947050530000. Accessed June 11, 2025.

City of Escondido. 2021 (March). *Final 2021 Climate Action Plan*. Available: https://www.escondido.gov/DocumentCenter/View/2226/Full-Document-PDF. Accessed June 3, 2025.

City of Imperial Beach. 2019. *Final Draft Local Coastal Program Resilient Imperial Beach Climate Action Plan*. Available: https://ca-imperialbeach.civicplus.com/DocumentCenter/View/410/Approved-Climate-Action-Plan---Resolution-2019-8054-PDF. Accessed June 3, 2025.

City of La Mesa. 2024 (November). *City of La Mesa Climate Action Plan Update*. Available: https://www.cityoflamesa.us/DocumentCenter/View/23700/Climate-Action-Plan-Update-Nov-2024. Accessed June 3, 2025.

City of Lemon Grove. 2020 (January). *Climate Action Plan.* Available: https://www.lemongrove.ca.gov/media/vesngpxc/lg-cap_combined-2020-01-13.pdf. Accessed June 3, 2025.

City of National City. 2011 (May). *Climate Action Plan.* Available: https://www.ca-ilg.org/sites/main/files/file-attachments/climate_action_plan.pdf?1472518681. Accessed June 3, 2025.

City of Oceanside. 2019. *Climate Action Plan*. Available: https://www.ci.oceanside.ca.us/civicax/filebank/blobdload.aspx?blobid=48919. Accessed May 19, 2021.

City of San Diego. 2022. *Climate Action Plan.* Available: https://www.sandiego.gov/sites/default/files/san_diegos_2022_climate_action_plan_0.pdf. Accessed June 3, 2025.

City of San Marcos. 2020. *Final Climate Action Plan*. Available: https://www.san-marcos.net/home/showpublisheddocument/25084/637435406644270000. Accessed June 3, 2025.

City of Santee. 2019 (December). *Sustainable Santee Plan*. Available: https://www.cityofsanteeca.gov/documents/planning-building/sustainable-santee-plan.pdf. Accessed June 3, 2025.

City of Solana Beach. 2024. *Climate Action Plan.* Available: https://www.cityofsolanabeach.org/sites/default/files/Solana%20Beach/Environmental%20Sustainability/SolanaBeachCAP.Final_10.29.24.pdf. Accessed June 3, 2025.

City of Vista. 2021 (October). *Climate Action Plan*. Available: https://www.cityofvista.com/home/showpublisheddocument/24574/637699911232170000. Accessed June 3, 2025.

County of San Diego. 2022. *San Diego Regional Decarbonization Framework Technical Report*. Available: https://www.sandiegocounty.gov/content/dam/sdc/lueg/regional-decarb-frameworkfiles/RDF_Technical_Report_FINAL_2022.pdf. Accessed June 13, 2025.

———. 2024. *Final 2024 Climate Action Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/sustainability/docs/final2024cap/Final2024CAP.pdf. Accessed July 30, 2025.

EPA. See U.S. Environmental Protection Agency.

European Commission Joint Research Centre. 2018. *Toward Climate Change Impact: Vectors Carrying Viral Infection. What We Should Know.*

Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA.* Available: https://lci.ca.gov/docs/20180416-743_Technical_Advisory_4.16.18.pdf. Accessed March 17, 2025.

Greenhouse Gas Protocol. 2024. *IPCC Global Warming Potential Values.* Available: https://ghgprotocol.org/sites/default/files/2024-08/Global-Warming-Potential-Values%20%28August%202024%29.pdf. Accessed February 25, 2025.

ICLEI. *See* Local Governments for Sustainability.

International Panel on Climate Change. 2013. *Climate Change 2013: The Physical Science Basis*. Available: https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_all_final.pdf. Accessed February 25, 2025.

———. 2014. *Climate Change Synthesis Report*. Available: https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf. Accessed February 25, 2025.

———. 2023a. Climate Change 2023 Synthesis Report Summary for Policymakers. Available: https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf. Accessed April 18, 2025.

———. 2023b. Climate Change 2023 Synthesis Report. Available: https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf. Accessed April 18, 2025.

IPCC. *See* International Panel on Climate Change.

Legislative Analyst's Office. 2023. *Assessing California's Climate Policies: The 2022 Scoping Plan Update*. Available: https://lao.ca.gov/reports/2023/4656/2022-Scoping-Plan-Update-010423.pdf. Accessed May 22, 2025.

Lister, B. C., and A. Garcia. "Climate-Driven Declines in Arthropod Abundance Restructure a Rainforest Food Web." *PNAS* 115(44): E-10397–E10406.

Local Governments for Sustainability. 2019. U.S. Community Protocol for Accounting and Reporting Greenhouse Gase Emissions. Available: https://iclei.org/e-library/u-s-community-protocol-for-accounting-and-reporting-of-greenhouse-gas-emissions/. Accessed June 13, 2025.

National Highway Traffic Safety Administration. 2024. USDOT Finalizes New Fuel Economy Standards for Model Years 2027-2031. Available: https://www.nhtsa.gov/press-releases/new-fuel-economy-standards-model-years-2027-2031. Accessed February 25, 2025.

National Oceanic and Atmospheric Administration. 2025a. Trends in CO_2, CH_4, N_{2O}, SF_6. Available: https://gml.noaa.gov/ccgg/trends/global.html. Accessed February 25, 2025.

———. 2025b. 2024 Was the World's Warmest Year on Record. Available: https://www.noaa.gov/news/2024-was-worlds-warmest-year-on-recordAccessed April 18, 2025.

———. 2025c. The Weather and Climate Influences on the January 2025 Fires around Los Angeles. Authored by Rebecca Lindsey. Available: https://www.climate.gov/news-features/event-tracker/weather-and-climate-influences-january-2025-fires-around-los-angeles#:~:text=On%20January%207%2C%202025%2C%20a,and%20shrub%2Ddominated%20chaparral%20landscapes. Accessed April 18, 2025.

NHTSA. *See* National Highway Traffic Safety Administration.

NOAA. *See* National Oceanic and Atmospheric Administration.

OPR. Now known as Governor's Office of Land Use and Climate Innovation. *See* Governor's Office of Planning and Research.

Port of San Diego. 2013. *Port of San Diego Climate Action Plan*. Available: https://pantheonstorage.blob.core.windows.net/environment/Port-of-San-Diego-Climate-Action-Plan.pdf. Accessed June 3, 2025.

SANDAG. *See* San Diego Association of Governments.

San Diego Air Pollution Control District. 2022. *2022 Regional Air Quality Strategy*. Available: https://www.sdapcd.org/content/dam/sdapcd/documents/grants/planning/Att.%20A%20-%202022%20RAQS.pdf. Accessed April 22, 2025.

San Diego Association of Governments. 2014. *Regional Energy Strategy.* Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/environment/regional-energy-planning/regional-energy-strategy-goals-summary-2014-06-01.pdf. Accessed June 13, 2025.

———. 2018. *Infrastructure Development Plan for the LOSSAN Rail Corridor in San Diego County.* Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/featured-projects/lossan-rail-improvements-del-mar-bluffs/infrastructure-development-plan-for-the-lossan-rail-corridor-in-san-diego-county-2018-06-07.pdf. Accessed June 9, 2025.

———. 2023. *Regional Resilience Framework.* Available: https://www.sandag.org/-/media/SANDAG/Documents/ZIP/projects-and-programs/regional-resilience-framework-2024-05-06.zip. Accessed April 22, 2025.

———. 2024. *Zero Emission Vehicle Incentive Program Implementation Plan*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/innovative-mobility/clean-transportation/incentive-programs/zev-incentive-program-implementation-plan-2025-4-23.pdf. Accessed August 14, 2025.

———. 2025a. Climate Action Planning Framework for Local Governments. Available: https://www.sandag.org/projects-and-programs/environment/climate/climate-action-planning-framework-local-government. Accessed March 17, 2025.

———. 2025b. Incentive Programs. Available: https://www.sandag.org/projects-and-programs/innovative-mobility/clean-transportation/incentive-programs. Accessed March 17, 2025.

———. 2025c. Climate Action Data Portal. Available: https://opendata.sandag.org/stories/s/pd9g-cay7/. Accessed August 8, 2025.

———. 2025d. Fiscal Year 2026 SANDAG Program Budget. Available: https://www.sandag.org/funding/-/media/59AEA766FFBA4339B062FB58B3F57A58.ashx. Accessed June 12, 2025.

San Diego County. 2022. *San Diego Regional Decarbonization Framework.* Available: https://www.sandiegocounty.gov/content/dam/sdc/lueg/regional-decarb-frameworkfiles/RDF_Technical_Report_FINAL_2022.pdf. Accessed May 22, 2025.

———. 2024. *Guidelines for Determining Significance: Climate Change*. Available: https://www.sandiegocounty.gov/content/dam/sdc/sustainability/docs/final2024cap/Final2024CAP_A-8_CAP-Consistency-Checklist_Guidelines-for-Determining-Significance.pdf. Accessed June 12, 2025.

San Diego County Regional Airport Authority. 2020 (June). *Sustainability Management Program*. Available: https://www.san.org/Portals/0/Documents/Environmental/2020_SAN_SMP_Summary.pdf?ver=2020-09-04-095753-707. Accessed June 3, 2025.

SANDAG. See San Diego Association of Governments.

SDAPCD. *See* San Diego Air Pollution Control District.

SDCP. *See* San Diego Community Power.

United Nations. 2015. *Paris Agreement.* Available: https://unfccc.int/sites/default/files/english_paris_agreement.pdf. Accessed March 2019.

U.S. Environmental Protection Agency. 2004. *Control of Emissions of Air Pollution From Nonroad Diesel Engines and Fuel*. Available: https://www.gpo.gov/fdsys/pkg/FR-2004-06-29/pdf/04-11293.pdf. Accessed March 19, 2025. Accessed April 18. 2025.

———. 2016. *EPA and NHTSA Adopt Standards to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles for Model Year 2018 and Beyond.* Available: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100P7NL.PDF?Dockey=P100P7NL.PDF. Accessed February 25, 2025.

———. 2023. *California State Motor Vehicle and Engine Pollution Control Standards; Heavy-Duty Vehicle and Engine Emission Warranty and Maintenance Provisions; Advanced Clean Trucks; Zero Emission Airport Shuttle; Zero- Emission Power Train Certification; Waiver of Preemption; Notice of Decision*. Federal Register 88: 20688.

———. 2024a. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022*. Available: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022. Accessed June 13, 2025.

———. 2024b. *2024-2027 Climate Adaptation Plan*. Available: https://www.epa.gov/system/files/documents/2024-06/epas-2024-2027-climate-adaptation-plan-508-compliant.pdf. Accessed April 18, 2025.

———. 2025a. Overview of Greenhouse Gases. Available: https://www.epa.gov/ghgemissions/overview-greenhouse-gases. Accessed February 25, 2025.

———. 2025b. Proposed Rule: Reconsideration of 2009 Endangerment Finding and Greenhouse Gas Vehicle Standards. Available: https://www.epa.gov/regulations-emissions-vehicles-and-engines/proposed-rule-reconsideration-2009-endangerment-finding. Accessed July 30, 2025.

Section 4.9 Hazards and Hazardous Materials

CalEPA. *See* California Environmental Protection Agency.

California Department of Resource Recycling and Recovery. 2025. Solid Waste Information System Database. Available: https://www2.calrecycle.ca.gov/SolidWaste/Site/DataExport. Retrieved January 2, 2025.

California Department of Toxic Substances Control. 2019. Managing Hazardous Waste. Available: https://dtsc.ca.gov/california-accidental-release-prevention-program-calarp-fact-sheet/#:~:text=Program%20Overview,Management%20Program)%20into%20state%20regulations. Accessed May 26, 2025.

———. 2025a. Registered Hazardous Waste Transporter Database. Available: https://hwts.dtsc.ca.gov/transporters/. Retrieved January 2, 2025.

———. 2025b. Hazardous Waste and Substances Site List (Cortese). Available: https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,F

UDS&status=ACT,BKLG,COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29. Accessed January 2, 2025.

———. 2025c. Enforcement and Emergency Response Division's Core Activities. Available: https://dtsc.ca.gov/enforcements-core-activities/. Accessed January 3, 2025.

———. 2025d. DTSC Toxicity Criteria Rule for Human Health Risk Assessments. Available: https://dtsc.ca.gov/toxicity-criteria-rule-for-human-health-risk-assessments-faq/#easy-faq-348250. Accessed May 27, 2025.

———. 2025e. Update on Phase I Environmental Site Assessments for School Sites; All Appropriate Inquiries; ASTM E-1527-05. Available: https://dtsc.ca.gov/environmental-site-assessments-fs/#:~:text=California%20school%20districts%20are%20required,or%20expanding%20school%20properties%20that. Accessed January 3, 2025.

California Department of Transportation. 2011 (October). *California Airport Land Use Planning Handbook*. Division of Aeronautics. Available: https://dot-drp.dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf. Accessed January 3, 2025.

———. 2021 (February). *California-Baja California 2021 Border Master Plan.* District 11. Prepared by SANDAG Service Bureau and IBI Group Team. Available: https://sandagbmpazurestorage.blob.core.windows.net/bmp-docs/2021-BMP_Final_Report_03152021.pdf. Accessed February 4, 2025.

———. 2025. Aerially Deposited Lead (ADL). Available: https://dot.ca.gov/programs/environmental-analysis/hazardous-waste/contaminants-waste/aerially-deposited-lead. Accessed May 30, 2025.

California Environmental Protection Agency. 2016. *Sites Identified with Waste Constituents Above Hazardous Waste Levels Outside the Waste Management Unit*. Available: https://calepa.ca.gov/wp-content/uploads/2016/10/SiteCleanup-CorteseList-CurrentList.pdf. Accessed May 26, 2025.

———. 2025a. Cortese List Data Resources. Available: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed January 2, 2025.

———. 2025b. Cortese List: Section 65962.5(a). Available: https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/. Accessed May 26, 2025.

———. 2025c. List of "Active" CDO and CAO from Water Board. Available: https://calepa.ca.gov/sitecleanup/corteselist/. Retrieved January 2, 2025.

———. 2025d. More About the Unified Program. Available: https://calepa.ca.gov/cupa/about/. Accessed January 3, 2025.

———. 2025e. California Accidental Release Program Frequently Asked Questions. Available: https://calepa.ca.gov/california-accidental-release-prevention/california-accidental-release-prevention-program-faq/. Accessed January 3, 2025.

———. 2025f. Hazardous Materials Business Plan Frequently Asked Questions. Available: https://calepa.ca.gov/hazardous-materials-business-plan-program/hazardous-materials-business-plan-faq/. Accessed January 3, 2025.

California Office of Emergency Services. 2023a. *California State Emergency Plan Coordinating Draft.* Available: https://www.caloes.ca.gov/wp-content/uploads/Preparedness/Documents/2023-SEP-Draft-Public-Review.pdf. Accessed January 3, 2025.

———. 2023b. *California State Hazard Mitigation Plan.* Volume 1. Available: https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/2023-California-SHMP_Volume-1_11.10.2023.pdf. Accessed January 3, 2025.

California Office of Environmental Health Hazard Assessment. 2025. California Human Health Screening Levels (CHHSLs). Available: https://oehha.ca.gov/risk-assessment/california-human-health-screening-levels-chhsls. Accessed January 3, 2025.

Cal OES. *See* California Office of Emergency Services.

CalRecycle. *See* California Department of Resource Recycling and Recovery.

Caltrans. *See* California Department of Transportation.

County of San Diego. 2007a (July 30). *County of San Diego Guidelines for Determining Significance, Hazardous Materials and Existing Conditions*. Land Use and Environment Group. Department of Planning and Land Use. Department of Public Works. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/docs/Hazardous_Guidelines.pdf. Accessed January 2, 2025.

———. 2007b. (July 30). *County of San Diego Guidelines for Determining Significance, Airport Hazards.* Land Use and Environment Group. Department of Planning and Land Use. Department of Public Works. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/ProjectPlanning/docs/Airport_Guidelines.pdf. Accessed March 3, 2025.

———. 2020. *2020 San Diego County Operational Area Hazardous Materials Area Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/deh/hmd/pdf/2020%20HM%20Area%20Plan.pdf. Accessed January 3, 2025.

———. 2025a. Certified Unified Program Agency (CUPA). Available: https://www.sandiegocounty.gov/content/sdc/deh/hazmat/hmd_cupa.html. Accessed January 3, 2025.

———. 2025b. *Hazardous Materials Business Plan (HMPB)*. Department of Environmental Health and Quality.

———. 2025c. UST Plan Check. Available: https://www.sandiegocounty.gov/content/sdc/deh/hazmat/ust/hmd_ust_construction.html#:~:text=The%20San%20Diego%20County%20Department,and%20removal%20of%20USTs%20in. Accessed May 27, 2025.

———. 2025d. Site Assessment and Mitigation Program. Department of Environmental Health and Quality. Available: https://www.sandiegocounty.gov/content/sdc/deh/hazmat/sam_homepage.html#:~:text=The%20primary%20goal%20of%20the,Code%20of%20Regulations%20(CCR). Accessed January 3, 2025.

———. 2025e. Voluntary Assistance Program. Department of Environmental Health and Quality Available: https://www.sandiegocounty.gov/content/sdc/deh/hazmat/sam_voluntary_assistance_program.html. Accessed January 3, 2025.

———. 2025f. Underground Storage Tanks (UST). Department of Environmental Health and Quality. Available: https://www.sandiegocounty.gov/content/sdc/deh/hazmat/ust.html. Accessed January 3, 2025.

———. 2025g. Office of Emergency Services. Available: https://www.sandiegocounty.gov/content/sdc/oes.html. Accessed January 3, 2025.

