

Barstow International Gateway Greenhouse Gas Emissions Assessment

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LIST OF ABBREVIATED TERMS

ACC	Advanced Clean Cars
ACF	Advanced Clean Fleets
ACT	Advanced Clean Trucks
AB	Assembly Bill
BIG	Barstow International Gateway
BAU	Business-as-usual
CARB	California Air Resource Board
CCR	California Code of Regulations
CalEEMod	California Emissions Estimator Model
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CALGreen	California Green Building Standards
CPUC	California Public Utilities Commission
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CFC	Chlorofluorocarbons
CFC	Code of Federal Regulation
CAFE	Corporate Average Fuel Economy
EO	Executive Order
EV	Electric vehicle
EMFAC	Emission Factors Model
FCAA	Federal Clean Air Act
GWP	Global Warming Potential
GHG	Greenhouse gas
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
IRA	Inflation Reduction Act
LORs	Laws, Ordinances, and Regulations
LCFS	Low Carbon Fuel Standard
MW	megawatt
CH ₄	Methane
MTCO ₂ e	Metric tons of CO ₂ e
MPO	Metropolitan planning organizations
mpg	Miles per gallon
MMTCO ₂ e	Million metric tons of CO ₂ e
MM	Mitigation Measure
MY	Model year
MDAQMD	Mojave Desert Air Quality Management District
NHTSA	National Highway Traffic Safety Administration
NWL	Natural and Working Lands
N ₂ O	Nitrous oxide
OGV	Ocean-going Vessels
ppm	Parts per million

PFC	Perfluorocarbon
RTP	Regional transportation plan
RPS	Renewable Portfolio Standard
RTG	Rubber-tired gantry
SB	Senate Bill
South Coast AQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SF ₆	Sulfur hexafluoride
SCS	Sustainable Communities Strategy
TACs	Toxic Air Contaminants
TRUs	Transport refrigeration units
TMT	Truck miles traveled
U.S.	United States
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle miles traveled
ZE	Zero-emissions
ZEV	Zero-emissions vehicle

1.0 BARSTOW INTERNATIONAL GATEWAY SUMMARY

This Report has been prepared to analyze the proposed Barstow International Gateway (“BIG”) and associated off-site improvements. BIG is located in the City of Barstow (“City”) and in unincorporated territory in the County of San Bernardino (“County”), California (see **Figure 1: Regional Vicinity Map** and **Figure 2: Local Vicinity Map**). BIG consists of a rail yard with an intermodal facility¹ and “block swap” facility², a transload warehouse center³, and a solar farm.

Additionally, to serve the proposed rail yard and transload warehouse center, BNSF Railway Company (BNSF) proposes off-site rail improvements (including lead track extensions), and off-site non-rail improvements (including drainage, utilities, and roadways).

BIG’s proposed components are depicted on **Figure 3: Barstow International Gateway Conceptual Site Plan**, **Figure 4: BIG Off-Site Improvements, West**, and off-site improvements are depicted on **Figure 5: BIG Off-Site Improvements, East**.

1.1 Project Location and Setting

BIG totals approximately 5,000 acres⁴, and includes approximately 680 acres which would remain ungraded/undisturbed (“Mojave River buffer area”). BIG’s Specific Plan area totals approximately 4,300 acres and is generally bounded by the Mojave River to the north, Main Street (also referred to as National Trails Highway or Route 66) to the south, Lenwood Road to the east, and Hinkley Road to the west.

Most of the BIG footprint is within unincorporated County lands, while the remainder is within Barstow City limits. The BIG footprint is generally flat and gradually slopes north to the Mojave River. Off-site improvements are generally within existing BNSF rail and City/County street rights-of-way. The BIG footprint is primarily vacant undeveloped land, which is traversed by an existing BNSF railroad, and which contains scattered residential, commercial, and industrial land uses. This area is mostly devoid of tall vegetation and trees, with structures and other elements of the built environment scattered throughout. Existing land uses within BIG’s footprint are listed in **Table 1: Existing Land Uses**. There are approximately 108 dwelling units and approximately 94,000 square feet of non-residential land uses (i.e., commercial and industrial) within the BIG footprint. Additionally, a private airstrip (“Depue Airport”) is within BIG’s proposed solar farm footprint. Under BIG, this private airstrip would be demolished and replaced with the proposed solar farm.

¹ “Intermodal facility” refers to a rail yard where containerized goods are transferred between trains and trucks. Trucks arrive to either pick up containers from arriving trains or deliver containers for departing trains. However, unlike traditional intermodal facilities, at BIG the majority of containers would arrive by train and be transferred to and from electric hostlers.

² “Block Swap” refers to transferring a block of intermodal train cars between trains. In effect, the entire block of cars remains coupled together and is moved en masse to another train.

³ “Transload” refers to the transfer of goods from one container to another. In this document, it specifically refers to the transfer of goods from 40-foot international containers to 53-foot domestic containers. The transload warehouse center at the BIG is designed to serve goods transported to and from the intermodal facility by rail.

⁴ Although the BIG Specific Plan acreage is 4,335 acres, throughout this technical report, the BIG Specific Plan acreage is referred to as 4,300 acres. Note: all acreages in this report are preliminary and based on GIS data. Acreages will be refined with site survey.

Table 1: Existing Land Uses					
Description	Residential (DU)	Commercial (SF)	Industrial (SF)	TOTAL (DU)	TOTAL (SF)
Existing Land Use	108	85,887	7,837	108	93,724

Regional vehicular access to BIG is provided by Main Street from the south, I-15 from the southeast, and SR-58 from the east. Local access to BIG is primarily provided by Lenwood Road and Hinkley Road from the east and west, respectively, in addition to various unpaved roads along Main Street. Regional rail access is provided from the north by BNSF's Mojave subdivision, from the west by BNSF's Cajon subdivision, and from the east by BNSF's Needles subdivision.