———. 2025h. Unified Disaster Council. Office of Emergency Services. Available: https://www.sandiegocounty.gov/content/sdc/oes/emergency_management/oes_jl_UDC.html. Accessed January 3, 2025.

———. 2025i. Multi-Jurisdictional Hazard Mitigation Plan. Office of Emergency Services. Available: https://www.sandiegocounty.gov/content/sdc/oes/emergency_management/oes_jl_mitplan.html. Accessed January 3, 2025.

DOI. *See* U.S. Department of the Interior.

DHS, FEMA, and OES. *See* U.S. Department of Homeland Security, Federal Emergency Management Agency Region IX, and Governor's Office of Emergency Services.

DTSC. *See* California Department of Toxic Substances Control.

Ed-Data. *See* Education Data Partnership.

Education Data Partnership. 2025. San Diego County. Available: https://www.ed-data.org/county/San-Diego#wheel-38. Retrieved January 2, 2025.

EPA. *See* U.S. Environmental Protection Agency.

Federal Emergency Management Agency. 2023 (April). Mitigation Planning and Grants. Available: https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning/requirements#:~:text=Hazard%20mitigation%20plans%20need%20to,five%20years%20to%20maintain%20eligibility. Accessed June 4, 2025.

Federal Motor Carrier Safety Administration. 2024 (July). How to Comply with Federal Hazardous Material Regulations. Available: https://www.fmcsa.dot.gov/regulations/hazardous-materials/how-comply-federal-hazardous-materials-regulations. Accessed January 3, 2025.

FEMA. *See* Federal Emergency Management Agency.

FMCSA. *See* Federal Motor Carrier Safety Administration.

Governor's Office of Planning and Research. 2018. *Planning and Investing for a Resilient California: A Guidebook for State Agencies.* Available: https://lci.ca.gov/climate/docs/20180313-Building_a_Resilient_CA.pdf. Accessed May 29, 2025.

Hristov, H., N. Butler, P. Painter, and D. Siegel. 2005. *Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.* Revised January 2005. Originally published November 2004. Integrated Risk Assessment Section. California Environmental Protection Agency, California Office of Environmental Health Hazard Assessment. Available: https://oehha.ca.gov/media/downloads/crnr/screenreport010405.pdf. Accessed January 3, 2025.

Mell, H. K., S. Mumma, and B. Hiestand. 2017 (October). *Emergency Medical Services Response Times in Rural, Suburban, and Urban Areas*. Retrieved from: https://jamanetwork.com/journals/jamasurgery/fullarticle/2643992. Accessed March 24, 2025.

Naval Facilities Engineering Command. 2014 (December). *A Guide to the Air Installations Compatible Use Zones*. Available: https://cnrse.cnic.navy.mil/Portals/83/cnrse/Documents/AICUZ/A%20Guide%20to%20the%20AICUZ%20Program-December%202014.pdf?ver=Qlh7nwFsi1qhr8ez_B7eiQ%3d%3d. Accessed January 3, 2025.

NAVFAC. *See* Naval Facilities Engineering Command.

OEHHA. *See* California Office of Environmental Health Hazard Assessment.

OPR. *See* Governor's Office of Planning and Research.

PHMSA. *See* Pipeline and Hazardous Materials Safety Administration.

Pipeline and Hazardous Materials Safety Administration. 2023 (February). *Office of Hazardous Materials Safety 2019–2020 Biennial Report.* Available: https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2023-06/2019-2020-Biennial-Report-to-the-Public.pdf. Accessed January 2, 2025.

———. 2025. National Pipeline Mapping System Public Viewer. Available: https://pvnpms.phmsa.dot.gov/PublicViewer/. Retrieved January 2, 2025.

San Diego Association of Governments. 2021a (July). Regional ITS Architecture. Available: https://its-arch.sandag.org/. Accessed May 30, 2025.

———. 2021b (July). PS13-Regional Evacuation and Reentry Management. Available: https://its-arch.sandag.org/html/mp/mp10160.htm. Accessed May 30, 2025.

———. 2021c (July). PS14-Regional Disaster Traveler Information. Available: https://its-arch.sandag.org/html/mp/mp10161.htm. Accessed May 30, 2025.

———. 2025. SANDAG Open Data Portal. Retrieved from: https://opendata.sandag.org/. Accessed January 2025.

San Diego County Operational Area. 2012. Policy #8-A. Available: https://sdoparea.org/wp-content/uploads/documents/8A%20WUI%20-%20Wildland%20Urban%20Interface.pdf. Accessed June 3, 2025.

———. 2022. Policy #8-B. Available: https://sdoparea.org/wp-content/uploads/documents/8B%20Evacuation%20and%20Repopulation.pdf. Accessed June 3, 2025.

San Diego County Regional Airport Authority. 2025a. Airport Land Use Compatibility. Available: https://www.san.org/Airport-Projects/Land-Use-Compatibility/ALUC-Resources. Retrieved January 2, 2025.

———. 2025b. Airport Authority. Available: https://www.san.org/airport-authority. Accessed January 3, 2025.

San Diego Gas & Electric. n.d. *High Pressure Gas Pipeline Map.* Available: https://www.sdge.com/safety/gas-safety/pipeline-map. Accessed January 2, 2025.

San Diego Geographic Information Source. 2025. San Diego Regional Data Warehouse. Retrieved from: https://geo.sandag.org/portal/apps/experiencebuilder/experience/?id=fad9e9c038c84f799b5378e4cc3ed068&page=Home#data_s=id%3AdataSource_1-0%3A162. Accessed January 2025.

SANDAG. *See* San Diego Association of Governments.

SanGIS. *See* San Diego Geographic Information Source.

SCAG. *See* Southern California Association of Governments.

SDCOA. *See* San Diego County Operational Area.

SDCRAA. *See* San Diego County Regional Airport Authority.

SDGE. *See* San Diego Gas & Electric.

State of California. 2025. California Climate Adaptation Strategy, San Diego. Available: https://climateresilience.ca.gov/regions/san-diego.html. Accessed January 2, 2025.

State Water Resources Control Board. 2025. GeoTracker. Retrieved from: https://geotracker.waterboards.ca.gov/search?CMD=search&case_number=&business_name=&main_street_name=&city=&zip=&county=&SITE_TYPE=LUFT&oilfield=&STATUS=&BRANCH=&MASTER_BASE=&Search=Search. Retrieved June 11, 2025.

Southern California Association of Governments. 2024. *Certified Final Program Environmental Impact Report for Connect SoCal 2024.* Available: https://scag.ca.gov/peir. Retrieved February 4, 2025.

SWRCB. *See* State Water Resources Control Board.

The White House. 2025 (January 20). Unleashing American Energy. Available: https://www.whitehouse.gov/presidential-actions/2025/01/unleashing-american-energy/. Accessed July 8, 2025.

USDCESO and County of San Diego. *See* Unified San Diego County Emergency Services Organization and County of San Diego.

Unified San Diego County Emergency Services Organization and County of San Diego. 2019 (September). *Operational Area Recovery Plan.* Available: https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/plans/Operational-

Area-Recovery-Plan/SDC_OPERATIONAL%20AREA%20RECOVERY%20PLAN_FINAL_20190815.pdf. Accessed June 3, 2025.

———. 2022 (September). *Operational Area Emergency Operations Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/plans/op-area-plan/2023-eop/EOP2023_Complete%20Plan.pdf. Accessed January 2, 2025.

USACE. *See* U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2025a. Formerly Used Defense Sites Program. Available: https://www.usace.army.mil/Missions/Environmental/Formerly-Used-Defense-Sites/. Accessed February 4, 2025.

———. 2025b. Formerly Used Defense Sites (FUDS) Viewer – FY22 Data. Available: https://geospatial.sec.usace.army.mil/arcgis/apps/webappviewer/index.html?id=fe3efb63b00e45b5857d3b9e15420f92. Retrieved January 2, 2025.

USDCESO and County of San Diego. *See* Unified San Diego County Emergency Services Organization and County of San Diego.

USFS. *See* U.S. Forest Service.

U.S. Department of Homeland Security, Federal Emergency Management Agency Region IX, and Governor's Office of Emergency Services. 2008 (September). *California Catastrophic Incident Base Plan: Concept of Operations.* Available: https://www.caloes.ca.gov/wp-content/uploads/Preparedness/Documents/CA-Catastrophic-Incident-Base-Plan-Conops.pdf. Accessed May 29, 2025.

U.S. Department of the Interior. 2022. *Infrastructure Investment and Jobs Act Wildfire Risk Five-Year Monitoring, Maintenance, and Treatment Plan*. Available: https://www.doi.gov/sites/doi.gov/files/bil-5-year-wildfire-risk-mmt-plan.04.2022.owf_.final_.pdf. Accessed May 26, 2025.

U.S. Environmental Protection Agency. 2016 (May). Emerging Contaminant and Federal Facility Contaminants of Concern. Available: https://19january2017snapshot.epa.gov/fedfac/emerging-contaminants-and-federal-facility-contaminants-concern_.html. Accessed December 27, 2024.

———. 2019. *Managing Your Hazardous Waste: A Guide for Small Business.* Available: https://www.epa.gov/sites/default/files/2019-10/documents/10008_managingyourhazwaste_508pdf_october_16_2019.pdf. Accessed February 4, 2025.

———. 2020a. *Hazardous Waste Requirements for Large Quantity Generators (LQGs).* Available: https://www.epa.gov/sites/default/files/2020-07/documents/10635_lqg-factsheet_508.pdf. Accessed February 4, 2025.

———. 2020b. *Summary of Requirements for Very Small Quantity Generators (VSQGs).* Available: https://www.epa.gov/sites/default/files/2020-07/documents/10635_vsqg-factsheet_508.pdf. Accessed February 4, 2025.

———. 2023. TRI Toxics Tracker. Retrieved from: https://edap.epa.gov/public/extensions/TRIToxicsTracker/TRIToxicsTracker.html#continue. Accessed February 3, 2025.

———. 2024a (October). Categories of Hazardous Waste Generators. Available: https://www.epa.gov/hwgenerators/categories-hazardous-waste-generators. Accessed December 27, 2024.

———. 2024b (January). Contaminants of Emerging Concern Including Pharmaceuticals and Personal Care Products. Available: https://www.epa.gov/wqc/contaminants-emerging-concern-including-pharmaceuticals-and-personal-care-products. Accessed December 27, 2024.

———. 2024c (November). Regional Screening Levels (RSLs) - Frequent Questions. Available: https://www.epa.gov/risk/regional-screening-levels-rsls-frequent-questions#FQ1. Accessed February 4, 2025.

———. 2025a. Contaminants of Emerging Concern including Pharmaceuticals and Personal Care Products. Available: https://www.epa.gov/wqc/contaminants-emerging-concern-including-pharmaceuticals-and-personal-care-products. Accessed May 26, 2025.

———. 2025b. RCRAInfo Search. Available: https://enviro.epa.gov/envirofacts/rcrainfo/search. Retrieved February 3, 2025.

———. 2025c. What Is the Toxics Release Inventory? Available: https://www.epa.gov/toxics-release-inventory-tri-program/what-toxics-release-inventory. Accessed February 3, 2025.

———. 2025d. Releases from Underground Storage Tanks. Available: https://www.epa.gov/ust/releases-underground-storage-tanks. Accessed May 30, 2025.

U.S. Forest Service. 2022. Wildfire Crisis Strategy. Available: https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/Confronting-the-Wildfire-Crisis.pdf. Accessed May 26, 2025.

———. 2025 (January). Wildfire Crisis Annual Update. Available: https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/WCS-making-difference.pdf. Accessed August 6, 2025.

Section 4.10 Hydrology and Water Quality

Agnew, D. C. 1979. "Tsunami History of San Diego." In *Earthquakes and Other Perils, San Diego Region*, edited by L. Abbott and W. J. Elliott. San Diego Association of Geologists for the Geological Society of America. Available: https://igppweb.ucsd.edu/~agnew/Pubs/agnew.a09.pdf. Accessed December 30, 2024.

Anastas, K. 2024 (May 24). "County: Avoid These Beaches This Memorial Day Because of Bacteria." KPBS. Available: https://www.kpbs.org/news/health/2024/05/24/county-avoid-these-beaches-this-memorial-day-because-of-bacteria. Accessed July 23, 2025.

Borrego Valley Groundwater Sustainability Agency. 2019 (August). *Draft Final Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin*. Available: https://www.sandiegocounty.gov/content/sdc/pds/SGMA/borrego-valley/GSP.html. Accessed December 30, 2024.

BVGSA. *See* Borrego Valley Groundwater Sustainability Agency.

California Department of Conservation. 2025. Tsunami Hazard Area Map. Available: https://maps.conservation.ca.gov/cgs/informationwarehouse/ts_evacuation/. Accessed March 12, 2025.

California Department of Transportation. 2019. *Highway Design Manual*. 7th Edition. Available: https://dot.ca.gov/programs/design/manual-highway-design-manual-hdm. Accessed June 16, 2025.

———. 2025. Levee Flood Protection Zone. Available: https://gis.lfpz.water.ca.gov/lfpz/. Accessed January 2, 2025.

California Department of Water Resources. 2025. Inundation Maps. Available: https://water.ca.gov/Programs/All-Programs/Division-of-Safety-of-Dams/Inundation-Maps. Accessed January 2, 2025.

Caltrans. *See* California Department of Transportation.

Caoile, R. 2024 (March 21). "These Areas in San Diego County Are at the Highest Risk of Flooding, Data Shows." Fox 5 KUSI News. Available: https://fox5sandiego.com/weather/these-areas-in-san-diego-county-are-at-the-highest-risk-of-flooding-data-shows/. Accessed July 23, 2025.

CEP and SDF. *See* Climate Education Partners and San Diego Foundation.

Climate Education Partners and San Diego Foundation. 2015. *San Diego, 2050 Is Calling, How Will We Answer? Facing the Future: How Science Can Help Prepare San Diego Regional Leaders for Climate Change*. San Diego, CA.

City News Service. 2024. "Water Contact Closures, Advisories Listed for San Diego County Beaches." KPBS. Available: https://www.kpbs.org/news/public-safety/2024/11/04/water-contact-closures-advisories-listed-for-san-diego-county-beaches. Accessed July 23, 2025.

City of Escondido. n.d. Hale Avenue Resource Recovery Facility (HARRF). Available: https://www.escondido.gov/194/Hale-Avenue-Resource-Recovery-Facility-H. Accessed January 2, 2025.

City of San Diego. 2015. *Seismic Safety Element*. Available: http://www.sandiego.gov/planning/genplan/pdf/generalplan/seismicsafetyelement.pdf. Accessed June 16, 2025.

———. 2022. *Application for Renewal of NPDES CA0107409 and 301(h) Modified Secondary Treatment Requirements, Point Loma Ocean Outfall, Volumes I through X*. Prepared by the Public Utilities Department, March. Available: https://www.sandiego.gov/sites/default/files/volume_ii_parts_1_through_3.pdf. Accessed December 30, 2024.

———. 2023. *Standard Operating Procedures.* Available: https://www.sandiego.gov/sites/default/files/fpm-sop.pdf. Accessed July 1, 2025.

———. 2024. *City of San Diego Stormwater Standards*. Available: https://www.sandiego.gov/sites/default/files/2024-08/sws_manual_august_2024_update.pdf. Accessed July 1, 2025.

———. n.d.-a. Water and Wastewater Facilities. Available: https://www.sandiego.gov/public-utilities/water-quality/water-wastewater-facilities. Accessed January 2, 2025.

———. n.d.-b. Maps of Flood-Prone Areas. Available: https://www.sandiego.gov/storm/maps. Accessed July 23, 2025.

CNS. *See* City News Service.

Colorado River Basin Regional Water Quality Control Board. 2024. *Water Quality Control Plan Colorado River Basin – Region 7*. Available: https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_planning/docs/rb7-basin-plan.pdf. Accessed December 30, 2024.

County of San Diego. 2007. *Floodplain Management Plan.* Available: https://www.sandiegocounty.gov/content/dam/sdc/dpw/FLOOD_CONTROL/floodcontroldocuments/floodplainmanagementplan.pdf. Accessed January 3, 2025.

———. 2010. *County of San Diego Department of Planning and Land Use General Plan Update, Groundwater Study*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/EIR_2009/EIR_Appn_D_Groundwater_070109.pdf. Accessed December 30, 2024.

———. 2011a (August). "Chapter 2.8, Hydrology and Water Quality." *San Diego County General Plan Update EIR*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/BOS_Aug2011/EIR/FEIR_2.08_-_Hydrology_2011.pdf. Accessed December 30, 2024.

———. 2011b. *General Plan Safety Element.* Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/SafetyElement-Aug2021.pdf. Accessed July 1, 2025.

———. 2014a (July). *Low Impact Development Handbook. Storm Water Management Strategies.*

———. 2014b (September). *Hydraulic Design Manual.* Department of Public Works, Flood Control Section.

———. 2020. *County of San Diego BMP Design Manual.* Available: https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html. Accessed January 3, 2025.

———. 2023. *San Diego County Multi-Jurisdictional Hazard Mitigation Plan.* Available: https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2023/MJHMP_SD%20County%20Base%20Plan%202023.pdf. Accessed January 3, 2025.

———. 2025 (February). *Local Agency Management Program for Onsite Wastewater Treatment Systems*. Available: https://www.sandiegocounty.gov/content/dam/sdc/deh/lwqd/finalLAMPeffective02012025.pdf. Accessed July 1, 2025.

CRB RWQCB. *See* Colorado River Basin Regional Water Quality Control Board.

DWR. *See* California Department of Water Resources.

Encina Wastewater Authority. n.d. Encina Water Pollution Control Facility. Available: https://www.encinajpa.com/. Accessed January 2, 2025.

EPA. *See* U.S. Environmental Protection Agency.

EWA. *See* Encina Wastewater Authority.

Federal Emergency Management Agency. 2011. *Definitions.* Available: https://www.fema.gov/pdf/nfip/manual201105/content/22_definitions.pdf. Accessed January 3, 2025.

———. 2020. Floodway. Available: https://www.fema.gov/about/glossary/floodway. Accessed January 3, 2025.

———. 2025. FEMA Flood Map Service Center, San Diego County, All Jurisdictions. Available: https://msc.fema.gov/portal/advanceSearch#searchresultsanchor. Accessed March 20, 2025.

FEMA. *See* Federal Emergency Management Agency.

Higgs, S. 2024 (October 9). "San Diego Stormwater Crisis Part 2 – Tackling Stormwater Management with Action & Funding." San Diego Coastkeeper. Available: https://www.sdcoastkeeper.org/blog/san-diego-stormwater-crisis-infrastructure-funding/#:~:text=Stormwater%20runoff%20accelerates%20erosion%20as,This%20limits%20aquatic%20plant%20photosynthesis. Accessed July 23, 2025.

Jennings, M. K., D. Cayan, J. Kalansky, A. D. Pairis, D. M. Lawson, A. D. Syphard, U. Abeysekera, R. E. S. Clemesha, A. Gershunov, K. Guirguis, J. M. Randall, E. D. Stein, and S. Vanderplank. 2018 (March). *San Diego County Ecosystems: Ecological Impacts of Climate Change on a Biodiversity Hotspot.* Summary report. Climate Science Alliance. San Diego, CA.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *California's Fourth Climate Change Assessment: San Diego Region Report.* Available: http://www.climateassessment.ca.gov/regions/docs/20180827-SanDiego.pdf. Accessed July 26, 2025.

Lahontan RWQCB. *See* Lahontan Regional Water Quality Control Board.

Lahontan Regional Water Quality Control Board. 2021. *Lahontan Region Water Quality Control Plan.* Available: https://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/docs/2025/preface-contents.pdf. Accessed July 3, 2025.

LA RWQCB. See Los Angeles Regional Water Quality Control Board.

Los Angeles Regional Water Quality Control Board. 1994. *Los Angeles Region Water Quality Control Plan.* Available: https://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303d_policydocs/233.pdf. Accessed July 3, 2025.

Ocean Protection Council. 2024. *State of California Sea-Level Rise Guidance*. Available: https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf. Accessed July 17, 2025.

OPC. *See* Ocean Protection Council.

PCW. *See* Project Clean Water.

Project Clean Water. n.d.-a. Santa Margarita Watershed. Available: https://projectcleanwater.org/watersheds/santa-margarita-wma/#consider. Accessed December 30, 2024.

———. n.d.-b. San Luis Rey Watershed. Available: https://projectcleanwater.org/watersheds/san-luis-rey-wma/. Accessed December 30, 2024.

———. n.d.-c. Carlsbad Watershed. Available: https://projectcleanwater.org/watersheds/carlsbad-wma/. Accessed December 30, 2024.

———. n.d.-d. San Dieguito Watershed. Available: https://projectcleanwater.org/watersheds/san-dieguito-wma/. Accessed December 30, 2024.

———. n.d.-e. Los Peñasquitos Watershed. Available: https://projectcleanwater.org/watersheds/los-penasquitos-wma/. Accessed December 30, 2024.

———. n.d.-f. San Diego River Watershed. Available: https://projectcleanwater.org/watersheds/san-diego-river-wma/. Accessed December 30, 2024.

———. n.d.-g. San Diego Bay Watershed. Available: https://projectcleanwater.org/watersheds/san-diego-bay-wma/. Accessed December 30, 2024.

———. n.d.-h. Mission Bay Watershed. Available: https://projectcleanwater.org/watersheds/mission-bay-la-jolla-wma/. Accessed December 30, 2024.

———. n.d.-i. Tijuana Watershed. Available: https://projectcleanwater.org/watersheds/tijuana-wma/. Accessed December 30, 2024.

Regional Water Management Group. 2018 (November). *Final 2019 San Diego Integrated Regional Water Management Plan*. Available: http://sdirwmp.org/pdf/SDIRWM_Final_2019_IRWM_Plan_Phase1_compiled.pdf. Accessed December 30, 2024.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2021 (December). *San Diego Forward: The Regional Plan Final Environmental Impact Report*. Available: https://www.sandag.org/regional-plan/2021-regional-plan/environmental-impact-report. Accessed December 30, 2024.

San Diego County Water Authority. 2016 (June). *Final 2015 Urban Water Management Plan*. Available: https://www.sdcwa.org/sites/default/files/files/water-management/water_resources/2015%20UWMP%20Final%2006222016.pdf. Accessed December 30, 2024.

———. 2021. *2020 Urban Water Management Plan*. Available: https://www.sdcwa.org/wp-content/uploads/2021/08/2020-UWMP_Final-Print-Version-July-2021-1.pdf. Accessed December 30, 2024.

San Diego Regional Water Quality Control Board. 2021 (September 1). *The Basin Plan*. Available: https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/. Accessed January 2, 2025.

———. 2024. *Nitrate/OWTS Policy Basin Plan Amendment*. Available: https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/nitrate_owts_bpa/. Accessed January 3, 2025.

San Diego RWQCB. *See* San Diego Regional Water Quality Control Board.

Santa Ana RWQCB. See Santa Ana Regional Water Quality Control Board.

Santa Ana Regional Water Quality Control Board. 1995. *Santa Ana River Basin (8) Water Quality Control Plan*. Available: https://water.waterboards.ca.gov/water_issues/programs/tmdl/docs/303d_policydocs/287.pdf. Accessed July 3, 2025.

SCAG. *See* Southern California Association of Governments.

Schiff, K., J. Giffith, J. Steele, B. Arnold, A. Ercument, J. Benjamin-Chung, J. Colford, J. Soller, R. Wilson, and C. McGee. 2016. *The Surfer Health Study*. SCCWRP Technical Report 943.

SDCWA. *See* San Diego County Water Authority.

Smith, D. 2024. "Coronado Keeps Making Best Beaches Lists Despite Water Quality Issues." NBC 7 San Diego. Available: https://www.nbcsandiego.com/news/local/coronado-best-beaches-lists-water-quality-issues/3532540/#:~:text=Following%20the%20border%20sewage%20crisis,the%20Coronado%20shoreline%20on%20Tuesday. Accessed July 23, 2025.

SOC. *See* South Orange County.

Southern California Association of Governments. 2024. *Program Environmental Impact Report (PEIR) for the Connect SoCal Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)*. Available: https://scag.ca.gov/peir. Accessed April 8, 2025.

South Orange County. 2024. *South Orange County Water Quality Improvement Plan*. Available: https://www.southocwqip.org/. Accessed December 30, 2024.

State Water Resources Control Board. 2006. *California's AquaGems: Areas of Special Biological Significance*. Available: https://www.waterboards.ca.gov/water_issues/programs/ocean/docs/asbs/wrkshps_aug2006/comments/david_beckman1.pdf. Accessed July 1, 2025.

———. 2012a (March). *Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges*.

———. 2012b. *National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements (WDRS) for State of California Department of Transportation*. Order No. 2012-0011-DWQ. NPDES No. CAS000003.

———. 2012c. *State Water Resources Control Board Resolution No. 2012-0032*. Available: https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0032.pdf. Accessed August 6, 2025.

———. 2018. *2018 California Integrated Report (Clean Water Act Section 303(d) List and 305(b) Report)*. Available: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/2018_integrated_report.html. Accessed June 16, 2025.

———. 2019. *California Ocean Plan, Water Quality Control Plan for Ocean Waters of California*. Available: https://www.waterboards.ca.gov/water_issues/programs/ocean/docs/oceanplan2019.pdf. Accessed January 2, 2025.

———. 2022 (September 8). *Order 2022-0057-DWQ NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*. Construction General Permit.

———. 2024a. *Interactive SSO Report*. Available: https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso_main. Accessed May 23, 2025.

———. 2024b. Adopted TMDLs. Available: https://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/tmdladopted.html. Accessed January 3, 2025.

———. 2025. GeoTracker. Available: https://geotracker.waterboards.ca.gov/. Retrieved January 2, 2025.

SWRCB. *See* State Water Resources Control Board.

Tandon, A. 2021 (April 19). "Climate Change Could Cause 'Irreversible Impacts' to Lake Ecosystems." CarbonBrief. Available: https://www.carbonbrief.org/climate-change-could-cause-irreversible-impacts-to-lake-ecosystems/. Accessed July 23, 2025

U.S. Environmental Protection Agency. 2024. Overview of Impaired Waters and Total Maximum Daily Loads Program. Available: https://www.epa.gov/tmdl/overview-impaired-waters-and-tmdls-program-under-cwa-section-303d. Accessed January 3, 2025.

———. 2025. Stormwater Discharges from Transportation Sources. Available: https://www.epa.gov/npdes/stormwater-discharges-transportation-sources. Accessed July 1, 2025.

USGS. See U.S. Geologic Survey.

U.S. Geologic Survey. 2023. Water Quality After Wildfire. Available: https://www.usgs.gov/mission-areas/water-resources/science/water-quality-after-wildfire#:~:text=Wildfires%20pose%20a%20substantial%20risk%20to%20water,providers%20to%20monitor%20and%20assess%20water%20quality. Accessed July 23, 2025.

Wiłkomirski, B., B. Sudnik-Wójcikowska, H. Galera, M. Wierzbicka, and M. Malawska. 2010. "Railway Transportation as a Serious Source of Organic and Inorganic Pollution." *Water Air Soil Pollution.* Available: https://pmc.ncbi.nlm.nih.gov/articles/PMC3096763/pdf/11270_2010_Article_645.pdf. Accessed July 1, 2025.

Section 4.11 Land Use and Planning

BLM. *See* Bureau of Land Management.

Bureau of Land Management. 2008. *Eastern San Diego County Resource Management Plan and Record of Decision.* Available: https://eplanning.blm.gov/public_projects/lup/71564/95316/115275/Eastern_San_Diego_County_RMP_ROD.pdf. Accessed April 2, 2025.

California Coastal Commission. 2025. Maps, Local Coastal Program Areas. Available: https://coastal.ca.gov/maps/lcp/. Accessed April 2, 2025.

California High Speed Rail Authority. 2005 (August). *Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System.* Available: https://hsr.ca.gov/programs/environmental-planning/program-eir-eis-documents-for-the-statewide-high-speed-rail-system-tier-1/final-program-environmental-impact-report-environmental-impact-statement-eir-eis-for-the-proposed-california-high-speed-train-system-2005/. Accessed April 8, 2025.

City of Carlsbad. 2015. *Carlsbad General Plan.* Available: https://www.carlsbadca.gov/departments/community-development/planning/general-plan. Accessed January 13, 2025.

———. 2021. *2021-2029 Housing Element.* Available: https://www.carlsbadca.gov/home/showpublisheddocument/7213/637629115272470000. Accessed January 13, 2025.

City of Chula Vista. 2020. *City of Chula Vista General Plan.* Available: https://www.chulavistaca.gov/departments/development-services/planning/planning-digital-library/general-plan. Accessed January 13, 2025.

———. 2021. *Housing Element of the General Plan.* Available: https://www.chulavistaca.gov/home/showpublisheddocument/22775/637581702237870000. Accessed January 13, 2025.

City of Coronado. 2003. *Coronado General Plan*. Available: https://www.coronado.ca.us/DocumentCenter/View/1580/General-Plan-PDF. Accessed January 13, 2025.

———. 2024. *2021-2029 Housing Element Update*. Available: https://www.projectcoronado.org/housing-element-update. Accessed January 13, 2025.

City of Del Mar. 1985. *The Community Plan*. Available: https://www.delmar.ca.us/DocumentCenter/View/622/Community-Plan-1976?bidId=. Accessed January 13, 2025.

———. 2021. *City of Del Mar Housing Element Update* (2021-2029). Available: http://www.delmar.ca.us/DocumentCenter/View/7542/Del-Mar-6th-Cycle-HEU_Council-Adopted3252021_FINAL-PDF?bidId=. Accessed January 13, 2025.

City of El Cajon. 2001. *City of El Cajon General Plan*. Available: https://www.elcajon.gov/home/showdocument?id=140. Accessed January 13, 2025.

———. 2022. *City of El Cajon 2021-2029 Housing Element*. Available: https://www.elcajon.gov/home/showpublisheddocument/25373/638036046563330000. Accessed January 13, 2025.

City of Encinitas. 1995. *City of Encinitas General Plan*. Available: https://portal.laserfiche.com/Portal/browse.aspx?id=665622&repo=r-d8c5c08d. Accessed January 13, 2025.

———. 2021. *Encinitas 6th Cycle Housing Element 2021-2029*. Available: https://portal.laserfiche.com/Portal/DocView.aspx?id=822467&repo=r-d8c5c08d. Accessed January 13, 2025.

City of Escondido. 2012. *General Plan*. Available: https://escondido.gov/1106/Policy-and-Regulatory-Documents. Accessed January 13, 2025.

———. 2021. *City of Escondido 6th Cycle Housing Element 2021-2029*. Available: https://escondido.gov/DocumentCenter/View/2499/Chapter-IV---Housing-amended-as-of-March-22-2023-PDF. Accessed January 13, 2025.

City of Imperial Beach. 2021. *City of Imperial Beach Housing Element of the General Plan Year 2021-2029*. Available: https://imperialbeachca.gov/DocumentCenter/View/337/Final-Adopted-6th-Cycle-Housing-Element-with-AFFH-PDF. Accessed January 13, 2025.

———. 2024. *City of Imperial Beach General Plan/Local Coastal Plan*. Available: https://imperialbeachca.gov/DocumentCenter/View/2388/General-Plan-LCP-Updated-2024?bidId=. Accessed January 13, 2025.

City of La Mesa. 2013. *2012 General Plan*. Available: https://www.cityoflamesa.us/953/General-Plan. Accessed January 13, 2025.

———. 2023. *Housing Element Update*. Available: https://www.cityoflamesa.us/DocumentCenter/View/18333/Adopted-La-Mesa-Housing-Element?bidId=. Accessed January 13, 2025.

City of Lemon Grove. 1996. *General Plan*. Available: https://www.lemongrove.ca.gov/media/neqcgowf/lemon-grove-general-plan.pdf. Accessed January 13, 2025.

———. 2023. *Housing Element Update*. Available: https://www.lemongrove.ca.gov/our-government/community-development/planning-zoning/. Accessed January 13, 2025.

City of National City. 2011. *National City General Plan*. Available: https://www.nationalcityca.gov/home/showpublisheddocument/29222/637963502359500000. Accessed January 13, 2025.

———. 2021. *City of National City 6th Cycle Housing Element 2021-2029*. Available: https://www.nationalcityca.gov/government/community-development/planning/focused-general-planupdate. Accessed January 13, 2025.

City of Oceanside. 2002. *General Plan*. Available: https://www.ci.oceanside.ca.us/government/development-services/planning/general-plan. Accessed January 13, 2025.

———. 2023. *City of Oceanside 2021-2029 Housing Element*. Available: https://www.ci.oceanside.ca.us/home/showpublisheddocument/13945/638447160308570000. Accessed January 13, 2025.

———. 2024. *City of Oceanside General Plan Update - Onward Oceanside*. Available: https://onwardoceanside.com/. Accessed January 13, 2025.

City of Poway. 1991. *Poway Comprehensive Plan*. Available: https://docs.poway.org/WebLink/DocView.aspx?id=49298&dbid=0&repo=CityofPoway. Accessed January 13, 2025.

———. 2024. *City of Poway Housing Element*. Available: https://poway.org/DocumentCenter/View/10883/City-of-Poway-Adopted-Housing-Element---April-2024?bidId=. Accessed January 13, 2025.

City of San Diego. 2006. *San Diego Downtown Community Plan*. Available: https://www.sandiego.gov/sites/default/files/downtown-comunity-plan-all-1.pdf. Accessed June 30, 2025.

———. 2020. *City of San Diego General Plan Housing Element 2021-2029*. Available: https://www.sandiego.gov/sites/default/files/he_final_print_view_june2021.pdf. Accessed January 13, 2025.

———. 2024. *City of San Diego General Plan*. Available: https://www.sandiego.gov/sites/default/files/2024-07/general-plan_01_introduction_july-2024.pdf. Accessed January 13, 2025.

City of San Marcos. 2012. *City of San Marcos General Plan*. Available: https://www.san-marcos.net/work/economic-development/general-plan. Accessed January 13, 2025.

———. 2021. *2021-2029 Housing Element*. Available: https://www.san-marcos.net/home/showpublisheddocument/25740/637689416879030000. Accessed January 13, 2025.

———. 2025. *City of San Marcos General Plan Update*. Available: https://sanmarcos.generalplan.org/. Accessed June 2, 2025.

City of Santee. 2003. *City of Santee General Plan*. Available: https://www.cityofsanteeca.gov/departments/planning-building/planning. Accessed January 13, 2025.

———. 2022. *City of Santee Housing Element Sixth Cycle 2021-2029*. Available: https://www.cityofsanteeca.gov/departments/city-clerk/document-central/planning-building/general-plan/gp-housing-element.pdf. Accessed January 13, 2025.

City of Solana Beach. 1988. *City of Solana Beach General Plan*. Available: https://www.cityofsolanabeach.org/en/government/departments/community-development/planning/general-plan. Accessed January 13, 2025.