Figure 1: Regional Vicinity Map

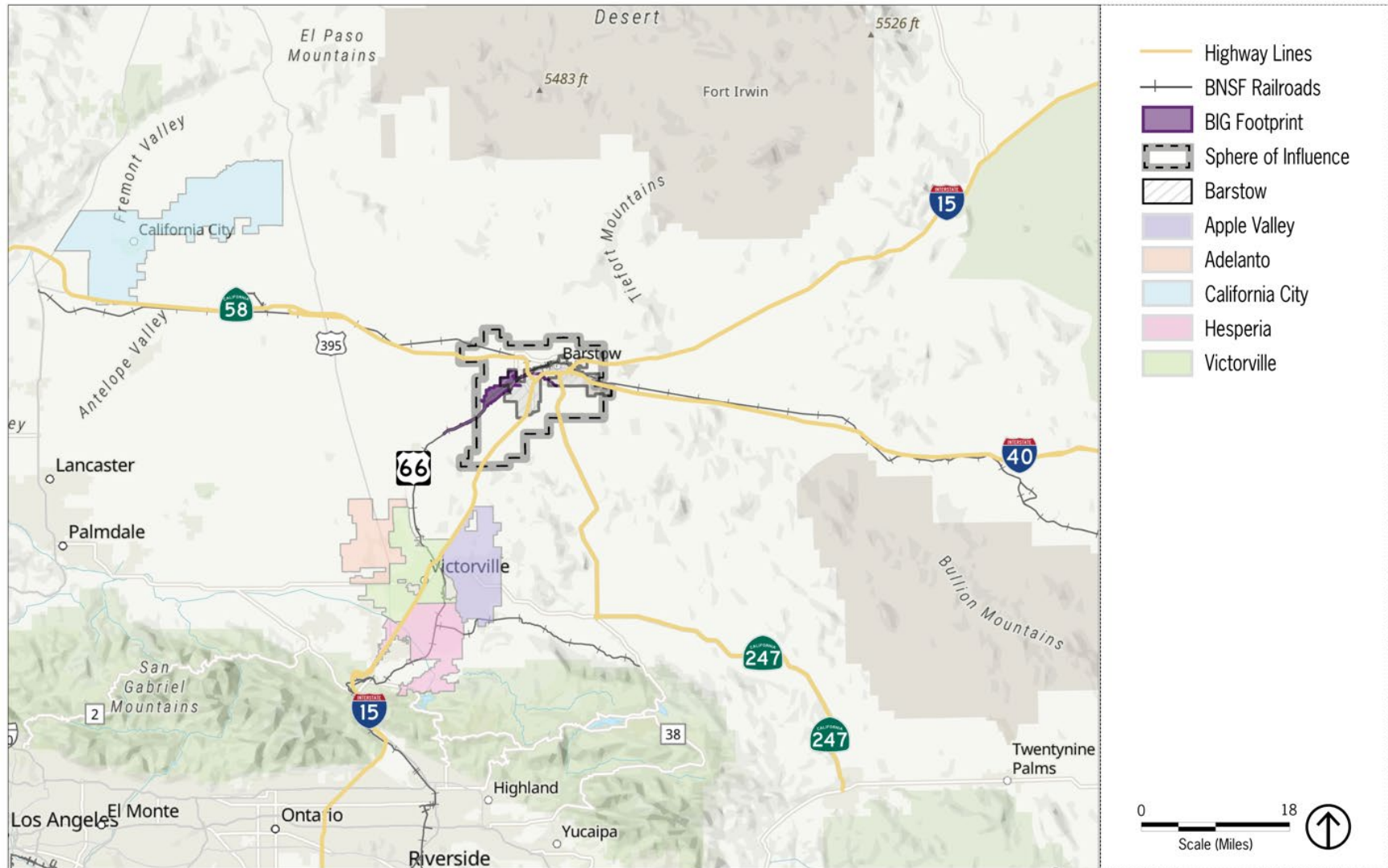


Figure 2: Local Vicinity Map

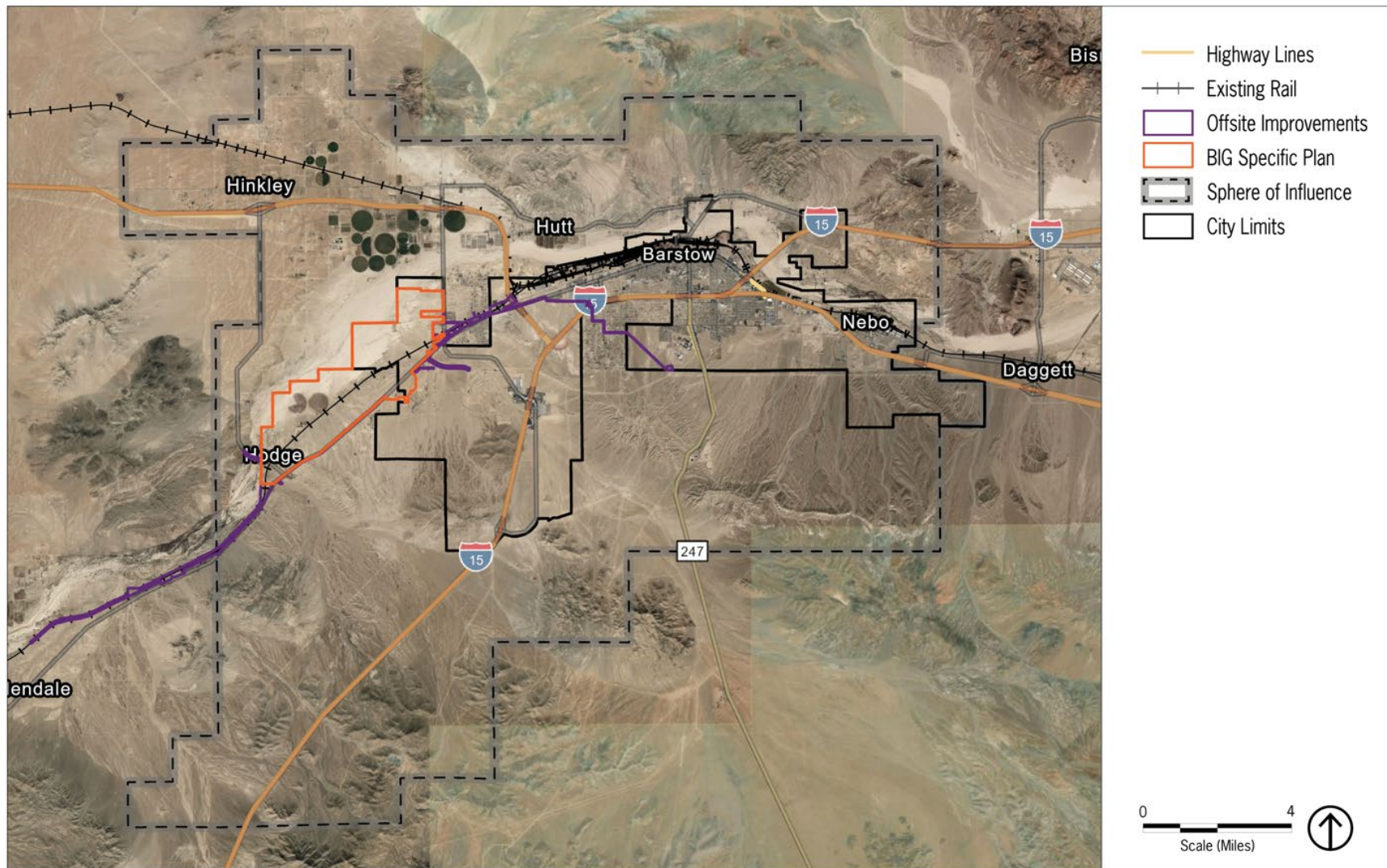


Figure 3: Barstow International Gateway Conceptual Site Plan