———. 2023. *City of Solana Beach 2021-2029 Housing Element Update*. Available: https://www.cityofsolanabeach.org/sites/default/files/Solana%20Beach/Community%20Development/Housing%20Element%20Update/Solana%20Beach%20Housing%20Element%20Update_February2023_Clean.pdf. Accessed January 13, 2025.

City of Vista. 2012. *Vista General Plan 2030*. Available: https://www.vista.gov/departments/community-development/permits-forms/vista-general-plan-2030. Accessed January 13, 2025.

———. 2022. *Housing Element Update*. Available: https://www.cityofvista.com/city-services/citydepartments/community-development/housing-element-update. Accessed January 13, 2025.

County of San Diego. 2011. *San Diego County General Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/Cover-TOC-Vision-UpdateFebruary2023.pdf. Accessed January 13, 2025.

———. 2021. *6th Cycle Housing Element Update County of San Diego General Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/06-Housing-Element-2021.pdf. Accessed January 13, 2025.

HSRA. *See* California High Speed Rail Authority.

LCI. *See* Office of Land Use and Climate Innovation.

Marine Corps Air Station Miramar. n.d. Marine Corps Air Station Miramar. Available: https://www.miramar.marines.mil/. Accessed January 9, 2025.

Marine Corps Base Camp Pendleton. n.d. Welcome to Marine Corps Base Camp. Available: https://www.pendleton.marines.mil/Base-Info/Welcome-Aboard/. Accessed January 9, 2025.

MCAS Miramar. See Marine Corps Air Station Miramar.

MCB Camp Pendleton. See Marine Corps Base Camp Pendleton.

My Base Guide. n.d. Naval Base Point Loma: In-Depth Welcome Center. Available: https://mybaseguide.com/naval-base-point-loma-welcome-center. Accessed January 9, 2025.

National Oceanic and Atmospheric Administration. 2024. What Is Coastal Zone Management? Available: https://oceanservice.noaa.gov/facts/czm.html. Accessed April 2, 2025.

NOAA. *See* National Oceanic and Atmospheric Administration.

Office of Land Use and Climate Innovation. 2017. *State of California 2017 General Plan Guidelines*. Available: https://lci.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf. Accessed June 30, 2025.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2021a. *2021 Regional Plan*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/regional-plan/2021-regional-plan/final-2021-regional-plan/final-2021-regional-plan-flipbook.pdf. Accessed January 8, 2025.

———. 2021b. *2021 Regional Plan Environmental Impact Report*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/regional-plan/2021-regional-plan/environmental-impact-report/eir-2021-regional-plan-chapter-4-11-2021-12-01.pdf. Accessed May 29, 2025.

———. 2025 (May). "Appendix F: Regional Growth Forecast with Sustainable Communities Land Use Pattern." *2025 Regional Plan*. Available: https://www.sandag.org/regional-plan/-/media/10C998A6E17E42B3B6EEE218B1528CDA.ashx. Accessed May 29, 2025.

San Diego County Regional Airport Authority. n.d. Airport Land Use Compatibility. Available: http://www.san.org/Airport-Projects/Land-Use-Compatibility. Accessed January 8, 2025.

———. 2025. Airport Land Use Compatibility. Available: https://www.san.org/Airport-Projects/Land-Use-Compatibility. Accessed June 2, 2025.

San Diego International Airport. 2019 (September). *Airport Development Plan Recirculated Draft Environmental Impact Report*. Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245263-adp-draft-eir. Accessed April 8, 2025.

San Diego Unified Port District. 2025. *Port Master Plan Update*. Available; https://www.portofsandiego.org/waterfront-development/port-master-plan-update. Accessed April 2, 2025.

———. 2024. *Port Master Plan*. Available: https://pantheonstorage.blob.core.windows.net/waterfront-development/Port-Master-Plan.pdf. Accessed June 2, 2025

SanGIS 2025. Tribal land/Indian Reservation for County of San Diego. Available: https://geo.sandag.org/server/rest/directories/downloads/Indian_Reservation_filegdb.zip. Accessed February 25, 2025.

SCAG. *See* Southern California Association of Governments.

SDCRAA. *See* San Diego County Regional Airport Authority.

Southern California Association of Governments. 2024a. *Connect SoCal (2024–2045 Regional Transportation Plan/Sustainable Communities Strategy).* Available: https://scag.ca.gov/sites/main/files/file-attachments/23-2987-connect-socal-2024-final-complete-040424.pdf?1714175547. Accessed January 16, 2025.

———. 2024b. *Program Environmental Impact Report (PEIR) for the Connect SoCal Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS).* Available: https://scag.ca.gov/peir. Accessed April 8, 2025.

U.S. Census Bureau. 2024. 2019-2023 American Community Survey 5-Year Estimates. Available: https://www.census.gov/tribal/index.html?st=06&aianihh=4500. Accessed June 30, 2025.

U.S. Forest Service. 2005. *Executive Summary of the Final Environmental Impact Statement for Revised Land Management Plans*. Available: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5337802.pdf. Accessed April 2, 2025.

———. 2018. *Ecological Restoration, Cleveland National Forest Leadership Intent*. Available: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5411431.pdf. Accessed April 2, 2025.

USFS. *See* U.S. Forest Service.

U.S. Navy. n.d. Naval Base Coronado. Available: https://cnrsw.cnic.navy.mil/Installations/NAVBASE-Coronado/. Accessed January 9, 2025.

U.S. Department of the Navy. 2021. *Navy Old Town Campus Revitalization Draft Environmental Impact Report.* May. Available: https://navwar-revitalization.com/draft-eis/. Accessed June 30, 2025.

Section 4.12 Mineral Resources

California Geological Survey. 2018. *Aggregate Sustainability in California.* Available: https://www.conservation.ca.gov/cgs/Documents/Publications/Map-Sheets/MS_052_California_Aggregates_Report_201807.pdf. Accessed July 2025.

CGS. *See* California Geological Survey.

City of Carlsbad. 2015. *Carlsbad General Plan: Open Space, Conservation, and Recreation*. Available: https://www.carlsbadca.gov/home/showpublisheddocument/3424/637434861099030000. Accessed January 2025.

City of Chula Vista. 2005. *City of Chula Vista General Plan, Environmental*. Available: https://www.chulavistaca.gov/home/showpublisheddocument/28395/638587882478170000. Accessed January 2025.

———. 2024. Surface Mining Operations. Available: https://chulavista.municipal.codes/CVMC/19.69. Accessed January 2025.

City of Coronado. 2003. *City of Coronado General Plan*. Available: https://www.coronado.ca.us/DocumentCenter/View/1057/General-Plan-PDF?bidId=. Accessed January 2025.

City of Del Mar. 2024. Municipal Code 23.32. Available: https://library.municode.com/ca/del_mar/codes/municipal_code. Accessed January 2025.

City of El Cajon. 2001. *City of El Cajon General Plan 2000*. Available: https://www.elcajon.gov/home/showdocument?id=140. January 2025.

City of Encinitas. 2024. *General Plan*. Available: https://portal.laserfiche.com/Portal/browse.aspx?id=665622&repo=r-d8c5c08d. January 2025.

City of Escondido. 2012. *City of Escondido General Plan: VII. Resource Conservation*. Available: https://escondido.gov/DocumentCenter/View/2503/Chapter-VII---Resource-Conservation-PDF. Accessed January 2025.

City of Imperial Beach. 2024. *City of Imperial Beach General Plan and Local Coastal Plan*. Available: https://imperialbeachca.gov/DocumentCenter/View/2388/General-Plan-LCP-Updated-2024. Accessed January 2025.

City of La Mesa. 2013. *La Mesa General Plan: Conservation & Sustainability Element*. Available: https://www.cityoflamesa.us/DocumentCenter/View/6199/05LaMesaGPConservSustain-CD?bidId=. Accessed January 2025.

City of Lemon Grove. 1996. *Lemon Grove General Plan*. Available: https://www.lemongrove.ca.gov/media/neqcgowf/lemon-grove-general-plan.pdf. Accessed January 2025.

City of National City. 2011. *National City General Plan*. Available: https://www.nationalcityca.gov/home/showpublisheddocument/29222/637963502359500000. Accessed January 2025.

City of Oceanside. 2002. *Oceanside General Plan: Land Use Element*. Available: https://www.ci.oceanside.ca.us/home/showpublisheddocument/3868/637952805795270000. Accessed January 2025.

City of Poway. 1991. *Poway Comprehensive Plan: The General Plan. Natural Resources Element*. Available: https://docs.poway.org/WebLink/DocView.aspx?id=49302&dbid=1&repo=CityofPoway. Accessed January 2025.

City of San Diego. 2024. *City of San Diego General Plan: Conservation Element.* Available: https://www.sandiego.gov/sites/default/files/2024-07/general-plan_08_conservation_july-2024.pdf. Accessed January 2025.

City of San Marcos. 2012. *City of San Marcos General Plan: Conservation and Open Space Element*. Available at: https://www.san-marcos.net/home/showpublisheddocument/8478/636597348039500000. Accessed January 2025.

City of Santee. 2003. *Santee General Plan: Conservation Element*. Available: https://www.cityofsanteeca.gov/documents/planning-building/general-plan/gp-conservation-element.pdf. Accessed January 2025.

City of Solana Beach. 2014. *General Plan Conservation and Open Space Element*. Available: https://www.codepublishing.com/CA/SolanaBeach/#!/SolanaBeachGP/SolanaBeachGP03.html. Accessed January 2025.

City of Vista. 2011. *Vista General Plan 2030 Draft Program Environmental Impact Report.* Available: https://www.vista.gov/Home/ShowDocument?id=15644. Accessed January 2025.

County of San Diego. 2011. *San Diego County General Plan Update EIR*. Available https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/BOS_Aug2011/EIR/FEIR_2.10_-_Minerals_2011.pdf. Accessed January 2025.

Dudek. 2020. *Paleontological Resources Review Memorandum*. Available: https://www.sandiego.gov/sites/default/files/dsd_appendix_n_paleo_resources_review_memo.pdf. Accessed January 2025.

Hudson Institute of Mineralogy. 2024. Pala Mining District. Available at: https://www.mindat.org/loc-3560.html. Accessed January 2025.

SCAG. *See* Southern California Association of Governments.

SMGB. See State Mining and Geology Board.

Southern California Association of Governments. 2024a. *Program Environmental Impact Report for the Connect SoCal (2024-2050 Regional Transportation Plan/Sustainable Communities Strategy) 2024*. Available: https://scag.ca.gov/peir. Accessed January 2025

———. 2024b. *Connect So Cal: A Plan for Navigating to a Brighter Future.* Available: https://scag.ca.gov/connect-socal. Accessed January 2025

State Mining and Geology Board. 2024. About the Board. Available: https://www.conservation.ca.gov/smgb/Pages/About-The-Board.aspx. Accessed January 2025.

Section 4.13 Noise and Vibration

California Department of Transportation. 2011 (October). *California Airport Land Use Planning Handbook*. Division of Aeronautics. Available: https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf. Accessed January 2, 2025.

———. 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. Final. CT-HWANP-RT-13-069.25.2. Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, and Paleontology Office, Sacramento, CA.

———. 2020a (April). *Transportation and Construction Vibration Guidance Manual.* Available: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf. Accessed January 2, 2025.

———. 2020b (April). *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects.* Available: http://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/traffic-noise-protocol-april-2020-a11y.pdf. Accessed December 30, 2024.

Caltrans. *See* California Department of Transportation.

City of Carlsbad. 2015 (September). *Carlsbad General Plan*. Available: https://www.carlsbadca.gov/home/showpublisheddocument/3416/637434861085570000. Accessed December 31, 2024.

———. 2024. Municipal Code Section 8.48. Available: https://ecode360.com/44005824?highlight=noise&searchId=1641700077503806l#44005825. Accessed December 31, 2024.

City of Chula Vista 2025. Municipal Code Chapter 17. Available: https://chulavista.municipal.codes/CVMC/19.68.030. Accessed January 2, 2025.

City of Coronado. 2025. Municipal Code Title 41. Available: https://coronado.municipal.codes/CMC/41. Accessed January 2, 2025.

City of Del Mar. 1985. *The Community Plan.* Available: https://www.delmar.ca.us/DocumentCenter/View/622/Community-Plan-1976?bidId=. Accessed January 13, 2025.

———. 2024. Municipal Code Chapter 9.20. Available: https://library.municode.com/ca/del_mar/codes/municipal_code?nodeId=TIT9PUSAPEWE_CH9.20NORE_9.20.040SOLELI. Accessed December 31, 2024.

City of El Cajon. 2024. Municipal Code Chapter 17. Available: https://ecode360.com/44374836#44374836. Accessed December 31, 2024.

City of Encinitas. 2024. Municipal Code Chapter 30. Available: https://ecode360.com/44483878#44483878. Accessed December 31, 2024.

City of Escondido. 2024. Municipal Code Chapter 17. Available: https://ecode360.com/43259848#43259902. Accessed December 31, 2024.

City of Imperial Beach. 2024. Municipal Code Chapter 9.32. Available: https://ecode360.com/42863416?highlight=noise,noise%20noise,noises&searchId=1642236853795138#42863415. Accessed December 31, 2024.

City of La Mesa. 2024. Municipal Code Chapter 10. Available: https://library.municode.com/ca/la_mesa/codes/code_of_ordinances?nodeId=TIT10PUPESAMO_CH10.80NORE_10.80.040AMBANOLE. Accessed December 31, 2024.

City of Lemon Grove. 2024. Municipal Code Chapter 9. Available: https://ecode360.com/44607966#44607972. Accessed December 31, 2024.

City of National City. 2024. Municipal Code Chapter 12. Available: https://library.municode.com/ca/national_city/codes/code_of_ordinances?nodeId=CD_ORD_TIT12NOCO_CH12.06EXNOLI. Accessed December 31, 2024.

City of Oceanside. 2002. *General Plan*. Available: https://www.ci.oceanside.ca.us/gov/dev/planning/general.asp. Accessed January 13, 2025.

———. 2024. Municipal Code Chapter 38 Noise Control. Available: https://library.municode.com/ca/oceanside/codes/code_of_ordinances?nodeId=CH38NOCO. Accessed December 31, 2024.

City of Poway. 2024. Municipal Code. Available: https://www.codepublishing.com/CA/Poway/#!/Poway08/Poway0808.html#8.08.040. Accessed December 31, 2024.

City of San Diego. 2024. Municipal Code Article 9.5. Available: https://docs.sandiego.gov/municode/MuniCodeChapter05/Ch05Art09.5Division04.pdf. Accessed December 31, 2024.

City of San Marcos. 2024. Municipal Code. Available: https://library.municode.com/ca/san_marcos/codes/code_of_ordinances?nodeId=TIT20ZO_CH20.300SIPLGEDEST_S20.300.070PEST. Accessed December 31, 2024.

City of Santee. 2025. Municipal Code. Available: https://ecode360.com/43748808#43748816. Accessed January 2, 2025.

City of Solana Beach. 2025. Municipal Code. Available: https://www.codepublishing.com/CA/SolanaBeach/#!/SolanaBeach07/SolanaBeach0734.html#7.34. Accessed January 2, 2025.

City of Vista. 2025. Municipal Code Chapter 8.32. Available: https://records.vista.gov/WebLink/PDF/tmubpa5vvx2pl02xmcbzisyp/5/muni%20code%208.32%20noise%20control.pdf. Accessed January 13, 2025.

County of San Diego. 2011. *General Plan*. Available: https://www.sandiegocounty.gov/content/sdc/pds/generalplan.html. Accessed May 2025.

———. 2024. Municipal Code Chapter 36. Available: https://codelibrary.amlegal.com/codes/san_diego/latest/sandiego_regs/0-0-0-76067#JD_36.404. Accessed December 31, 2024.

EPA. *See* U.S. Environmental Protection Agency.

Federal Highway Administration. 2006 (January). *Roadway Construction Noise Model User's Guide*. Washington, DC. Prepared by the Research and Innovative Technology Administration, Cambridge, MA.

———. 2011 (December). *Highway Traffic Noise: Analysis and Abatement Guidance*. FHWA-HEP-10-025.

Federal Railroad Administration. 2012 (September). *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. Washington, DC. Available: https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/2680/20120220_FRA_HSR_NV_Manual_FINAL_102412.pdf. Accessed March 2025.

Federal Transit Administration. 2018 (September). *Transit Noise and Vibration Impact Assessment Manual.* Final. FTA Report No. 0123. Washington, DC. Volpe National Transportation Systems Center, Cambridge, MA. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed December 30, 2024.

FHWA. *See* Federal Highway Administration.

FRA. *See* Federal Railroad Administration.

FTA. *See* Federal Transit Administration.

Governor's Office of Planning and Research. 2017 (August). *State of California General Plan Guidelines*. Sacramento, CA. Available: https://lci.ca.gov/planning/general-plan/guidelines.html/. Accessed March 5, 2025.

National Cooperative Highway Research Program. 1999. *Mitigation of Nighttime Construction Noise, Vibrations, and Other Nuisances*. Transportation Research Board National Research Council.

National Research Council. 1999. *Science for Decision Making; Coastal and Marine Geology at the U.S. Geological Survey.* National Academy Press. Washington, DC.

NCHRP. *See* National Cooperative Highway Research Program.

OPR. *See* Governor's Office of Planning and Research.

San Diego Association of Governments. 2021 (February). *California-Baja California 2021 Border Master Plan*. Available: https://www.calibajabmp.org/reports. Accessed March 12, 2025.

SANDAG. *See* San Diego Association of Governments.

San Diego County Regional Airport Authority. 2014 (April). *San Diego International Airport Land Use Compatibility Plan*. Prepared by Ricondo & Associates, Inc. Available: http://www.san.org/DesktopModules/Bring2mind/DMX/API/Entries/Download?EntryId=2990&Command=Core_Download&language=en-US&PortalId=0&TabId=807. Accessed December 30, 2024.

———. 2019 (September). *Airport Development Plan San Diego International Airport*. Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245263-adp-draft-eir. Accessed March 12, 2025.

———. 2022a (April*). Ramona Airport Land Use Compatibility Plan*. Prepared by Ricondo & Associates, Inc.

———. 2025. *Airport Land Use Compatibility*. Available: https://www.san.org/Airport-Projects/Land-Use-Compatibility. Accessed January 2, 2025.

———. 2022b (May). *14 CFR Part 150 Update Noise Exposure Maps and Noise Compatibility Program Final Report*. Prepared by Mead & Hunt. Available: https://www.san.org/Aircraft-Noise/FAR-Part-150. Accessed May 28, 2025.

San Diego International Airport. 2025. *Airport Land Use Compatibility*. Available: https://www.san.org/Airport-Projects/Land-Use-Compatibility?EntryId=8297. Accessed May 28, 2025.

SDCRAA. *See* San Diego County Regional Airport Authority.

Southern California Association of Governments. 2024 (April). "3.13 Noise." *Draft Program Environmental Impact Report (PEIR) for the Connect SoCal Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)*. Available: https://scag.ca.gov/peir. Accessed March 12, 2025.

U.S. Environmental Protection Agency. 1971 (December). Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. Washington, DC. Prepared by Bolt Baranek and Newman.———. 1977 (May). *Speech Levels in Various Noise Environments*. EPA-600/1-77-025. Washington, DC. Prepared by Bolt, Beranek, and Newman.

WHO. *See* World Health Organization.

World Health Organization. 1999 (April). *Guidelines for Community Noise*. London, United Kingdom.

Section 4.14 Population and Housing

California Coastal Commission. 2016. *San Diego County Local Coastal Programs*. Available: https://www.coastal.ca.gov/maps/lcp/. Accessed July 18, 2025.

California Department of Transportation and Secretariat of Infrastructure, Urban Development, and Territorial Reorganization. 2021. *California-Baja California Border Master Plan*. Available: https://www.calibajabmp.org/. Accessed May 29, 2025.

California Employment Development Department. 2025 (May 16). *Monthly Labor Force Data for Cities and Census Designated Places (CDP). April 2025 – Preliminary*. Labor Market Information Division. Available: https://labormarketinfo.edd.ca.gov/file/lfmonth/sandisub.xls. Accessed March 31, 2025.

California Housing Partnership Corporation 2024 (May). *San Diego County 2024: Affordable Housing Needs Report*. Available: https://chpc.net/wp-content/uploads/2024/05/San-Diego_Housing_Report.pdf. Accessed March 31, 2025.

Caltrans and SIDURT. *See* California Department of Transportation and Secretariat of Infrastructure, Urban Development, and Territorial Reorganization.

CHPC. *See* California Housing Partnership Corporation.

City of San Diego. 2020. *City of San Diego General Plan General Plan Housing Element 2021–2029*. Available: https://www.sandiego.gov/sites/default/files/he-screen-view-smaller.pdf. Accessed April 9, 2025.

———. 2018. *County of San Diego Local Coastal Program Land Use Plan*. Available at: https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/POD13-009/Attachment-F-%20LUP_Clean.pdf. Accessed July 18, 2025.

———. 2024 (September). *Final 2024 Climate Action Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/sustainability/docs/final2024cap/Final2024CAP.pdf. Accessed January 31, 2025.

EDD. *See* California Employment Development Department.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *San Diego Region Report. California's Fourth Climate Change Assessment*. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-009_SanDiego_ADA.pdf. Accessed January 7, 2025.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2021. *6th Cycle Regional Housing Needs Assessment Methodology*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/regional-plan/2021-regional-plan/final-2021-regional-plan/2021-regional-plan-appendix-k-2021-05-01.pdf. Accessed January 7, 2025.

———. 2025a. Housing Acceleration Grant Program. Available: https://www.sandag.org/funding/grant-programs/smart-growth-and-housing/housing-acceleration-grant-program. Accessed March 31, 2025.

———. 2025b. *2025 Regional Plan, Appendix F: Regional Growth Forecast with Sustainable Communities Strategy Land Use Pattern*. Available: https://www.sandag.org/regional-plan/-/media/10C998A6E17E42B3B6EEE218B1528CDA.ashx. Accessed June 2, 2025.

San Diego Housing Commission. 2020. *Preserving Affordable Housing in the City of San Diego*. May. Available: https://www.sdhc.org/wp-content/uploads/2020/05/Affordable-Housing-Preservation-Study.pdf. Accessed April 9, 2025.

SCAG. *See* Southern California Association of Governments.

Scripps. *See* Scripps Institution of Oceanography.

Scripps Institution of Oceanography. 2016. *Scientifically, It Was Still a Monster El Niño Year***.** Available: https://scripps.ucsd.edu/news/scientifically-was-still-monster-el-nino-year. Accessed January 14, 2025.

Southern California Association of Governments. 2024. *Connect SoCal 2024 EIR* Available: https://scag.ca.gov/peir. Accessed June 10, 2025.

USGCRP. *See* U.S. Global Change Research Program.

U.S. Global Change Research Program. 2018. *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*, Volume II, edited by D. R. Reidmiller, C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. M. Lewis, T. K. Maycock, and B. C. Stewart. Washington, DC. Available: https://nca2018.globalchange.gov/chapter/front-matter-about/. Accessed January 31, 2025.

Section 4.15 Public Services, Recreation, and Utilities

CAL FIRE. *See* California Department of Forestry and Fire.

California Coastal Conservancy. 2019. California Coastal Trail. Available: https://scc.ca.gov/projects/california-coastal-trail/. Accessed January 2025.

California Department of Forestry and Fire Protection. 2019. *San Diego County Fire Strategic Plan 2020-2025*. Available: https://www.sandiegocounty.gov/content/dam/sdc/sdcfa/documents/StratPlan/StratPlanCtyFire.pdf. Accessed May 2025.

———. 2024. Natural Resources Management. Available: https://www.fire.ca.gov/what-we-do/natural-resource-management. Accessed January 2025.

California Department of Education. 2024. Enrollment by Grade. Available: https://dq.cde.ca.gov/dataquest/dqcensus/EnrGrdLevels.aspx?cds=37&agglevel=county&year=2024-25. Accessed July 2025.

———. 2025. Educational Data Management Division. Available: https://www.cde.ca.gov/ds/si/ds/pubschls.asp. Accessed July 2025.

California Department of Resources Recycling and Recovery. 2018. *Jurisdiction Diversion/Disposal Rate Detail*. Available: https://www2.calrecycle.ca.gov/LGCentral/%20DiversionProgram/JurisdictionDiversionDetail/433/Year/2018. Accessed July 2025.

———. 2023. *Jurisdiction Diversion/Disposal Rate Detail*. Available: https://www2.calrecycle.ca.gov/LGCentral/DiversionProgram/JurisdictionDiversionPost2006. Accessed May 23, 2025.

———. 2024a. *Recyclers/Processors Programs*. Available: https://www2.calrecycle.ca.gov/BevContainer/CertifiedPrograms/RecyclersProcessors/. Accessed January 2025

———. 2024b. *2021 Disposal Facility-based Characterization of Solid Waste*. Available: https://www2.calrecycle.ca.gov/Publications/Details/1738. Accessed January 2025.

———. 2025a. *CalRecycle*. Available: https://www.calrecycle.ca.gov/. Accessed May 23, 2025.

———. 2025b. *SWIS Facility/Site Data Exports*. Available: https://www2.calrecycle.ca.gov/SolidWaste/Site/DataExport. Accessed May 23, 2025.

California Department of Transportation. 2020. *Highway Design Manual*. Available: https://dot.ca.gov/-/media/dot-media/programs/design/documents/hdm-complete-12312020-a11y.pdf. Accessed January 2025

California Energy Commission. 2022a. Electricity Consumption by Entity. Available: http://ecdms.energy.ca.gov/elecbyutil.aspx. Accessed February 3, 2025.

———. 2022b. Gas Consumption by Entity. Available: http://ecdms.energy.ca.gov/gasbyutil.aspx. Accessed February 3, 2025.

———. 2024. *2024 Integrated Energy Policy Report Update*. Available: https://efiling.energy.ca.gov/GetDocument.aspx?tn=260322&DocumentContentId=96547. Accessed July 2025.

California State Library. 2024. *California Public Library Statistics*. Available: https://www.library.ca.gov/services/to-libraries/statistics/. Accessed January 2025.

CalRecycle. *See* California Department of Resources Recycling and Recovery.

Caltrans. *See* California Department of Transportation.

CDE. *See* California Department of Education.

CEC. *See* California Energy Commission.

City of Carlsbad. 2024. *Fire Department.* Available: https://www.carlsbadca.gov/departments/fire. Accessed January 2025.

———. 2025. *Department Facts*. Available: https://www.carlsbadca.gov/departments/police/inside-the-cpd/department-facts. Accessed May 23, 2025. City of Encinitas. 2024. Updating a Community's Climate Priorities. Available: https://www.encinitasenvironment.org/climate-action-plan-update. Accessed January 2025.

City of Chula Vista. 2024. *Stations & Locations.* Available: https://www.chulavistaca.gov/departments/fire-department/stations-locations/fire-stations-map. Accessed January 2025.

———. 2025. *About the Police Department.* Available: https://www.chulavistaca.gov/departments/police-department/about-us#:~:text=Chief%20Kennedy%20leads%20a%20department,a%20budget%20of%20%2470%20million. Accessed May 23, 2025.

City of Coronado. 2025. *City of Coronado, Personnel Authorization and Compensation Plan.* Available: https://www.coronado.ca.us/DocumentCenter/View/4183/PACP-Fiscal-Year-2024-to-2025-PDF?bidId=. Accessed May 23, 2025.

City of Del Mar. 2024. *Fire Department.* Available: https://www.delmar.ca.us/134/Fire-Department. Accessed January 2025.

City of El Cajon. 2025. *Police Department History.* Available: https://www.elcajon.gov/discover-el-cajon/police-department-history. Accessed May 23, 2025.

City of Encinitas. 2024. *Fire Operations, Training & EMS.* Available: https://www.encinitasca.gov/government/departments/public-safety/fire-operations-training-ems. Accessed January 2025.

City of Escondido. 2024. *Facilities.* Available: https://www.escondido.gov/481/Facilities. Accessed January 2025.

———. 2025. *History of Law Enforcement.* Available: https://www.escondido.gov/526/History-of-Law-Enforcement. Accessed May 23, 2025.

City of Imperial Beach. 2024. *About Imperial Beach Fire-Rescue.* Available: https://www.imperialbeachca.gov/272/About-Imperial-Beach-Fire-Rescue. Accessed January 2025.

———. 2025. *Sheriff Department.* Available: https://imperialbeachca.gov/464/Sheriff-Department. Accessed May 23, 2025.

City of La Mesa. 2025. *Police Department.* Available: https://www.cityoflamesa.us/1611/Police-Department#:~:text=We%20are%20committed%20to%20making,work%2C%20or%20visit%20for%20all.&text=The%20department%20has%2069%20sworn,contingent%20of%20retired%20senior%20volunteers. Accessed May 23, 2025.

City of National City. 2024. *Fire Operations.* Available: https://www.nationalcityca.gov/government/fire/fire-operations. Accessed January 2025.

City of Oceanside. 2024. *Stations & Apparatus.* Available: https://fire.ci.oceanside.ca.us/department-overview/stations-apparatus. Accessed January 2025.

———. 2025. *City of Oceanside Police Department.* Available: https://www.oceansidepolice.com/home-police. Accessed May 23, 2025.

City of Poway. 2024. *Fire Stations.* Available: https://poway.org/375/Fire-Stations. Accessed January 2025.

City of San Diego. 2015. *City of San Diego Zero Waste Plan*. Available: https://www.sandiego.gov/sites/default/files/zwplan.pdf. Accessed January 2025.

———. 2024a. Fire Stations. Available: https://www.sandiego.gov/fire/about/fire-stations. Accessed January 2025.

———. 2024b. Water and Wastewater Facilities. Available: https://www.sandiego.gov/public-utilities/water-quality/water-wastewater-facilities. Accessed January 2025.

———. 2025. Police. Available: https://www.sandiego.gov/police. Accessed May 23, 2025.

County of San Diego. 2011. *County of San Diego General Plan Update EIR*. Available: https://www.sandiegocounty.gov/content/sdc/pds/gpupdate/environmental.html. Accessed January 2025.

———. 2015. *County of San Diego Sewer System Management Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/dpw/SAN_DIEGO_COUNTY_SANITATION_DISTRICT/SDCSD_SSMP_2015.pdf. Accessed January 2025.

———. 2017. *Strategic Plan to Reduce Waste*. Available: https://www.sandiegocounty.gov/dpw/recycling/plan.html. Accessed January 2025.

———. 2020a. *County of San Diego BMP Design Manual for Permanent Site Design, Storm Water Treatment and Hydromodification Management*. Available: https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html. Accessed January 2025.

———. 2020b. *Non-Exclusive Franchise Agreement for Discarded Materials Management.* Available: https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID_WASTE_PLANNING_and_RECYCLING/Files/NEFA%20Draft_090120_No%20Redlines.pdf. Accessed July 2025.

———. 2021a. *County of San Diego Construction & Demolition Recycling Facility Directory*. Available: https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID_WASTE_PLANNING_and_RECYCLING/UpdatedCDResources/CD%20Guide_Updated_070422_PDF.pdf. Accessed January 2025.

———. 2021b. *Chapter 5. Management of Solid Waste, Recyclable Materials, Organic Waste, Construction and Demolition Debris*. Available: https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID_WASTE_PLANNING_and_RECYCLING/swo/SWO%202022%20AM%20Legal.pdf. Accessed July 2025.

———. 2021c. *Parks Master Plan.* Available: https://www.sandiego.gov/sites/default/files/parks-master-plan-adopted-2021.pdf. Accessed July 2025.

———. 2022. *County of San Diego Five-Year Review Report of the Countywide Integrated Waste Management Plan*. Available: https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID_WASTE_PLANNING_and_RECYCLING/Files/2022%20Five-Year%20Review.pdf. Accessed January 2025.

County of San Diego Department of Public Works. 2014. *Low Impact Development Handbook, Stormwater Management Strategies*. Available: https://www.sandiegocounty.gov/content/dam/sdc/dpw/WATERSHED_PROTECTION_PROGRAM/susmppdf/lid_handbook_2014sm.pdf. Accessed July 2025.

EPA. *See* U.S. Environmental Protection Agency.

Federal Communications Commission. 2020. Fixed Broadband Deployment. Available: https://opendata.fcc.gov/Wireline/Fixed-Broadband-Deployment-Data-June-2020-V1/4kuc-phrr. Accessed January 2025.

FCC. See Federal Communications Commission.

Google Maps. 2025. Coronado Fire Stations. Available: https://www.google.com/maps/search/Coronado+fire+stations/@32.6477523,-117.2053598,12.75z?entry=ttu&g_ep=EgoyMDI1MDUyMS4wIKXMDSoASAFQAw%3D%3D. Accessed May 23, 2025.

Governor's Office of Land Use and Climate Innovation. 2017. General Plan Guidelines. Available at: https://opr.ca.gov/planning/general-plan/guidelines.html. Accessed July 2025.

Heartland Fire and Rescue. 2024. Fire Station Locations & Jurisdiction. Available: https://heartlandfire.org/159/Fire-Station-Locations-Jurisdiction. Accessed January 2025.

Hoffman, M. 2018. "San Diego Harbor Police Officers Double as Maritime Firefighters." KPBS. Available at https://www.kpbs.org/news/public-safety/2018/10/03/port-san-diego-harbor-police-officers-double-marin. Accessed January 2025.

IACP. *See* International Association of Chiefs of Police.

IBWC. *See* International Boundary and Water Commission.

International Association of Chiefs of Police. 2024. Technical Assistance. Available: https://www.theiacp.org/technical-assistance. Accessed January 2025.

International Boundary and Water Commission. 2024. South Bay International Wastewater Treatment Plant. Available: https://www.ibwc.gov/Mission_Operations/sbiwtp.html. Accessed January 2025.

LAFCO. *See* San Diego Local Agency Formation Commission.

LCI. *See* Governor's Office of Land Use and Climate Innovation.

Regional Water Quality Control Board District 9. 2016. *Water Quality Control Plan for the San Diego Basin*. Available: https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/. Accessed August 10, 2018.

———. 2018. *San Diego Region – San Diego County Municipal Storm Water Permit*. Available: https://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater/sd_stormwater.html. Accessed January 2025.

RWQCB. *See* Regional Water Quality Control Board District 9.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2024. *Public Safety Allocations in the San Diego Region: Expenditures and Staffing for FY 2022-23*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/data-and-research/criminal-justice-and-public-safety/criminal-justice-research-clearinghouse/fy-2022-2023-public-safety-allocations-in-the-san-diego-region-2024-05-01.pdf. Accessed May 23, 2025.

San Diego County Sheriff's Department. 2024. Detention Services Bureau. Available: https://www.sdsheriff.gov/bureaus/detention-services-bureau. Accessed January 2025.

San Diego County Water Authority. 2021. *2020 Urban Water Management Plan*. Available: https://www.sdcwa.org/wp-content/uploads/2021/03/Draft-2020-UWMP.pdf. Accessed June 2025.

San Diego Gas and Electric. 2025. About Us. Available: https://www.sdge.com/more-information/our-company/about-us?utm_source=chatgpt.com. Accessed July 2025.

San Diego Local Agency Formation Commission. 2023. *Cities and Special Districts Sphere-of-Influence, Summary of Actions.* Available: https://www.sdlafco.org/home/showpublisheddocument/8398/638744292458070000. Accessed July 2025.