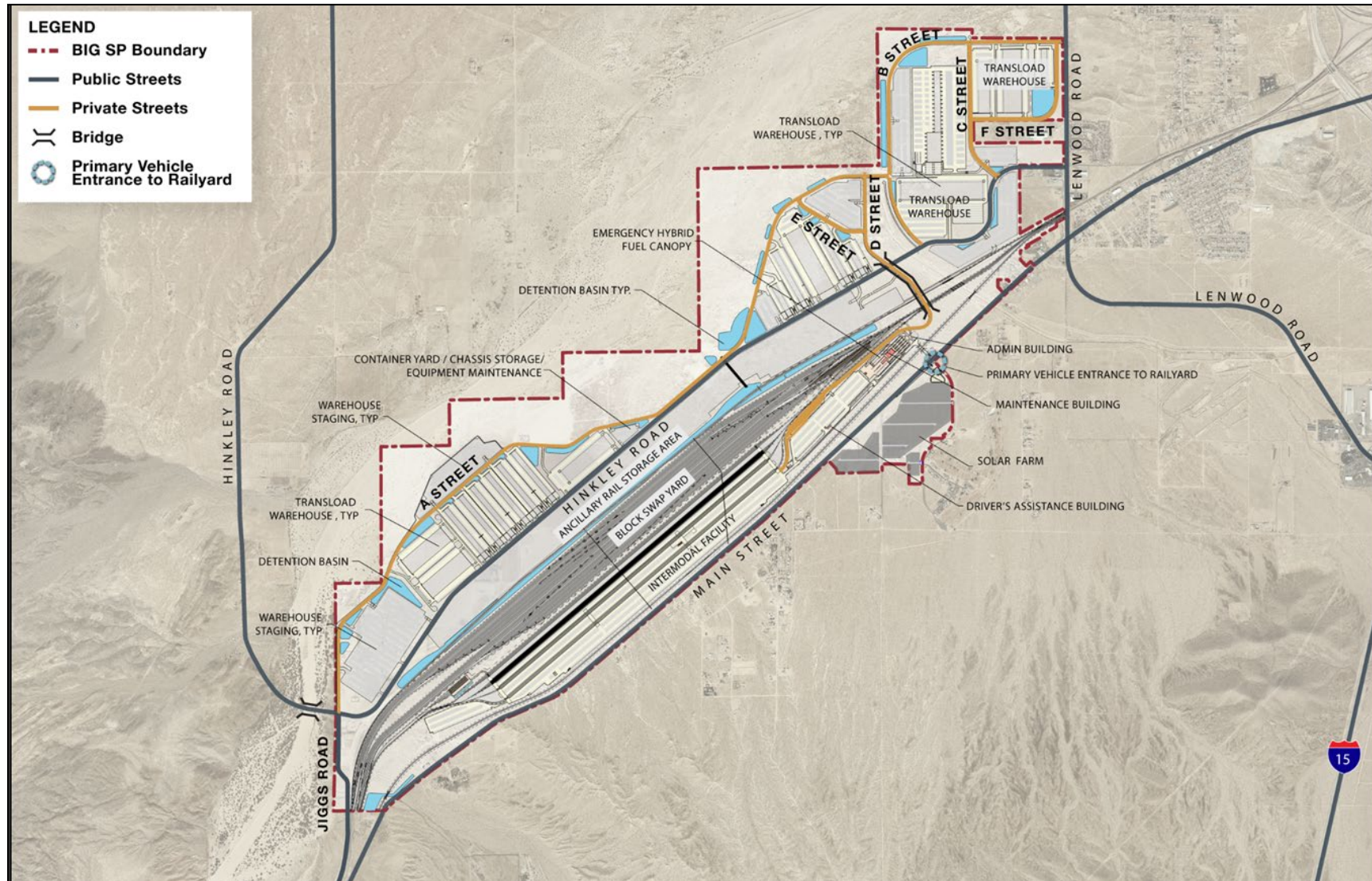


Figure 4: BIG Off-Site Improvements, West

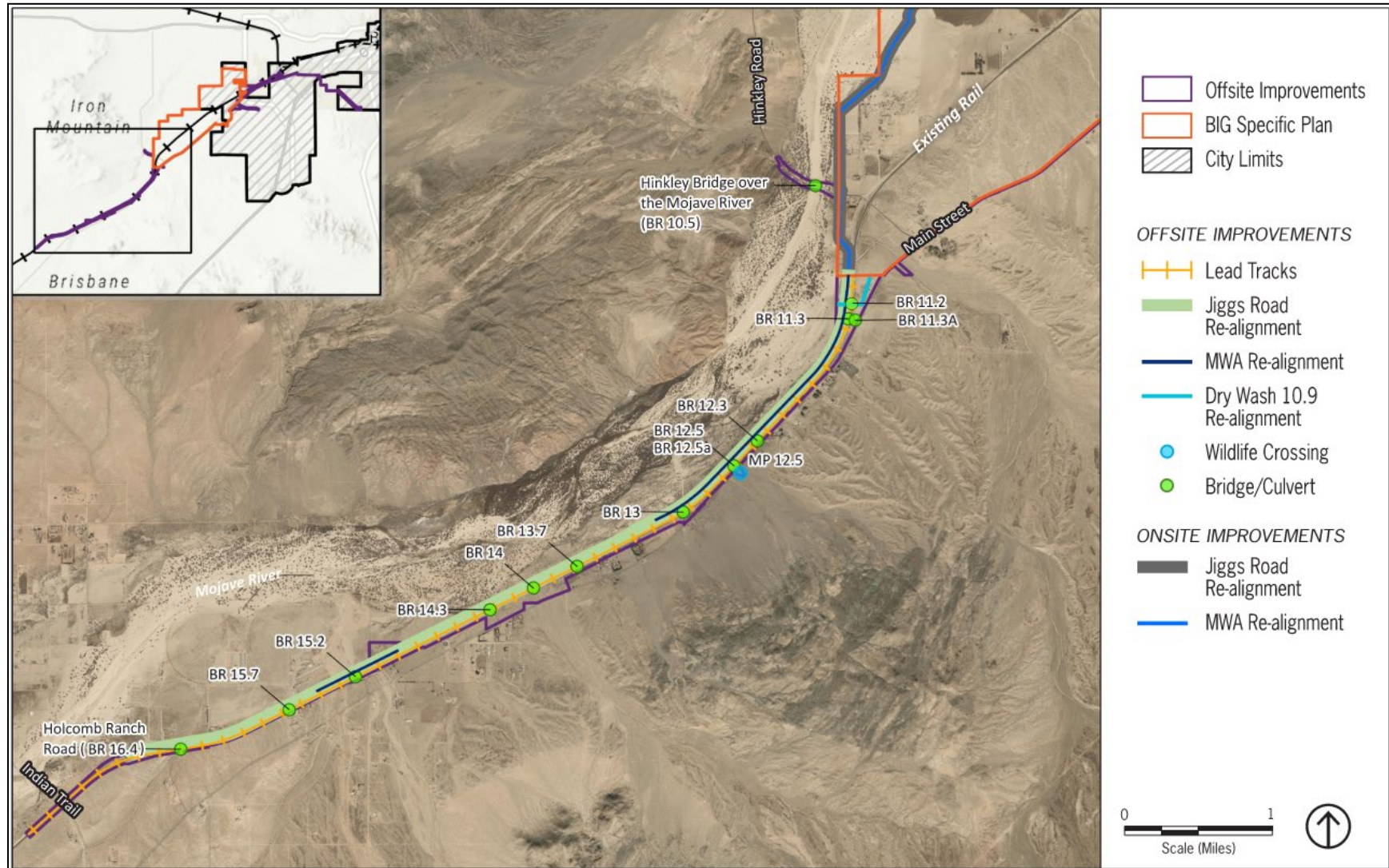
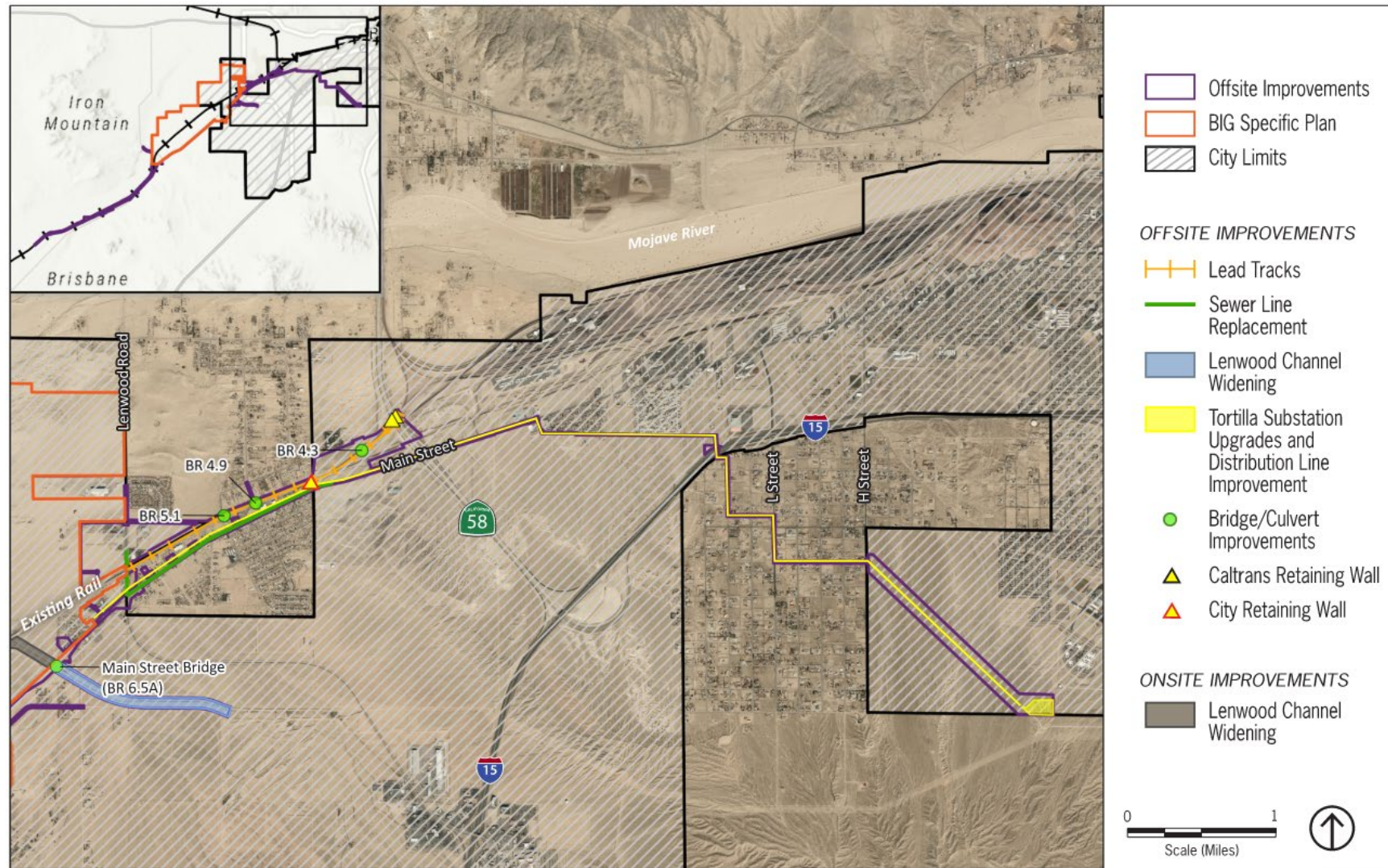