San Miguel Fire District. 2025. San Miguel Fire Stations. Available: https://www.sanmiguelfire.org/stations. Accessed May 23, 2025.

SCAG. *See* Southern California Association of Governments.

SDCSD. *See* San Diego County Sheriff's Department.

SDCWA. *See* San Diego County Water Authority.

SDG&E. *See* San Diego Gas and Electric.

Southern California Association of Governments. 2024a. *Program Environmental Impact Report for the Connect SoCal (2024-2050 Regional Transportation Plan/Sustainable Communities Strategy) 2024.* Available: https://scag.ca.gov/peir. Accessed January 2025.

———. 2024b. *Connect So Cal: A Plan for Navigating to a Brighter Future.* Available: https://scag.ca.gov/sites/main/files/file-attachments/23-2987-connect-socal-2024-final-complete-040424.pdf?1714175547. Accessed January 2025.

State Water Resource Control Board. 2015. *San Diego Region – Storm Water; ORDER NO. R9-2013-0001, The San Diego Regional MS4 Permit*. Available: http://www.waterboards.ca.gov/sandiego/water_issues/programs/stormwater. Accessed January 2025.

———. 2018. *Resolution No.2018-0019.* Available: https://www.waterboards.ca.gov/water_issues/programs/owts/docs/rs2018_0019.pdf. Accessed January 2025.

———. 2024. *Interactive SSO Report.* Available: https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso_main. Accessed May 23, 2025. SWRCB. *See* State Water Resources Control Board.

SWRCB. *See* State Water Resources Control Board.

U.S. Department of the Navy. 2021. *Draft Environmental Impact Statement the Navy Old Town Campus (OTC) Revitalization*. Available: https://navwar-revitalization.com/draft-eis/. Accessed July 2025.

Section 4.16 Transportation

California Air Pollution Control Officers Association. 2024 (October). *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. Available: https://www.airquality.org/ClimateChange/Documents/2024%20Handbook%20Update_AB434.pdf. Accessed May 2, 2025.

California Air Resources Board. 2022 (November 16). *Scoping Plan for Achieving Carbon Neutrality, November 16, 2022*. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed May 2, 2025.

California Department of Transportation. 2020a (May). *Vehicle Miles Traveled – Focused, Transportation Impact Study Guide*. Available: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmt-focused-tisg-a11y.pdf. Accessed May 2, 2025.

———. 2020b (July). *Highway Design Manual*. Available: https://dot.ca.gov/programs/design/manual-highway-design-manual-hdm. Accessed May 2, 2025.

———. 2020c. *California Manual on Uniform Traffic Control Devices,* 2014 Edition, Revision 9. Available: https://dot.ca.gov/programs/safety-programs/camutcd. Accessed May 2025.

———. 2021a (February). *California Transportation Plan 2050*. Available: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf. Accessed May 2, 2025.

———. 2021b (February). *California-Baja California Border Master Plan.* Available: https://sandagbmpazurestorage.blob.core.windows.net/bmp-docs/2021-BMP_Final_Report_03152021.pdf. Accessed January 16, 2025.

———. 2023. *California Freight Mobility Plan 2023*. Available: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cfmp/cfmp-july-2023-final-v1-a11y.pdf. Accessed May 2, 2025.

———. 2025a (January). *Highway Design Manual, Chapter 1000 – Bicycle Transportation Design*. Available: https://dot.ca.gov/-/media/dot-media/programs/design/documents/chp1000-a11y.pdf. Accessed May 2, 2025.

———. 2025b. Active Transportation Program. Available: https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/active-transportation-program. Accessed May 2, 2025.

California High-Speed Rail Authority and U.S. Department of Transportation Federal Railroad Administration. 2005 (August). *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System*. Available: https://hsr.ca.gov/wp-content/uploads/docs/programs/eir-eis/State_Wide_EIR_EIS_Volume_1_Part_1_of_3.pdf. Accessed June 11, 2025.

California Transportation Commission. 2024 (January). *2024 Regional Transportation Plan Guidelines*. Available: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/division-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants/adopted-2024-rtp-guidelines-for-mpos-2-a11y.pdf. Accessed May 2, 2025.

City of Tijuana Metropolitan Planning Institute. 2013. *2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan.* Available: https://implanplayasderosarito.gob.mx/wp-content/uploads/2021/06/PEM_Documento_V4_Feb_2012.pdf. Accessed February 5, 2025.

Caltrans. *See* California Department of Transportation.

CAPCOA. *See* California Air Pollution Control Officers Association.

CARB. *See* California Air Resources Board.

CTC. *See* California Transportation Commission.

Governor's Office of Planning and Research. 2018 (December). *Technical Advisory on Evaluating Transportation Impacts in CEQA*. Available: https://lci.ca.gov/docs/20190122-743_Technical_Advisory.pdf. Accessed May 2, 2025.

HSR & USDOT. *See* California High-Speed Rail Authority and U.S. Department of Transportation Federal Railroad Administration.

IMPLAN 2013. *See* City of Tijuana Metropolitan Planning Institute.

Metrolink. 2025. Metrolink Fact Sheet FY 2024-25 Q2. Governed by the Southern California Regional Rail Authority (SCRRA). Available: https://metrolinktrains.com/globalassets/about/agency/facts-and-numbers/fact_sheet_q2-fy25.pdf. Accessed May 2, 2025.

Metropolitan Transit System. 2013 (April). *San Diego and Arizona Eastern (SD&AE) Railway Fact Sheet*. Available: https://www.sdmts.com/sites/default/files/attachments/SDAEFactSheet.pdf. Accessed May 2, 2025.

———. 2025a (January). MTS Trolley Schedule. Available: https://www.sdmts.com/sites/default/files/routes/pdf/510.pdf. Accessed May 2, 2025.

———. 2025b (May). MTS Bus Schedule. Available: https://www.sdmts.com/transit-services/bus-routes. Accessed May 2, 2025.

MTS. *See* Metropolitan Transit System.

NCTD. *See* North County Transit District.

North County Transit District. 2020 (December). CTD & SANDAG Receive $106 Million Grant to Implement $202 Million of Improvements on the San Diego Portion of the LOSSAN Corridor. Available: https://gonctd.com/nctd-sandag-receive-106-million-grant-for-rail-improvements. Accessed May 2, 2025.

———. 2024a (October). NCTD Sprinter Schedule. Available: https://gonctd.com/wp-content/uploads/SPRINTER-Schedule-October-2024-W.pdf. Accessed May 2, 2025.

———. 2024b (October). NCTD Bus Schedule. Available: https://gonctd.com/wp-content/uploads/NCTD-System-Map-Only-October-2024.pdf. Accessed May 2, 2025.

———. 2024c (December). Coaster Schedule. Available: https://gonctd.com/wp-content/uploads/COASTER-Schedule-October-2024-Web.pdf. Accessed May 2, 2025.

OCTA. *See* Orange County Transportation Authority.

OPR. *See* Governor's Office of Planning and Research.

Orange County Transportation Authority. 2024 (December). LOSSAN Corridor Fact Sheet. Available: https://www.octa.net/pdf/FactSheet_LOSSAN.pdf?n=2025. Accessed May 2, 2025.

Port of San Diego. 2019 (February 28). *Economic Impacts of the San Diego Unified Port District in 2017*. Available: https://pantheonstorage.blob.core.windows.net/administration/port-of-san-diego-economic-impact-report-2017.pdf. Accessed May 2, 2025.

SANDAG. *See* San Diego Association of Governments.

San Diego Association of Governments. 2010a (April). *Riding to 2050. San Diego Regional Bike Plan.* Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/bikeways-and-walkways/regional-bike-plan/san-diego-regional-bike-plan-riding-to-2050.pdf. Accessed May 2, 2025.

———. 2010b (June). *Parking Strategies for Smart Growth*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/data-and-research/applied-research-and-performance-monitoring/surveys/parking-strategies-for-smart-growth-tools-san-diego-2010-06-01.pdf. Accessed May 2, 2025.

———. 2012 (March). *San Diego Regional Safe Route to School Strategic Plan*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/data-and-research/applied-research-and-performance-monitoring/surveys/parking-strategies-for-smart-growth-tools-san-diego-2010-06-01.pdf. Accessed May 2, 2025.

———. 2016 (December). *2016 Freight Gateway Study Update*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/goods-movement-planning/freight-gateway-study/2016-freight-gateway-study-update-2016-12-01.pdf. Accessed May 2, 2025.

———. 2018a. California Active Transportation Program. Available: https://www.sandag.org/funding/grant-programs/active-transportation/california-active-transportation-program. Accessed May 2, 2025.

———. 2018b (October). *Regional Bike Plan Early Action Program Fact Sheet.* Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/bikeways-and-walkways/bikeway-walkway-projects/regional-bike-plan-EAP-fact-sheet-2018-10-01.pdf. Accessed May 2, 2025.

———. 2021 (March). *SR 11 Otay Mesa East Port of Entry Project Brochure*. Available: https://www.keepsandiegomoving.com/Libraries/SR_11/SAN_SR11_Port_of_Entry_Brochure_WEB_031721.sflb.ashx. Accessed May 2, 2025.

———. 2024a (September). *2025 Regional Transportation Improvement Program*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/funding/funding-and-programming/regional-transportation-improvement-program/final-2025-rtip.pdf. Accessed May 2, 2025.

———. 2024b (February). *San Diego and Imperial Counties Sustainable Freight Implementation Strategy*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/goods-movement-planning/san-diego-imperial-county-sustainable-freight-strategy/san-diego-imperial-counties-sustainable-freight-implementation-strategy-final-report-2024-02-01.pdf. Accessed May 2, 2025.

———. 2024c (November). *SANDAG Vision Zero Action Plan*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/projects-and-programs/regional-initiatives/vision-zero/sandag-vision-zero-action-plan-report.pdf. Accessed May 2, 2025.

———. 2025a. *Transportation Demand Management*. Available: https://www.sandag.org/-/media/SANDAG/Documents/PDF/regional-plan/2025-regional-plan/2025-rp-transportation-demand-management-one-pager.pdf. Accessed May 2, 2025.

———. 2025b. *Comprehensive Multimodal Corridor Plans*. Available: https://www.sandag.org/regional-plan/comprehensive-multimodal-corridor-plans. Accessed May 2, 2025.

San Diego County Regional Airport Authority. 2008. *Airport Master Plan*. Available: https://www.san.org/Airport-Projects/2008-Airport-Master-Plan#3134211-adopted-master-plan. Accessed January 16, 2025.

———. 2011. *Regional Aviation Strategic Plan*. Available: https://www.san.org/DesktopModules/Bring2mind/DMX/API/Entries/Download?EntryId=14180&Command=Core_Download&language=en-US&PortalId=0&TabId=185. Accessed January 16, 2025.

———. 2019. *SDIA Aviation Activity Forecasts Final Technical Memorandum.* April. Available: https://www.san.org/Portals/0/Documents/Airport%20Development%20Plan/Forecast%20Reports/2019_SAN_MP_Forecast.pdf. Accessed February 5, 2025.

San Diego International Airport. 2021. Air Traffic Report Summary: Calendar Year 2021. Available: https://www.san.org/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=15134&language=en-US&PortalId=0&TabId=225. Accessed May 2, 2025.

San Diego International Airport. 2019 (September). *Airport Development Plan Recirculated Draft Environmental Impact Report*. Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245263-adp-draft-eir. Accessed April 8, 2025.

SCAG. *See* Southern California Association of Governments.

SDIA. *See* San Diego International Airport.

Southern California Association of Governments. 2024a (April 4). *Connect SoCal (The Southern California Association of Governments' 2024–2050 Regional Transportation Plan/Sustainable Communities Strategy) Final Program Environmental Impact Report*. State Clearinghouse #2022100337. Certified April 4, 2024. Available: https://scag.ca.gov/peir. Accessed June 11, 2025.

———. 2024b (December 16). *2025 Federal Transportation Improvement Program*. Available: https://scag.ca.gov/2025-ftip. Accessed June 11, 2025.

Steinberg. 2008. California Senate Bill 375. Available: http://www.leginfo.ca.gov/pub/07-08/bill/sen/sb_0351-0400/sb_375_bill_20080930_chaptered.pdf. Accessed April 8, 2025.

USACE. *See* U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2022. Waterborne Tonnage for Principal U.S. Ports and All 50 States and U.S. Territories; Waterborne Tonnages for Domestic, Foreign, Imports, Exports and Intra-State Waterborne Traffic. Available: https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/12755. Accessed May 2, 2025.

U.S. Environmental Protection Agency. 2021 (May). *Border 2025: United States – Mexico Environmental Program*. Available: https://www.epa.gov/sites/default/files/2021-05/documents/final_us_mx_border_2025_final_may_6.pdf. Accessed February 5, 2025.

U.S. Department of Transportation. 2025. *Demonstrating Integrated Corridor Management in San Diego*. Available: https://www.itskrs.its.dot.gov/sites/default/files/2021-09/case-study/508%20SANDAG%20ICM%20Final.pdf. Accessed June 11, 2025.

USDOT. *See* U.S. Department of Transportation.

Section 4.17 Tribal Cultural Resources

Bean, L. J., and F. C. Shipek. 1978. Luiseño. In *Handbook of North American Indians, Volume 8: California*. Edited by R. F. Heizer, 550–563. Smithsonian Institution, Washington, D.C.

California Department of Transportation 2021. *California-Baja California Border Master Plan*. Available: https://www.calibajabmp.org/reports. Accessed April 15, 2025.

California High Speed Rail Authority. 2005. *Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System*. Available: https://hsr.ca.gov/programs/environmental-planning/program-eir-eis-documents-for-the-statewide-high-speed-rail-system-tier-1/final-program-environmental-impact-report-environmental-impact-statement-eir-eis-for-the-proposed-california-high-speed-train-system-2005/. Accessed May 30, 2025.

City of San Diego. 2018. *Pure Water Program North City Project Environmental Impact Report/Environmental Impact Statement*. Prepared by City of San Diego Public Utilities Department and U.S. Bureau of Reclamation. Available: https://www.sandiego.gov/public-utilities/sustainability/pure-water-sd/reports. Accessed July 8, 2025.

County of San Diego. 2011 (August). "Chapter 7.0 Proposed General Plan Update Policies and Mitigation Measures." In *San Diego County General Plan Update EIR*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/BOS_Aug2011/EIR/FEIR_7.00_-_Mitigation_Masures_2011.pdf. Accessed, April 15, 2025.

County of San Diego. 2011. *San Diego County General Plan Update Final Environmental Impact Report.* Available: https://www.sandiegocounty.gov/content/sdc/pds/gpupdate/environmental.html. Accessed July 8, 2025.

Gifford, E. W. 1931. *The Kamia of Imperial Valley. Bureau of American Ethnology Bulletin No. 97.* U.S. Government Printing Office, Washington, D.C.

Governor's Office of Planning and Research. 2020. *AB 52 and Tribal Cultural Resources in CEQA: Technical Advisory.* February 2020. Available: https://lci.ca.gov/ceqa/docs/20200224-AB_52_Technical_Advisory_Feb_2020.pdf. Accessed June 27, 2025.

HSRA. *See* California High Speed Rail Authority.

Kroeber, A. L. 1925. "Handbook of Indians of California." *Bureau of American Ethnology Bulletin 78.* Smithsonian Institution. Washington, DC.

Luomala, K. 1978. "Tipai-Ipai." *In Handbook of North American Indians, Volume 8, California,* edited by R. F. Heizer, 592–609. Smithsonian Institution. Washington, DC.

San Diego County Regional Airport Authority. 2020. *Airport Development Plan Final Environmental Impact Report*. Available: https://www.san.org/Airport-Projects/Environmental-Affairs#1245314-adp-final-eir. Accessed May 30, 2025.

SCAG. *See* Southern California Association of Governments.

SDCAA. *See* San Diego County Regional Airport Authority.

Shipek, F. 1972. "Table of Tipai-Ipai population." Included on p. 596 of K. Luomala (1978), "Tipai-Ipai." In *Handbook of North American Indians, Volume 8, California,* edited by R. F. Heizer, 592–609. Smithsonian Institution, Washington, D.C.

Southern California Association of Governments. 2024. *2024-2050 Regional Transportation Plan/Sustainable Communities Strategy Final Program Impact Report*. Available: https://scag.ca.gov/program-environmental-impact-report-0. Accessed May 30, 2025.

U.S. Department of the Navy. 2020. *Final Environmental Impact Statement for the Navy Old Town Campus Revitalization*. Prepared by Naval Facilities Engineering Command Southwest. Available: https://navwar-revitalization.com/draft-eis/. Accessed July 8, 2025.

Section 4.18 Water Supply

Bedsworth, L., D. Cayan, G. Franco, L. Fisher, and S. Ziaja. 2018. *Statewide Summary Report. California's Fourth Climate Change Assessment.* Publication number: SUMCCCA4-2018-013.

Borrego Springs Watermaster. 2024 (October 1). "Exhibit 4." *Baseline Pumping Allocations*.

Borrego Valley Groundwater Sustainability Agency. 2019 (August). *Draft Final Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin.* Available: https://www.sandiegocounty.gov/content/sdc/pds/SGMA/borrego-valley/GSP.html. Accessed January 23, 2025.

Bureau of Reclamation. 2007 (October). *Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead – Final Environmental Impact Statement.* Available: https://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html. Accessed January 27, 2025.

———. 2012 (December). *California River Basin Water Supply and Demand Study*. Available: https://www.usbr.gov/watersmart/bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf. Accessed January 27, 2025.

BVGSA. *See* Borrego Valley Groundwater Sustainability Agency.

California Department of Transportation. 2016 (July 20). *Statewide Stormwater Management Plan.* Available: https://dot.ca.gov/programs/environmental-analysis/stormwater-management-program. Accessed March 5, 2025.

California Department of Water Resources. 2016. *California's Groundwater Bulletin 118 – Interim Update 2016*. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/B118-Interim-Update-2016_ay_19.pdf. Accessed January 23, 2025.

———. 2021. "Appendix K." *2020 Urban Water Management Plan Guidebook*. Available: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans. Accessed July 7, 2025.

———. 2023a (October 26). *San Pasqual Valley Basin – 2022 Groundwater Sustainability Plan Determination.*

———. 2023b. *California Water Plan 2023 Update*

———. 2024 (January 18). *Upper San Luis Rey Valley – 2022 Groundwater Sustainability Plan Determination.*

———. 2025. *Climate Change Basics.* Available: https://water.ca.gov/Water-Basics/Climate-Change-Basics#:~:text=Extreme%20Events%20%E2%80%93%20Rain%2C%20Flood%2C,critical%20and%20non%2Dcomplimentary%20ways. Accessed July 24, 2025.

California Natural Resources Agency. 2014. *California Water Action Plan*. Available: https://wildlife.ca.gov/Conservation/Watersheds/Instream-Flow/Action-Plan. Accessed January 27, 2025.

———. 2020. *California Water Resilience Portfolio.*

———. 2022. *California's Water Supply Strategy – Adapting to a Hotter, Drier Future*. Available: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Water-Resilience/CA-Water-Supply-Strategy.pdf. Accessed July 8, 2025.

Caltrans *See* California Department of Transportation

CEP and SDF. *See* Climate Education Partners and San Diego Foundation.

City of Encinitas. 2024 (September 25). San Dieguito Water District Administrative Code Article 21 Recycled and Non-Potable Water. Available: https://ecode360.com/44489846. Accessed January 27, 2025.

City of Escondido. 2011 (June). *Recycled Water Master Plan*.

City of San Diego. 2020 (June 22). *2020 Recycled Water Master Plan Update.* Available: https://www.sandiego.gov/sites/default/files/rw_master_plan_final_report_hdr_2020.pdf. Accessed January 27, 2025.

———. 2022 (July). *City of San Diego Rules and Regulations For Recycled Water Systems*.

———. 2025 (January). What Is Pure Water San Diego? Available at https://www.sandiego.gov/sites/default/files/2025-01/pw-sd-phase-1-art-pure-water-phase-1-fact-sheet-010625_v1-1.pdf. Accessed January 22, 2025.

———. n.d. Pure Water San Diego. Available: https://www.sandiego.gov/public-utilities/sustainability/pure-water-sd. Accessed January 22, 2025.

City of Tijuana Metropolitan Planning Institute. 2013. *2034 Tijuana, Tecate, and Playas de Rosarito Metropolitan Strategic Plan.*

Climate Education Partners and San Diego Foundation. 2015. *San Diego, 2050 Is Calling, How Will We Answer? Facing the Future: How Science Can Help Prepare San Diego Regional Leaders for Climate Change*. San Diego, CA.

CNRA. *See* California Natural Resources Agency.

Cole, S., E. Hanak, A. Escriva-Bou, J. Medellín-Azuara, C. Peterson, and K. Greenspan. 2024. *Drought and Groundwater Sustainability in California's Farming Regions.* Public Policy Institute of California. Available: https://www.ppic.org/wp-content/uploads/policy-brief-drought-and-groundwater-sustainability-in-californias-farming-regions.pdf. Accessed July 25, 2025.

Congressional Research Service. 2024 (April 4). Management of the Colorado River: Water Allocations, Drought, and the Federal Role. Available: https://www.congress.gov/crs-product/R45546. Accessed March 12, 2025.

County of San Diego. 2010a. "Appendix D: Groundwater Study." *County of San Diego Final Program Environmental Impact Report for the General Plan Update*. Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/BOS_Aug2011/EIR/Appn_D_GW.pdf. Accessed January 22, 2025.

———. 2010b. "Appendix A: Evaluation of Groundwater Conditions in Borrego Valley." *County of San Diego Final Program Environmental Impact Report for the General Plan Update.* Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/BOS_Aug2011/EIR/Appn_D_GW_Appendices.pdf. Assessed January 22, 2025.

———. 2011. *San Diego County General Plan Update, Final Environmental Impact Report.* Available: http://www.sandiegocounty.gov/content/sdc/pds/gpupdate/environmental.html. Accessed January 23, 2025.

———. 2020. *County of San Diego BMP Design Manual*. Available: https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/BMP_Design_Manual.html. Accessed March 7, 2025.

———. 2023. *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements Groundwater Resources.* Available: https://www.sandiegocounty.gov/content/dam/sdc/pds/SGMA/GRWTR-Guidelines-Text-Final.pdf. Accessed July 24, 2025.

———. 2024. San Diego County Water Authority Boundary for San Diego County.

———. n.d.-a. Groundwater in San Diego County. Available: https://www.sandiegocounty.gov/pds/SGMA.html. Accessed January 22, 2025.

———. n.d.-b. San Luis Rey Valley Groundwater Basin. Available: https://www.sandiegocounty.gov/content/sdc/pds/SGMA/san-luis-rey-valley.html. Accessed January 22, 2025.

———. n.d.-c. San Pasqual Valley Groundwater Basin. Available: https://www.sandiegocounty.gov/content/sdc/pds/SGMA/san-pasqual-valley.html. Accessed January 22, 2025.

———. n.d.-d. Watery System Description. Available: https://www.sandiegocounty.gov/content/sdc/dpw/h2o1/What_We_Do/WaterDistributionSystem.html. Accessed January 23, 2025.

———. n.d.-e. Recycled Water. Available: https://www.sandiegocounty.gov/content/sdc/deh/lwqd/lu_recycled_water.html. Accessed January 24, 2025.

DWR. *See* California Department of Water Resources.

Elmer, M. 2023. Where San Diego Gets Its Water. *Voice of San Diego.* Available: https://voiceofsandiego.org/2023/01/19/where-san-diego-gets-its-water/. Accessed July 24, 2025.

EPA. *See* U.S. Environmental Protection Agency.

Geoscience. 2022 (January). *Upper San Luis Rey Valley Groundwater Sustainability Plan*. Prepared for Pauma Valley Groundwater Sustainability Agency.

Gottlieb, A., and J. Mankin. 2024. "Evidence of Human Influence on Northern Hemisphere Snow Loss." *Nature* 625: 293–300. Available: https://doi.org/10.1038/s41586-023-06794-y. Accessed July 24, 2025.

Hale, K., K. Jennings, K. Musselman, B. Livneh, and N. Molotch. 2023. "Recent Decreases in Snow Water Storage in Western North America." *Communications Earth and Environment* 4: 170. Available: https://doi.org/10.1038/s43247-023-00751-3. Accessed July 24, 2025.

Hogan, D., and J. Lundquist. 2024. "Recent Upper Colorado River Streamflow Declines Driven by Loss of Spring Precipitation." *Geophysical Research Letters* 51: e2024GL109826. Available: https://doi.org/10.1029/2024GL109826. Accessed July 24, 2025.

IID. *See* Imperial Irrigation District.

Imperial Irrigation District. 2012 (October). *Imperial Region Integrated Regional Water Management Plan.* Available: https://imperialirwmp.org/document-library-2/final-imperial-irwmp-volumes-1-2/. Accessed January 27, 2025.

IMPLAN. *See* City of Tijuana Metropolitan Planning Institute.

Jennings, M. K., D. Cayan, J. Kalansky, A. D. Pairis, D. M. Lawson, A. D. Syphard, U. Abeysekera, R. E. S. Clemesha, A. Gershunov, K. Guirguis, J. M. Randall, E. D. Stein, and S. Vanderplank. 2018. *Summary Report, San Diego County Ecosystems: Ecological Impacts of Climate Change on a Biodiversity Hotspo*t. Climate Science Alliance. San Diego, CA.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *California's Fourth Climate Change Assessment: San Diego Region Report.* Available: http://www.climateassessment.ca.gov/regions/docs/20180827-SanDiego.pdf. Accessed January 24, 2025.

Kelley, A. H. 2011. "Seawater Desalination: Climate Change Adaptation Strategy or Contributor?" *Seawater Desalination*: 40–50.

Medellin-Azuara, J., L. Mendoza-Espinosa, J. Lund, and C. S. Waller-Barrera. 2009. *Water Supply for Baja California: Economic-Engineering Analysis for Agricultural, Environmental and Urban Demands*. January. Available: https://www.researchgate.net/publication/275022263_Water_Supply_for_Baja_California_Economic-_Engineering_Analysis_for_Agricultural_Environmental_and_Urban_Demands. Accessed January 27, 2025.

Municipal Water District of Orange County. 2021 (June). *2020 Urban Water Management Plan*. Available: https://www.mwdoc.com/your-water/water-supply/urban-water-management-plan/. Accessed January 27, 2025.

Metropolitan Water District of Southern California. 2021 (June). *2020 Urban Water Management Plan*.

———. 2023 (August). *Climate Adaptation Master Plan for Water: Working Memorandum 3 IRP 2020 Regional Needs Assessment Summary*.

———. 2024. Metropolitan Facts. Available: https://d1q0afiq12ywwq.cloudfront.net/media/xgfhsx5n/final_2024_district-at-glance.pdf?keywords=at%20a%20glance. Accessed January 22, 2025.

———. 2025. *Climate Adaptation Master Plan for Water – Implementation Strategy*. Available: https://d1q0afiq12ywwq.cloudfront.net/media/v2gjwjx3/mwd-implementationstrategy_april-2025_final-post.pdf. Accessed July 7, 2025.

MWD. *See* Metropolitan Water District of Southern California.

MWDOC. *See* Municipal Water District of Orange County.

Ocean Protection Council. 2024. *State of California Sea-Level Rise Guidance*. Available: https://opc.ca.gov/wp-content/uploads/2024/05/California-Sea-Level-Rise-Guidance-2024-508.pdf. Accessed July 17, 2025.

Olivenhain Municipal Water District. 2015. *Rules and Regulations Governing the Use of Recycled Water*. Available: https://www.olivenhain.com/your-water-supplies/recycled-2/. Accessed January 27, 2025.

OMWD. *See* Olivenhain Municipal Water District.

OPC. *See* Ocean Protection Council.

PHMWC. *See* Pine Hills Mutual Water Company.

Pine Hills Mutual Water Company. n.d. Pine Hills Mutual Water Company: Home. Available: http://www.pinehillswater.org/index.html. Accessed January 23, 2025.

Pine Valley Mutual Water Company. n.d. Company History. Available: http://pinevalleywater.org/company-history/. Accessed January 23, 2025.

PVMWC. *See* Pine Valley Mutual Water Company.

Rancho Pauma Mutual Water Company. n.d. Rancho Pauma Mutual Water Company Services. Available: https://www.ranchopaumamwc.com/. Accessed January 23, 2025.

RDDMWD. *See* Rio del Diablo Municipal Water District.

Regional Water Management Group. 2018 (November). *2019 San Diego Integrated Regional Water Management Plan*. Available: http://sdirwmp.org/pdf/SDIRWM_Final_2019_IRWM_Plan_Phase1_compiled.pdf. Accessed December 30, 2024.

Reidmiller, D. R., C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. M. Lewis, T. K. Maycock, and B. C. Stewart. 2018. *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II. U.S. Global Change Research Program, Washington, DC, USA*. Available: https://www.doi.org/10.7930/NCA4.2018. Accessed January 27, 2025.

Rio del Diablo Municipal Water District. 2017(January 1). *Rincon del Diablo Water Administration Code*. Available: https://rinconwater.org/wp-content/uploads/2018/12/Water-Administrative-Code-rev-2017.pdf. Accessed January 27, 2025.

RPMWC. *See* Rancho Pauma Mutual Water Company.

RPMWC. *See* Rancho Pauma Mutual Water Company.

SANDAG *See* San Diego Association of Governments

San Diego Association of Governments. 2025. Master Geographic Reference Area (MGRA) Data for San Diego Region.

San Diego County Water Authority. 2016 (June). *2015 Urban Water Management Plan*.

———. 2020 (February). *San Diego County Water Authority: An Overview*. Available: https://www.sdcwa.org/sites/default/files/overview-fs.pdf. Accessed January 22, 2025.

———. 2021a (May). *2020 Urban Water Management Plan*. Available: https://www.sdcwa.org/wp-content/uploads/2021/08/2020-UWMP_Final-Print-Version-July-2021-1.pdf. Accessed January 22, 2025.

———. 2021b (May 17). *2020 Water Shortage Contingency Plan*. Available: https://www.sdcwa.org/your-water/planning-preparedness/. Accessed January 22, 2025.

———. 2021c (November 2). News Release: Water Authority Kicks Off 2023 Water Facilities Master Plan Update. Available: https://www.sdcwa.org/water-authority-kicks-off-2023-water-facilities-master-plan-update/. Accessed January 15, 2025.

———. 2024a. Water-Use Data Trends. Available: https://www.sdcwa.org/your-water/water-use/. Accessed January 22, 2025.

———. 2024b. Relationship with MWD – Water Supply. Available: https://www.sdcwa.org/projects-programs/programs/metropolitan-water-district/. Accessed January 22, 2025.

———. 2025a. *2024 Water Facilities Master Plan*. Available:https://www.sdcwa.org/projects-programs/programs/environmental/. Accessed June 2, 2025.

———. 2025b. *Addendum No. 1 to the 2003 Program Environmental Impact Report and the 2013 Supplemental Program Environmental Impact Report for the 2024 Water Facilities Master Plan.* Available: https://www.sdcwa.org/projects-programs/programs/environmental/. Accessed June 2, 2025.

———. 2025c. Imported Water Supplies. Available: https://www.sdcwa.org/your-water/imported-water-supplies/. Accessed July 24, 2025.

———. 2025d. Local Water Supplies. Available: https://www.sdcwa.org/your-water/local-water-supplies/. Accessed July 24, 2025.

———. n.d. WaterSmart Resources. Available: https://www.sdcwa.org/your-water/conservation/resources/. Accessed January 24, 2025.

San Diego Foundation. 2008. *The San Diego Foundation Regional Focus 2050 Study: Climate Change Related Impacts in the San Diego Region by 2050*. San Diego, CA. Prepared for the 2008 Climate Change Impacts Assessment, Second Biennial Science Report to the California Climate Action Team.

San Diego Regional Water Quality Control Board. 2021. *Water Quality Control Plan for the San Diego Basin*. Available: https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/. Accessed July 7, 2025.

San Diego RWQCB *See* San Diego Regional Water Quality Control Board

SCAG. *See* Southern California Association of Governments.

SDCWA. *See* San Diego County Water Authority.

SDF. *See* San Diego Foundation.

Southern California Association of Governments. 2024a. *The Southern California Association of Governments' 2024-2050 Regional Transportation Plan/Sustainable Communities Strategies.*

———. 2024b. *Final Program Environmental Impact Report for Connect SoCal 2024 (2024–2050 Regional Transportation Plan/Sustainable Communities Strategy).* Available: https://scag.ca.gov/peir. Accessed January 22, 2025.

State Water Resources Control Board. 2025a. Sustainable Groundwater Management Act (SGMA) Status Map. Available: https://gispublic.waterboards.ca.gov/portal/apps/storymaps/stories/35d50036fbfe44e5ac3b1a6e8c1e8d21. Accessed July 8, 2025.

———. 2025b. What Is State Intervention? Available: https://www.waterboards.ca.gov/water_issues/programs/sgma/intervention.html. Accessed July 8, 2025.

———. n.d. Storm Water Program. Available: https://www.waterboards.ca.gov/water_issues/programs/stormwater/. Accessed March 7, 2025.

SWRCB. *See* State Water Resources Control Board

U.S. Environmental Protection Agency. 2025. Pure Water San Diego. Available: https://www.epa.gov/wifia/pure-water-san-diego#:~:text=Project%20Description,Pure%20Water%20Program%20by%202035. Accessed July 24, 2025.

U.S. Geological Survey. 2017. Groundwater Availability in the Borrego Valley. Available: https://ca.water.usgs.gov/projects/borrego/borrego-groundwater-availability.html. Accessed January 23, 2025.

USGS. *See* U.S. Geological Survey.

West Yost. 2024 (March). *Water Year 2023 Annual Report for the Borrego Springs Watermaster*.

Woodard & Curran. 2021 (September). *Final San Pasqual Valley Groundwater Basin Groundwater Sustainability Plan*.

Section 4.19 Wildfire

Abatzoglou, J. T., and A. P. Williams. 2016 (October 10). "Impact of Anthropogenic Climate Change on Wildfire across Western U.S. Forests." *Proceedings of the National Academy of Sciences* 113(42): 11770–11775.

Atkinson, William. 2018. "The Link Between Power Lines and Wildfires." *Electrical Contractor*. Available: https://www.ecmag.com/section/systems/link-between-power-lines-and-wildfires. Accessed June 20, 2025.

Balch, J. K., B. A. Bradley, J. T. Abatzoglou, R. C. Nagy, E. J. Fusco, and A. L. Mahood. 2017 (March 14). "Human-Started Wildfires Expand the Fire Niche across the United States." *Proceedings of the National Academy of Sciences* 114(11): 2946–2951.

Bedsworth, L., D. Cayan, G. Franco, L. Fisher, and S. Ziaja. 2018. *California's Fourth Climate Change Assessment: State Summary Report*. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. Accessed January 6, 2025.

Black, C., Y. Tesfaigzi, J. A. Bassein, and L. A. Miller. 2017. "Wildfire Smoke Exposure and Human Health: Significant Gaps in Research for a Growing Public Health Issue." *Environmental Toxicology and Pharmacology* 55: 186–195.