Figure 5: BIG Off-Site Improvements, East



1.2 Project Components

Rail Yard

Overview

The rail yard would be generally bounded by the existing mainline to the north, Main Street to the south, Lenwood Road to the east, and Hinkley Road to the west. The rail yard would consist of an intermodal facility (i.e., where cross-dock intermodal operations and other intermodal facility operations would occur and where support intermodal facility uses would be located), a block swap yard, and ancillary rail areas (i.e., container yard, chassis storage, and ancillary rail storage area), as described below.

BIG's proposed rail yard would operate 24 hours per day, 365 days per year. The rail yard would have approximately 860 employees during Opening Year (2028), 1,010 employees in Interim Year (2033), and 1,125 employees during Horizon Year (2048)⁵, which would accommodate both the block swap yard and intermodal facility operations. Employees would be split evenly between three shifts.

While the block swap yard would change the number of trains that would arrive or depart BIG by optimizing for end destinations, it would not increase the number of containers. BIG's intermodal facility would, through the cross-dock intermodal operation, add a new volume to the BNSF network, totaling approximately 3.2 trains per day on average in 2028, approximately 4.3 trains per day on average in 2033, and approximately 4.9 trains per day on average in 2048. These train counts include eastbound and westbound trains, and as described elsewhere, trains between the Ports and the BIG intermodal facility would be comprised of dedicated Tier 4 locomotives.

Intermodal Facility

BIG's intermodal facility is proposed at the southern extent of the BIG Specific Plan area and its operations would consist of two types: cross-dock intermodal and "other" operations. BIG's intermodal facility would operate differently than typical intermodal facilities in that most of the containers processed at BIG intermodal facility would not arrive or leave externally by heavy-duty trucks. Instead, almost all of the containers would arrive or leave by train and be processed via BIG's unique "cross-dock intermodal" operation. The intermodal facility's primary purpose would be to transfer containers between railcars and electric hostlers⁶ for cross-dock movements at the onsite proposed transload warehouse center, and vice versa, though a small portion would arrive by heavy-duty truck. The electric hostlers would be used to transport containers within the rail yard, and between the rail yard and transload warehouse center. The electric hostlers would be zero-emission (ZE) and would not leave BIG. This differs from the operations at a traditional intermodal facility where the primary purpose is to transfer containers from heavy-duty trucks⁷ to railcars, and vice versa (defined as "other" operations). BIG also includes a dedicated fleet of Tier 4 linehaul locomotives⁸ to move containers between the Ports and the BIG intermodal facility.

⁵ A "Horizon Year" is the last year of analysis. BIG's Horizon Year is 20 years after opening.

⁶ Electric hostlers are trucks used for moving trailers and containers short distances within freight terminals, rail yards, and warehouses. Electric hostlers would not use public roadways outside of BIG footprint.

⁷ "Heavy-duty" trucks are conventional highway trucks that travel on public roads and carry containers intra- and inter-state.

⁸ "Tier" refers to emissions standards set by regulatory agencies for engine emissions, with Tier 0 referring to the oldest and having the highest emissions, while Tier 4 is the latest, more stringent standard with the fewest emissions.

BIG's intermodal facility would be composed of various components including railroad tracks, cargo handling equipment, an automated gate system, circulation roadways, yard equipment parking, container parking, stormwater detention ponds, electric vehicle charging stations, and buildings and ancillary rail facilities. Containers would be stored in parking spaces and low stacks at the intermodal facility, along with the ancillary rail area, and transload warehouse center (each described further below). Although electric lift equipment would be utilized to the extent commercially feasible within BIG's intermodal facility, a small 5,000-square-foot fuel canopy would be constructed in the electric hostler maintenance area to accommodate fueling of hybrid equipment. Hybrid and diesel equipment would include rubber-tired gantry cranes (RTGs), seven air compressors, welders, railcar wheel change machines, and heavy-duty truck transport refrigeration units (TRUs). The fuel canopy would be served by a 10,000-gallon unleaded fuel aboveground storage tank and a 20,000-gallon diesel fuel aboveground storage tank, with both controlled by an electronic fuel control system. In addition, starting in BIG opening year 2028, BNSF would increase the renewable diesel composition within their existing southern California fueling sites, including the existing fueling sites at the Ports and Barstow classification yard from 1 percent to 10 percent, a 900 percentage point increase in renewable diesel. This would improve the emissions of all BNSF trains fueling at the Ports, including those BNSF trains that would not stop at BIG.

BIG's intermodal facility proposes approximately 134,000 square feet of support buildings and structures, as detailed in **Table 2: BIG Intermodal Facility Structures**. As described below, final building sizes may vary slightly, this EIR conservatively analyzes up to 150,000 SF of support buildings and structures.

Table 1: BIG Intermodal Facility Structures	
Building/Canopy	Square Footage
Administration Building	23,000
Electric Hostler Employee and Maintenance Building	39,000
Drivers Assist Building	5,000
Crane Maintenance Employee and Storage Building	5,000
Crane Maintenance Canopies	22,500
Container Safe Haven Canopies	2,500
Quick Repair Canopy	10,000
AGS Kiosk Canopies	20,000
AGS Portals	2,000
Emergency Fuel Station Canopy for Hybrid Vehicles	5,000
<i>Total</i>	<i>134,000</i>
<i>Assumed Building Total for Final Design</i>	<i>150,000</i>
Note: The square footage described is an estimate and may vary up to 10% depending on the final engineering, therefore, the total square footage for planning purposes is estimated at approximately 150,000 sf.	

Block Swap Yard

The block swap yard is proposed within the middle portion of the BIG Specific Plan area, on approximately 410 acres of the rail yard's total approximately 1,950 acres. The proposed block swap yard would allow for the transfer of multiple railcars, or "blocks" of intermodal rail cars between trains via Tier 4 switcher

locomotives. A block is defined as rail cars of a similar type moving to a similar destination that are already connected and can be combined with other blocks intended for similar destinations to produce more efficient train movements. The entire block of rail cars would remain coupled together and be moved en masse, permitting the synchronizing of blocks to their destinations, so that each train would be compiled of rail car blocks travelling to similar destinations. Blocks could be assembled from inbound trains or trains processed at the intermodal facility carrying containers processed at the transload warehouse center. Certain train blocks may stage at the block swap yard until another train arrives with similar destination. The block swap yard would facilitate switching and transfer of lengthy rail car blocks between tracks for assembling departing trains. Thus, by synchronizing trains to their destinations, the block swap yard would improve train efficiency eastbound and westbound. The rail car blocks within the block swap yard would include containers from BIG's intermodal facility and containers processed at the transload warehouse center, combining as needed based on their destination.

The block swap yard's function is unique compared to a typical classification yard, such as the existing Barstow classification yard. Classification yards are where trains being processed are made up of non-intermodal railcars (i.e., individual boxcars, gondolas, open and closed hopper cars, automobile railcars, and tank cars), rather than intermodal railcars. BNSF designates these types of trains with a different train identification than those that would be processed at BIG. Further, BNSF uses different equipment to process these trains than would be used at BIG. While there is a small intermodal facility component adjacent to the existing Barstow classification yard, that intermodal facility is only used to process overflow from other BNSF intermodal facilities. By contrast, BIG's block swap yard would disassemble and assemble lengthy blocks of railcars with intermodal containers to similar destinations utilizing Tier 4 switcher locomotives. The existing Barstow classification yard also utilizes switcher locomotives as part of its operations, although they are currently Tier 0/0+/1+ switchers. Starting in BIG opening year 2028, BNSF will voluntarily retire all existing Tier 0/0+/1+ switcher locomotives at the unrelated existing Barstow classification yard, and in their place add six Tier 4 switcher locomotives.

Ancillary Rail Area

The ancillary rail storage area is an approximately 400-acre area north of the existing mainline and would be graded and covered with aggregate to be used for numerous purposes, including a container yard, truck chassis storage, and storage of maintenance equipment. A container yard would support the storage of empty containers awaiting loading while chassis storage would be used to provide parking for empty chassis awaiting use for loading, unloading, or draying of containers. The ancillary rail storage area would also be used for storage of spare parts and equipment for track maintenance, including rail, ties, turnouts, and other track material.

Mainline Improvements

BIG would retain the existing two rail mainlines ("north mainlines") within their current alignments, except at bridge crossings, which would be upgraded. BIG also proposes to construct two new mainlines ("south mainlines"), which would traverse the proposed rail yard in an east-west orientation, extending from Lenwood Road on the east to Hinkley Road on the west. During the construction phase, the south mainlines would be used to divert train traffic from the existing mainlines while they are upgraded. During

BIG operations, half of the trains which would bypass BIG would use the north mainlines and half would use the south mainlines to balance train counts between the mainlines. BIG would also upgrade various bridge crossings including replacement of the crossing at Lenwood Channel to accommodate the proposed Lenwood Channel widening; removal of existing culverts⁹ to accommodate proposed culverts for the overall rail yard; and replacement of two structures to meet BNSF standards regarding 50- and 100-year flood conditions.

Transload Warehouse Center

The transload warehouse center is proposed at the northern extent of the BIG Specific Plan area, on approximately 1,330 acres of BIG SP's total approximately 4,300 acres. The transload warehouses would be designed to process the contents of containers from cross-dock intermodal operations, with a small percentage dedicated to processing the contents of containers that have a portion destined for the Inland Empire (the remainder of the container's contents would be placed on trains destined eastward). A small percentage of containers processed at the transload warehouse center would arrive/leave by heavy-duty trucks, primarily from/to the Inland Empire. The transload warehouse center would process most of the containers within an onsite "closed loop" operation between BIG's intermodal facility and the transload warehouse center. The transload warehouse center would include approximately 9.0 million square feet of transload warehouses. The transload warehouse center would be fully built during construction, but operations would gradually increase as customers relocate to BIG. Transload warehouse center operations would include approximately 2,767 employees in Opening Year, approximately 3,660 employees in Interim Year, and 4,248 employees in Horizon Year.

The transload warehouse center would be composed of multiple buildings of various configurations and sizes, depending on tenant needs. As such, **Figure 4** provides a conceptual site plan for illustrative purposes showing potential transload warehouse buildings, locations, and sizes. Final transload warehouse buildings, locations, and sizes may differ from those proposed and would be processed with the City, as development occurs. Each transload warehouse would include container parking/storage areas, employee parking, stormwater/hydrology improvements, and landscaping. Finally, emergency generators are proposed throughout the transload warehouse center to provide electric power in the event of a power outage.

There would also be several areas distributed around the transload warehouse center, adding up to approximately 275 acres, for staging/overflow parking of containers accessing the transload warehouse center. These warehouse staging areas would be for truck containers only; truck "hoteling"¹⁰ would not occur, as electric hostlers would transfer containers to/from these areas, thus, heavy-duty truck trailers would not enter or exit these areas.

Hydrology/Stormwater Drainage Improvements

BIG would construct various infiltration basins and drainage outlets to the Mojave River that would be designed for 100-year flood events. Preliminarily, BIG proposes detention ponds of various sizes

⁹ Culverts are drainage features, typically a pipe or arch, used to convey water under a road or rail tracks.

¹⁰ Truck "hoteling" refers to when a heavy-duty truck parks for the driver to rest within the cab.

throughout BIG footprint totaling approximately 165 acre-feet of storage volume, which would accommodate the 100-year flood conditions.

In addition to various ephemeral washes throughout BIG footprint, three other primary hydrologic features traverse BIG footprint, as detailed below.

Unnamed Stream (Milepost 10.9): This feature is a dry wash from Main Street to the Mojave River that includes a sharp western bend. This feature would be realigned to accommodate track mains, sidings, and support tracks and improved with a combination of bridges and box culverts spanning the channel (Bridge 10.9a and Bridge 11.2, respectively).

Hinkley Road Bridge at Mojave River (Milepost 10.5): The existing Hinkley Road Bridge, which the County owns and maintains, is at a narrowed section of the Mojave River and crosses via a concrete pier structure. Based on discussions with the County, the existing Hinkley Road Bridge over the Mojave River is experiencing structural issues and is at risk of being over-topped from seasonal flooding. Hydrology and hydraulic analyses have indicated the existing bridge is undersized. To maintain a roadway connection to Hinkley Road from the transload warehouse center, BIG proposes to replace the existing bridge with a longer structure to better match the channel width of the Mojave River at that location. The channel beneath, and immediately adjacent to, the existing bridge would be excavated and widened to match the natural channel width more closely. Portions of Hinkley Road immediately east and west of the bridge would be raised to reduce exposure to Mojave River flood events. These proposed improvements at Hinkley Road Bridge would reduce flooding compared to existing conditions. As part of the improvements, the existing at-grade crossing would be abandoned, and vehicles would instead utilize the proposed Hinkley Road extension through the transload warehouse center.

Lenwood Channel (Milepost 6.5): A portion of the BIG footprint along Lenwood Channel is currently within the FEMA 100-year flood zone due to existing flooding concerns. Lenwood Channel is a north-south earthen channel used to convey water from the southeast to the Mojave River and maintained by San Bernardino County Flood District. Lenwood Channel would be widened by approximately 60 to 100 feet throughout the Specific Plan area for a length of 1.1 miles, continuing offsite south of Main Street, for an additional 1 mile. The widened channel would improve flooding compared to existing conditions. Preliminary BIG design requires the Lenwood Channel to be spanned at three locations for additional track east leads, mains, and sidings, as well as three roadway crossings: Main Street, Hinkley Road, and the private road between the intermodal facility and transload warehouse center.