Cal Matters. 2024. Californians Pay Billions for Power Companies' Wildfire Prevention Efforts. Are They Cost-Effective? Available: https://calmatters.org/environment/2024/12/pge-utilities-wildfire-prevention-customer-bills-california/. Accessed June 20, 2025.

CAL FIRE. *See* California Department of Forestry and Fire Protection.

California Department of Forestry and Fire Protection. 2018 (August). *California's Forests and Rangelands 2017 Assessment*. Fire and Resource Assessment Program. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/fire-resource-assessment-program---frap/assessment/forest-and-range-2017-assessment.pdf. Accessed January 6, 2025.

———. 2019a. 2019 Wildfire Activity Statistics. Available: https://www.fire.ca.gov/our-impact/statistics. Accessed February 14, 2025.

———. 2019b. State of California Wildland Urban Interface Map. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/fire-resource-assessment-program---frap/pdf-maps/wildland-urban-interface-2019.pdf?rev=e44c740c777940c6bda816c42c886c87&hash=52A9A0873B1CBF3E468DC52D4E5CB5B5. Accessed March 24, 2025.

———. 2020. *2020 Wildfire Activity Statistics*. Office of the State Fire Marshal. Sacramento, CA. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-

website/our-impact/fire-statistics/2020-wildfire-activity-stats.pdf?rev=da776d6b864342edb2fe0782b1afd9af&hash=17B19313E6A54CBE1D4693FAAC27F23C. Accessed February 14, 2025.

———. 2021. *2021 Wildfire Activity Statistics*. Office of the State Fire Marshal. Sacramento, CA. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2021-wildfire-activity-stats.pdf?rev=fb531e2875bb4fd58d4724cc4e80becd&hash=592A91EBED7D81CBAAF4533533CFDCFB. Accessed February 14, 2025.

———. 2022. *2022 Wildfire Activity Statistics*. Office of the State Fire Marshal. Sacramento, CA. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2023_redbook_final.pdf?rev=e3ba4cccf9fe4d0e97a921189d85baaf&hash=9593161EBE9D4EAC55B5ACD30F46228A. Accessed February 14, 2025.

———. 2023. *2023 Wildfire Activity Statistics*. Office of the State Fire Marshal. Sacramento, CA. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/2023_redbook_final.pdf?rev=e3ba4cccf9fe4d0e97a921189d85baaf&hash=9593161EBE9D4EAC55B5ACD30F46228A. Accessed January 3, 2025.

———. 2024a (September 1). Emergency Fund Fire Suppression Expenditures. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/suppression-costs-e-fund.pdf?rev=685eeca14aa14a4c933ac8ce0102ab58&hash=0B53A434ACB593281BB5A591AF6866AD. Accessed January 3, 2025.

———. 2024b (October 2). Top 20 Largest California Fires. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/top-20-largest-ca-wildfires.pdf?rev=097f901c128347149e2614f2fca4f546&hash=27DDE83DFEF9A69E67C73765892A2B75. Accessed January 3, 2025.

———. 2024c. *CAL FIRE Strategic Plan 2024.* Available: https://www.paperturn-view.com/cal-fire-communications/cal-fire-strategicplan24-web?pid=ODg8828162&v=2. March 24, 2025.

———. 2024d. *San Diego Unit 2024 Strategic Plan*. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-plan/2024/2024-san-diego-imperial-unit-fire-plan.pdf?rev=06f410e38906443eb6edf36b5d15035b&hash=C6B938145FD37619F902DE6B3B2EF5DB. Accessed June 12, 2025.

———. 2025a. 2025 Incident Archive. Available: https://www.fire.ca.gov/incidents/2025. Accessed February 14, 2025.

———. 2025b. Fire Hazard Severity Zones. Available: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed January 6, 2025.

———. 2025c. LRA Fire Hazard Severity Zone Maps. Available: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-maps. Accessed January 6, 2025.

———. 2025d. Top 20 Most Destructive California Wildfires. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/top20_destruction.pdf?rev=adaea8332a014a7ebf11dc6fdb3f8e98&hash=EA9A8C492BD9FBAA0FB67C2FEA3FF52E. Accessed June 13, 2025.

———. 2025e. Top 20 Deadliest California Wildfires. Available: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/top20_deadliest.pdf?rev=227b6e4a007f4df5be4414a12c033184&hash=3864EB332926BB6DC73C84B32A568726. June 13, 2025.

———. 2025f. Incidents Webpage, Kincade Fire. Available: https://www.fire.ca.gov/incidents/2019/10/23/kincade-fire. Accessed June 20, 2025.

California Department of Transportation. 2021 (February). *California-Baja California Border Master Plan.* Available: https://sandagbmpazurestorage.blob.core.windows.net/bmp-docs/2021-BMP_Final_Report_03152021.pdf. Accessed January 16, 2025.

California Forest Management Task Force. 2021. *California's Wildfire and Forest Resilience Action Plan*. Available: https://wildfiretaskforce.org/wp-content/uploads/2022/12/californiawildfireandforestresilienceactionplan.pdf. Accessed June 4, 2025.

California Governor's Office of Planning and Research. 2022. *Wildland-Urban Interface Planning Guide*. Available: https://lci.ca.gov/docs/20220817-Complete_WUI_Planning_Guide.pdf. Accessed June 2, 2025.

California Governor's Office of Emergency Services. 2020. *Adaptation Planning Guide*. Available: https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf. Accessed June 4, 2025.

California Public Utilities Commission. 2018. CPUC High Fire Threat District. Web Viewer. Available: https://capuc.maps.arcgis.com/apps/webappviewer/index.html?id=5bdb921d747a46929d9f00dbdb6d0fa. Accessed March 24, 2025.

Christiansen, K., A. A. Assi, R. B. Mostafiz, R. V. Rohli, et al. 2024. "Charting the Scorched Trails: A Comparative Analysis of Roadway Damage from Historical Megafires to the Unprecedented 2020 Labor Day Wildfires on the USA West Coast." *Emergency Management Science and Technology* 4: e015. Available: https://www.maxapress.com/article/doi/10.48130/emst-0024-0016. Accessed June 26, 2025.

County of San Diego. 2019. *County of San Diego Resilience Review Report 1-19: Wildland Fires*. Available: https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/plans/Resilience-Review-Reports/SDC_RESILIENCE%20REVIEW%20REPORT_WILDLAND%20FIRES_FINAL_20190909.pdf Accessed June 12, 2025.

———. 2023a. Office of Emergency Services. *Multi-Jurisdictional Hazard Mitigation Plan.* Available: https://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/HazMit/2023/MJHMP_SD%20County%20Base%20Plan%202023.pdf. Accessed February 6, 2025.

———. 2023b (April 13). *County of San Diego 2023 Consolidated Fire Code.* Available: https://www.sandiegocounty.gov/pds/docs/cosd-fire-code.pdf. Accessed January 6, 2025.

County of San Diego Fire Authority. 2019. *Strategic Plan 2020–2025*. Available: https://www.sandiegocounty.gov/content/dam/sdc/sdcfa/documents/StratPlan/StratPlanCtyFire.pdf. Accessed January 6, 2025.

County of San Diego Office of Emergency Services. 2013 (April). *San Diego County Operational Area Wildland Urban Interface Policy # 8-A*. Available: https://sdoparea.org/wp-content/uploads/documents/8A%20WUI%20-%20Wildland%20Urban%20Interface.pdf. Accessed June 12, 2025.

CPUC. *See* California Public Utilities Commission.

DOI and USDA. *See* U.S. Department of the Interior and U.S. Department of Agriculture.

Dodd. 2018. Senate Bill No. 901, Chapter 626. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB901. Accessed August 20, 2025.

Federal Emergency Management Agency. 2020. FEMA Fact Sheet Flood After Fire. Available: https://www.fema.gov/sites/default/files/documents/fema_flood-after-fire_factsheet_nov20.pdf. Accessed March 24, 2025.

Friedman. 2018. Assembly Bill No. 901, Chapter 641. Available: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB2911. Accessed August 20, 2025.

FEMA. *See* Federal Emergency Management Agency.

ICC. *See* International Code Council.

International Code Council. 2023 (October). *2024 International Fire Code*. Available: https://codes.iccsafe.org/content/IFC2024P1. Accessed January 6, 2025.

Kalansky, J., D. Cayan, K. Barba, L. Walsh, K. Brouwer, and D. Boudreau. 2018. *California's Fourth Climate Change Assessment: San Diego Region Report.* Available: http://www.climateassessment.ca.gov/regions/docs/20180827-SanDiego.pdf. Accessed June 13, 2025.

Kean, J.W., and D.M. Staley. 2021. "Forecasting the Frequency and Magnitude of Postfire Debris Flows Across Southern California." *Earth's Future* 9(3). Available: https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020EF001735. Accessed June 24, 2025.

Law, B. E., J. T. Abatzoglou, C. R. Schwalm, et al. 2025. "Anthropogenic Climate Change Contributes to Wildfire Particulate Matter and Related Mortality in the United States." *Communications Earth Environment* 6: 336. Available: https://doi.org/10.1038/s43247-025-02314-0. Accessed June 13, 2025.

Li, R., and M. V. Chester. 2023. "Vulnerability of California Roadways to Post-Wildfire Debris Flows." *Environmental Research Infrastructure and Sustainability* 3: 015003. Available: https://iopscience.iop.org/article/10.1088/2634-4505/acb3f5. Accessed June 26, 2025.

Mann, M. L., E. Batllori, M. A. Moritz, E. K. Waller, P. Berce, A. L. Flint, L. E. Flint, and E. Dolfi. 2016 (April 28). "Incorporating Anthropogenic Influences into Fire Probability Models: Effects of Human Activity and Climate Change on Fire Activity in California." *PLoS One* 11(4): e0153589.

National Park Service. 2017. Wildland Fire Behavior. Available: https://www.nps.gov/articles/wildland-fire-behavior.htm. Accessed June 26, 2025.

National Public Radio. 2025. Power Lines Sparked New Fires in LA after the Eaton Fire Began, Radio Traffic Shows. Available: https://www.npr.org/2025/02/17/nx-s1-5282086/los-angeles-eaton-fire-altadena-power-lines. Accessed June 20, 2025.

New York Times. 2025. Many of California's Most Destructive Fires Were Caused by Power Lines. Available: https://www.nytimes.com/interactive/2025/01/13/us/los-angeles-fires-cause.html. Accessed June 20, 2025.

NPR. *See* National Public Radio.

NPS. *See* National Park Service.

Radeloff, V. C., D. P. Helmers, H. Anu Kramer, M. H. Mockrin, P. M. Alexandre, A. Bar-Massada, V. Butsic, et al. 2018. "Rapid Growth of the U.S. Wildland-Urban Interface Raises Wildfire Risk." *Proceedings of the National Academy of Sciences* 115(13): 3314–3319.

Rengers, F. K., L. A. McGuire, N. S. Oakley, J. W. Kean, D. M. Staley, and H. Tang, et al. 2020. Landslides After Wildfire: Initiation, Magnitude, and Mobility. Department of Interior Technical Note 10.1007/s10346-020-

01506-3. Available: https://link.springer.com/content/pdf/10.1007%2Fs10346-020-01506-3.pdf. Accessed June 26, 2025.

Sacramento Metropolitan Air Quality Management District. 2018. Wildfire Smoke Information. Available: http://www.airquality.org/residents/public-outreach/wildfire-smoke-information. Accessed March 24, 2025.

San Diego County Water Authority. 2021. *2020 Urban Water Management Plan*. Available: https://www.sdcwa.org/wp-content/uploads/2021/08/2020-UWMP_Final-Print-Version-July-2021-1.pdf. Accessed June 20, 2025.

———. 2025 (March). *2024 Water Facilities Master Plan*. Available: https://www.sdcwa.org/wp-content/uploads/2025/05/2024-Water-Facilities-Master-Plan-1.pdf. Accessed June 20, 2025.

San Diego Gas & Electric. 2023. *Strategic Undergrounding Fact Sheet.* Available: https://www.sdge.com/sites/default/files/new%20SUG%20fact%20sheet%206%2021%2023_0.pdf. Accessed June 20, 2025.

———. 2024 (July 5). *2025 Wildfire Mitigation Plan Update.* Revision 2. https://www.sdge.com/sites/default/files/regulatory/2024-07-05_SDGE_2025_WMP-Update_R2.pdf. Accessed January 6, 2025.

———. 2025a. Strategic Undergrounding Program. Available: https://www.sdge.com/undergrounding-overhead-powerlines. Accessed June 20, 2025.

———. 2025b. Wildfire Safety. Available: https://www.sdge.com/our-commitment-wildfire-safety. Accessed July 18, 2025.

Schoennagel, T., J. K. Balch, H. Brenkert-Smith, P. E. Dennison, B. J. Harvey, M. A. Krawchuk, N. Mietkiewicz, P. Morgan, M. A. Mortiz, R. Rasker, et al. 2017 (April 17). "Adapt to More Wildfire in Western North American Forests as Climate Changes." *Proceedings of the National Academy of Sciences* 114(18): 4582–4590.

SCAG. *See* Southern California Association of Governments.

SDCWA. *See* San Diego County Water Authority.

SDG&E. *See* San Diego Gas & Electric.

Southern California Association of Governments. 2024. *Certified Final Program Environmental Impact Report for Connect SoCal 2024*. Available: https://scag.ca.gov/peir. Accessed February 4, 2025.

Syphard, A. D., and J. E. Keeley. 2015. "Location, Timing, and Extent of Wildfire Vary by Cause of Ignition." *International Journal of Wildland Fire* 24(1): 37–47.

Syphard, A. D., V. C. Radeloff, J. E. Keeley, T. J. Hawbaker, M. K. Clayton, S. I. Stewart, and R. B. Hammer. 2007 (July). "Human Influence on California Fire Regimes." *Ecological Applications* 17(5): 1388–1402.

Syphard, A. D., V. C. Radeloff, N. S. Keulen, R. S. Taylor, T. J. Hawbaker, S. I. Stewart, and M. K. Clayton. 2008. "Predicting Spatial Patterns of Fire on a Southern California Landscape." *International Journal of Wildland Fire* 17: 602–613.

UCLA. *See* University of California Los Angeles.

USDA. *See* U.S. Department of Agriculture.

U.S. Department of Agriculture. 2001. "Urban Wildland Interface Communities within Vicinity of Federal Lands that Are at High Risk from Wildfire." *Federal Register 66:* 751–777. Available: https://www.federalregister.gov/documents/2001/01/04/01-52/urban-wildland-interface-communities-within-the-vicinity-of-federal-lands-that-are-at-high-risk-from. Accessed January 6, 2025.

U.S. Department of the Interior. 2000. Managing the Impact of Wildfires on Communities and the Environment (The National Fire Plan). Available: https://clintonwhitehouse4.archives.gov/CEQ/firereport.html. Accessed March 24, 2025.

U.S. Department of the Interior and U.S. Department of Agriculture. 2022 (April). *Infrastructure Investment and Jobs Act Wildfire Risk Five-Year Monitoring, Maintenance, and Treatment Plan*. Available: https://www.doi.gov/sites/doi.gov/files/bil-5-year-wildfire-risk-mmt-plan.04.2022.owf_.final_.pdf. Accessed July 28, 2025.

USDOI. *See* U.S. Department of the Interior.

U.S. Environmental Protection Agency. 2025. Why Wildfire Smoke Is a Health Concern. Available: https://www.epa.gov/wildfire-smoke-course/why-wildfire-smoke-health-concern. Accessed June 13, 2025.

US EPA. *See* U.S. Environmental Protection Agency.

U.S. Forest Service. 2023. Fire Behavior. Available: https://research.fs.usda.gov/psw/fire/behavior. Accessed June 26, 2025.

USFS. *See* U.S. Forest Service.

U.S. Geological Survey. 2019. Nationwide Landslide Mapping Database. Available: https://www.sciencebase.gov/catalog/item/5c7065b4e4b0fe48cb43fbd7. Accessed June 26, 2025.

———. 2021. *How Often Do Rainstorms Cause Debris Flows in Burned Areas of the Southwestern US?* Available: https://www.usgs.gov/natural-hazards/landslide-hazards/science/how-often-do-rainstorms-cause-debris-flows-burned-areas?qt-science_center_objects=0#qt-science_center_objects. Accessed June 26, 2025.

USGS. *See* U.S. Geological Survey.

University of California Los Angeles. 2025. Economic Impact of the Los Angeles Wildfires. Available: https://www.anderson.ucla.edu/about/centers/ucla-anderson-forecast/economic-impact-los-angeles-wildfires#:~:text=In%20summary%2C%20the%20total%20property,losses%20estimated%20at%20%2475%20billion. Accessed February 14, 2025.

Westerling, A. L. 2018. *Wildfire Simulations for the Fourth California Climate Assessment: Projecting Changes in Extreme Wildfire Events with a Warming Climate.* University of California, Merced, California's Fourth Climate Change Assessment, California Energy Commission.

Western Fire Chiefs Association. 2024. The Link Between Power Lines and Wildfires. Available: https://wfca.com/wildfire-articles/power-lines-and-wildfires/. Accessed June 16, 2025.

WFCA. *See* Western Fire Chiefs Association.

Chapter 5 Alternatives

No references used in this chapter.

Chapter 6 Other Considerations Required by CEQA

San Diego Association of Governments. 2025. "Appendix B: Sustainable Communities Strategy Documentation and Related Information." *Draft 2025 Regional Plan.* Available: https://www.sandag.org/~/-/media/22977C036B624D999E62E2467A88F1C2.ashx. Accessed August 5, 2025.

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