Utility Improvements

To accommodate the proposed rail yard and transload warehouse center, BIG would require both relocations of existing facilities and construction of new/expanded facilities (i.e., water, wastewater, electric power, natural gas, and telecommunications). The utility improvements proposed within BIG's footprint are discussed below.

Water

BIG's construction phase water demand includes non-potable water for construction activities and potable water for onsite construction workers. To provide non-potable water during the construction

phase, up to eight new private onsite temporary groundwater wells would be constructed within BIG's transload warehouse center portion.

Temporary aboveground connections from Golden State Water Company existing mains within Main Street to BIG would be constructed to supply potable water to the construction sites. Additionally, Mojave Water Agency owns and operates a 48-inch recharge water line that crosses the BIG Specific Plan area. BIG proposes to relocate this existing line to the north to avoid conflict with rail yard and transload warehouse center improvements.

Operational potable water and fire flow water would be provided by directly connecting to facilities owned and operated by the Golden State Water Company. Fire flow would be supplemented by on-site water tanks and fire pumps if necessary to meet the fire flow requirements. Power to water tanks and fire pumps would be supported by the transload warehouse diesel backup generators in the case of an emergency. Water tanks would be placed entirely within the BIG footprint. The transload warehouse center would connect to an existing water main in Jasper Road on the east end of the BIG Specific Plan area. The rail yard would connect to an existing water main on the east end of the BIG Specific Plan area near Lenwood Road on the south side of Main Street. A new public 12-to 16-inch looped water main would be constructed from the existing connection in Main Street, extending west to the edge of rail yard, north to Hinkley Rd, and then continue east in Hinkley Road to the existing connection point near Lenwood Road. A second connection from the looped water main would be provided at the northeast corner of the Specific Plan at Lenwood Road. The new onsite public water mains total approximately 10 miles in length.

Wastewater

BIG's construction-related wastewater generation would be from construction workers. Temporary portable facilities (i.e., portable restrooms and portable handwash stations) would be utilized during the construction phase.

BIG's operational wastewater generation would be from transload warehouse center and rail yard employees, and the rail yard wash bays and track pans. Wastewater generated by BIG would discharge to the City's existing wastewater system at three connection points. The transload warehouse center would discharge to the proposed new sewer main in Hinkley Road. A new 8-inch wastewater line is proposed within the Hinkley Road extension from the west end of the transload warehouse center to the northeast end of the transload warehouse center and would connect to the existing sewer main in Lenwood Road. Within the transload warehouse center, west of the Lenwood Channel, 8-inch lines would extend north in C Street to serve the transload warehouses connecting to Lenwood Road via B Street. The rail yard would include new wastewater lines and force mains at the southern portion of the rail yard, conveying wastewater to the east and connecting to the existing sanitary sewer main in Main Street near Country Club Drive. BIG's wastewater would be conveyed by gravity flow to and treated at the Barstow Regional Wastewater Treatment Facility, which is owned and operated by the City. Wastewater conveyance and treatment would be coordinated with the City.

Electrical Power

BIG construction activities would generate temporary electric power demand from construction equipment, tools, lighting, and other necessary facilities (e.g., temporary offices). The electric power for construction activities would be supplied through connections to existing Southern California Edison (SCE) facilities.

BIG operations would generate permanent electric power demand from the transload warehouse center (lighting, electric vehicle charging for material handling, and forklifts) and rail yard (lighting, buildings, cranes, and electric hostlers (used to move containers between the rail yard and the transload warehouse center)). BIG operational electric power demand would be met through connecting to the SCE Tortilla Substation and supplemented with onsite electrical generation (i.e., an approximately 140-acre, approximately 21 megawatts solar power generation facility (i.e., solar farm), which is described further below. BIG proposes to construct the following onsite electric power facilities to serve BIG:

- Three substations: two substations at the eastern and western extents of the rail yard; and one substation within the solar farm.
- Additional 33kV distribution lines connecting via underground duct banks in a loop around the west end of the intermodal facility and north end of the transload warehouse center. These proposed 33KV distribution lines would total 23 miles of duct bank within the BIG Specific Plan area.
- An approximately 140-acre solar farm is proposed south of BIG rail yard, at the southwest corner of the Main Street at Country Club Drive intersection. The solar farm is estimated to generate approximately 21 megawatts to serve BIG. The solar farm would include a battery electric storage system and a new substation at the northwest corner to route power from the solar farm to BIG rail yard. The solar farm would be fenced to prevent trespass and would include internal roadways for maintenance vehicles. The solar farm would require minimal grading to level the site as existing topography is utilized wherever possible and excavation limited primarily to stormwater detention to capture runoff. Additionally, BIG would comply with CalGreen regulations requiring that rooftop solar generation be installed on the industrial warehouse rooftops (Title 24, Section 140.10). Based on 9.0 MSF of transload warehouse, BIG would include approximately 6.4 megawatts of rooftop solar generation for Title 24 compliance.
- Emergency diesel generators are proposed at various locations across the rail yard and transload warehouse center to provide backup power in the event of Tortilla Substation service interruptions. Rail yard generators would only be used if a power outage were to occur at nighttime, as the proposed solar farm would provide sufficient power during daytime in the event of a power outage. The rail yard would include up to 10 generators at the far western extent, while the transload warehouse center would include up to 29 generators dispersed throughout. Generators would require up to 50 hours of testing and maintenance operations per year.

Solar farm maintenance would consist of cleaning, inspecting, and replacing solar panels, equipment, and other system components. Maintenance trips associated with these activities would be limited to trucks transporting materials, equipment, and supplies to and from the farm. To maintain uninterrupted power generation for BIG, maintenance activities would occur incrementally. The solar farm would also require vegetative maintenance (e.g., mowing and weeding, and other grass control measures). No grading would occur during solar farm maintenance.

Natural Gas

BIG construction activities would not require construction of new natural gas facilities, although protection in place or relocation of existing natural gas facilities would be required to accommodate BIG.

Stormwater

To collect stormwater runoff, BIG proposes stormwater basins that would detain any stormwater in excess of predevelopment flows then discharge to existing drainageways through stormwater best management practices. BIG would include various outlets to the Mojave River. Exact sizing and locations of transload warehouse center basins would be dependent on final transload warehouse location, layout, and sizing. In addition, Lenwood Channel would be modified as discussed below.

Solid Waste

BIG would result in solid waste generation from construction (demolition debris, broken or excess materials, packaging, and other construction waste), as well as during operations from the rail yard and transload warehouse center. BIG's solid waste would be collected within onsite trash bins and be disposed of at the Barstow Sanitary Landfill, with 65 percent being recycled (for instance, demolished concrete foundations can be crushed and re-used onsite as aggregate).

Telecommunications

Telecommunication lines cross BIG footprint along Lenwood Road and along the southern edge of the existing tracks. Underground utilities may also be present. All underground communication facilities are assumed to have shallow depths except those crossing under existing features such as underpasses and creeks. Lines within BIG footprint may be relocated adjacent to/within existing and proposed rights-of-way or abandoned. In addition, BNSF Telecommunications would install approximately 12 communication towers with heights generally between 100 - 120 feet, though two communication towers would be 160 feet tall. Additionally, various existing telecommunications lines owned by Frontier Communications and Lumen would be removed from within BIG footprint, and, in their place, new communications line would be run beginning at the Jasper Road at Lenwood Road intersection, running to the western extent of the BIG Specific Plan area, and then running eastward back to Lenwood Road in a "loop."

On-Site Circulation Improvements

BIG would include various on-site circulation improvements as discussed below.

Hinkley Road Realignment: BIG would vacate Hinkley Road between the south side of the Mojave River bridge crossing and Main Street, closing the existing at-grade rail crossing. Hinkley Road would be realigned beginning at the north side of the Mojave River bridge crossing to connect through the transload warehouse center to the Jasper Road/Lenwood Road intersection. Transload warehouse center employees and heavy-duty trucks destined for the transload warehouse center would enter from the Lenwood Road/Hinkley Road/Jasper Road intersection.

Internal private roadways: In addition to the realigned public Hinkley Road (discussed above), BIG would include four dedicated internal private roadways for electric hostlers (private streets A, B, D, and E), and two internal private roadways for employee, visitor, and truck access (private streets C and F).

Country Club Drive: Country Club Drive would be widened along the solar farm frontage for approximately 400 feet to the proposed realignment of Sweeten Lane. A new stop-controlled intersection is proposed at the Country Club Drive at Sweeten Lane intersection.

Main Street: Rail yard employees and heavy-duty trucks destined for the intermodal facility would enter BIG's rail yard from a new driveway on Main Street across from Country Club Road. Main Street would be widened from two lanes to four lanes for approximately 0.5 mile east of Country Club, resulting in a consistent four-lane roadway width through Barstow. Additionally, the existing two-lane Main Street over Lenwood Channel low water crossing would be replaced with a new four-lane bridge that accommodates the 100-year flood condition, substantially reducing the existing flood conditions. Main Street would be raised over Lenwood channel, modifying the vertical alignment of Main Street for approximately 0.8 mile. The intent of this design is to keep flood waters contained in Lenwood Channel and convey the flow to the Mojave River under the bridge at MP 6.5, avoiding the overflow of the bank that can occur under existing conditions.

To accommodate BIG, various on-site public rights-of-way within the City and unincorporated San Bernardino County would also need to be vacated.

Off-Site Improvements

In addition to the on-site improvements described above, BIG also proposes off-site rail and non-rail improvements, as discussed below:

Off-Site Rail Improvements

BIG proposes lead track extensions to the east of approximately two miles and lead track extensions to the west of approximately seven miles ("east lead track" and "west lead track"). These off-site rail improvements would be primarily within existing BNSF right-of-way. These improvements would enable trains to safely enter and exit the mainline at mainline speeds, rather than slower "yard" speeds and risk fouling the track.¹¹ BIG east and west lead tracks would require modifications to existing culverts within the footprint; see also *Stormwater Drainage* discussion below.

Off-Site Non-Rail Improvements

BIG proposes ancillary and related stormwater drainage, utility (i.e., water, sewer, electric power, natural gas, and telecommunications), and circulation/roadway improvements and modifications, described below.

Water. North of transload warehouse center, an existing Mojave Water Agency 48-inch recharge line would be relocated. The relocated line would stretch along the north side of the transload warehouse center to the west end of the BIG Specific Plan area, then continue along the north side of the mainline and lead tracks for a total of 8.3 miles.

¹¹ "Fouling the track" means the placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment, or in any case is within four feet of the field side of the near running rail (49 CFR Part 214). When a rail network becomes congested, trains can foul the track by moving slower than a train behind them.

Wastewater. An existing approximately 27-inch sanitary sewer line is within existing BNSF ROW for approximately 1.6 miles between Lenwood Road and Pettit Road. This line includes multiple north/south lateral connections to serve the land uses between Main Street and the existing BNSF tracks. BIG would relocate this line at Phillips Street south to within Main Street. Additionally, the transload warehouse center will connect to City sewer via a new 27-inch sewer line within Jasper Road extending to north of Paris Avenue.

Electric Power. Electrical demand would be handled through connecting to the Southern California Edison Tortilla Substation, located approximately 0.4 mile south of the Veterans Parkway at Diamond Avenue intersection. Three underground duct banks with electrical conductors would connect BIG to the Tortilla Substation utilizing existing franchise agreements with the City and County on a route following Main Street, Sunrise Road, N Street, and Bonanza Road before utilizing existing easements between Bonanza Road and the substation. This proposed 33KV distribution route would extend approximately 7.1 miles underground from the Tortilla Substation to the intermodal facility's eastern extent at Country Club drive, then continue overhead approximately 3.5 miles from Country Club Drive to approximately Hinkley Road. For the 33kv line segment from Tortilla Substation to BIG, the 33kv circuits would be in underground utility lines resulting in an approximately 30-foot-wide disturbance to account for construction access and temporary spoils. From Tortilla substation to H Street (approximately 1.2 miles), the 33kv conduit could occur within a 450-foot-wide corridor, inclusive of the existing 150-foot wide SCE easement along Bonanza Road. However, the exact alignment is presently unknown and is being coordinated with SCE. Therefore, this EIR analyzes an approximately 30-foot wide disturbance within the 450-foot wide corridor ("33kv distribution corridor"). This EIR analyzes the "worst-case" environmental impacts within the 33kv distribution corridor. SCE would make modifications, which include constructing new feeders and new power distribution lines. Within the Tortilla Substation's existing fence line, SCE would also make modifications to supply the new feeders from their existing 115kV-33kV transformers. Various off-site existing electric power lines could be relocated, modified, or extended to accommodate BIG improvements.

Natural Gas. Various off-site existing natural gas lines could be relocated to accommodate BIG improvements.

Telecommunications. No off-site telecommunications improvements are proposed. Various minor existing telecommunications lines would be relocated toward the eastern end of the lead track improvements. Existing telecommunications lines passing through the intermodal facility and block swap yard would be relocated to the north side of the Main Street ROW.

Stormwater Drainage. As described above, the Lenwood Channel widening would continue offsite, south of Main Street. It would be widened by approximately 60 to 100 feet for a total of approximately 2.1 miles (of which 1 mile would be offsite) to improve flooding compared to existing conditions. At the Main Street crossing at Lenwood Channel, BIG would replace 0.8-mile of the existing Main Street low water crossing of Lenwood Channel with a bridge and raise and widen the road through this stretch west to the new intermodal facility entrance. These improvements accommodate the City/County master plan and improve flooding compared to existing conditions.

Other. To accommodate wildlife crossings from south of Main Street to the Mojave River without potential conflict with vehicular or train traffic, BIG proposes an underground wildlife crossing under Main Street west of the existing Hinkley Road.

Circulation/Roadway. Jiggs Road would be realigned generally from just east of Indian Trail to Hinkley Road to maintain emergency access from Indian Trails to Hinkley Road. In addition, a maintenance road would be constructed alongside the mainline to provide maintenance access to the tracks, generally from just east of Indian Trail to Hinkley Road. Various circulation and roadway improvements and modifications are proposed outside the BIG Specific Plan area. All circulation improvements would be permanent, except a temporary Main Street bypass. The temporary bypass would be constructed to maintain access along Main Street during Lenwood Channel Bridge reconstruction. To maintain access for adjacent residents, the temporary Main Street bypass would include private driveways for adjacent residential uses and would be open for the approximately 18-month bridge reconstruction period. Once the Lenwood Channel Bridge reconstruction is complete, the bypass would be removed and the site restored to its original condition. Additionally, construction of additional lead tracks over Pettit Road (approximately 1,100 feet west of SR-58) would require the road to be lowered by approximately 2.0 feet. BIG would also vacate various ROW within the City and County. Finally, Sweeten Lane would be vacated and realigned to eliminate the existing unimproved intersection with Main Street. A new paved access would extend from Country Club east approximately 1,000 feet and connect to the unimproved Sweeten Lane.

Maintenance Activities

While “light maintenance activities”¹² could occur at BIG, major maintenance activities¹³ would still occur at the existing Barstow classification yard, thus, requiring short-distance trips via BNSF’s existing mainline to and from the existing Barstow classification yard for heavy maintenance. Locomotive trips associated with maintenance activities would be based on the number of linehaul locomotives needed to move trains between the Ports and BIG intermodal facility, and the number of switcher locomotives needed to haul rail cars within BIG intermodal facility and block swap yard. All switcher locomotives at BIG would be Tier 4 locomotives, and BNSF would also retire all existing Tier 0/0+/1+ locomotives at the unrelated existing Barstow yard and, in their stead, add six Tier 4 switcher locomotives.

1.3 Project Construction Activities and Phasing

For analysis purposes, construction is assumed to occur over approximately 34 months beginning in the third quarter of 2025 and ending in the third quarter of 2028. The entirety of BIG’s construction activities, including off-site improvements, are analyzed in this report and described below. The assumed construction phase timing is shown in **Table 3: BIG Construction Schedule**. However, the current construction schedule anticipates that BIG construction would begin approximately August 2026, and end approximately July 2029, for an approximate 13-month shift from the schedule shown in **Table 3: BIG Construction Schedule** and analyzed in this technical report. However, construction duration (34 months)

¹² “Light maintenance activities” means routine locomotive servicing (e.g., window washing, fueling, inspecting fluid levels and topping off fluids, stocking cabins with crew equipment such as water and trash bags, toilet servicing) and minor railcar servicing (e.g., wheel changes, brake and friction shoes, and loose or missing bolts)

¹³ “Major maintenance activities” means repair of railing and platform, railcar suspension, hitches, engine, etc.

would remain unchanged. Further, given fleet turnover and compliance with increased regulatory requirements, construction and operational air quality emissions would improve over time as is reflected in California Emissions Estimator model (CalEEMod), the California Air Resource Board’s air quality emissions modeling platform.

During peak construction periods, work would be under way at several locations within BIG footprint simultaneously, with overlapping construction of various elements. Construction working hours and the number of workers present at any time would vary depending on the activities being performed. BIG construction would require approximately 8,177 construction workers per year.¹⁴

Table 2: BIG Construction Schedule		
Phase	Start Date	End Date
South Mainlines	8/7/2025	10/2/2026
Intermodal Facility	8/7/2025	1/4/2027
Block Swap Yard	1/22/2026	6/8/2028
North Mainlines	5/27/2027	6/8/2028
Transload Warehouse	2/5/2026	12/6/2027
33 kV Distribution Undergrounding	9/13/2025	5/7/2027
Solar Site	3/20/2026	2/27/2027

Nighttime construction could occur throughout the BIG footprint except where within 300 feet of sensitive receptors (along the 33kv distribution line). To avoid potential noise and vibration impacts from pile driving, BIG proposes to establish a buffer of 1,800 feet for nighttime pile driving and 500 feet for daytime pile driving from sensitive receptors. Additionally, nighttime construction would be necessary for track work adjacent to the existing mainline where lead tracks would tie into the mainline. All construction activities would occur within BIG footprint.

BIG components would involve the following construction activities:

Demolition and Grading

The BIG footprint is primarily vacant, undeveloped land traversed by an existing BNSF railroad and containing scattered residential, commercial, and industrial land uses. Existing land uses within BIG’s footprint are listed in **Table 1: Existing Land Uses**. All existing land uses not demolished during acquisition to avoid trespassing and safety concerns would be demolished prior to, or during, mass grading. In addition, existing utilities (underground and aboveground) within BIG footprint would be removed or temporarily relocated as needed.

Six culverts/bridges would need to be demolished within the existing BIG footprint. Demolition would involve excavators to break apart bridge abutments and foundations.

Mass grading would occur in one phase across the BIG footprint and require approximately 26 million cubic yards of cut and fill. Mass grading would be typified by large construction equipment establishing the area’s general grading contours. For locations supporting future buildings, roadways, or track, mass

¹⁴ Based on 23,200 construction worker “job years”

grading would include watering and compaction of soil to provide a stable subgrade. Earthwork onsite would be balanced, with excess cut from the rail yard being used as fill within the transload warehouse center.

Fine grading would include site-specific grading for the transload warehouse center, as well as finish grading around buildings, parking areas, curb and gutter, etc.

Construction of Rail Yard (Intermodal Facility and Block Swap Yard)

The likely sequence for BIG rail yard construction (intermodal facility and block swap yard) would include mass grading; compacting the rail bed and internal roadways/parking areas; installing underground improvements/utilities; fine grading; installing crushed rock subballast; laying track and ballast; and installing train signals and communications systems. To reduce construction trucking, BIG would bring rail ties, welded rail, and rail ballast in via train.

Rail yard construction elements would include surface and elevated track work where the track would cross a water feature, a grade-separated roadway crossing for electric hostlers to access (and return from) the transload warehouse center, and installation of an intermodal facility. Major construction activities would include grading and excavation support, underground utility installation, systems construction, bridge construction, and railway systems construction (including trackwork, signaling, and communications). High-mast lights (up to 120 feet in height) would be constructed throughout the rail yard, including foundation work, conduits, and security camera positions. Rail yard construction would also include foundations and tracks for gantry cranes.

Furthermore, the proposed rail yard area would be excavated to result in a nearly-level grade between the east and west ends. With the proposed grading, most of the rail yard would be approximately 30-45 feet below Main Street. Various key BIG elements are also shown below.

Rail materials such as rail ties, welded rails, and ballast would be delivered by train. As noted above, the two existing north mainlines would be protected in place except at the bridge crossings, and two new south mainlines constructed. The south mainlines would be constructed first, and, during the first year of construction, existing rail traffic would use the new south mainlines so that the existing mainlines can be rebuilt and their bridge crossings upgraded. Mainline, rail yard, and lead track construction would utilize a Track-Laying Machine for approximately 20 months to lay track.

Intermodal facility construction would include various administrative and support buildings and substantial paving for the container parking and storage.

Solar Farm Construction

Solar farm construction, which would occur in a single phase, would require minimal grading to level the site as existing topography is utilized wherever possible and excavation limited primarily to stormwater detention to capture runoff. Fencing would be installed around the solar farm's perimeter of the solar farm, internal drive-aisles would be graded and paved, and the proposed substation would be constructed per SCE standards.

Construction of Transload Warehouse Center

Construction elements for the transload warehouse center would include grading, over-excavation,¹⁵ footing and foundation excavation and pouring, tilt-up panel concrete construction, parking lot grading and paving, utility installation and undergrounding, and hydrology/drainage improvements.

Construction of Onsite Bridges and Roadway Improvements

Railroad bridge and roadway construction may use various methods including segmented pre-cast, cast-in-place, box girder or pre-cast, and span-by-span techniques.

Pre-construction activities would occur during final design and would include geotechnical investigations, identification of staging areas, initiation of site preparation and demolition, relocation of utilities, and implementation of temporary, long-term, and permanent road closures. Two bridges would be constructed over Lenwood Channel (BR 6.5D, 6.5E, and BR 6.5F) to enable traffic to flow from either side of Lenwood Channel.

Construction of Off-Site Rail Improvements

Off-site rail improvements would include clearing and grubbing, bridge crossing construction, ballast placement, track laying, and connection to the mainline. Off-site rail improvements would parallel the existing mainline and primarily be within existing BNSF right-of-way. BIG's rail deliveries of rail ties and ballast would include materials for construction of off-site rail improvement.

Construction of Off-Site Non-Rail Improvements

Off-site non-rail improvements would include construction of drainage, utility, and roadway improvements.

Drainage. Lenwood Channel improvements would consist of scouring and widening the channel. Construction equipment would be within Lenwood Channel in order to accomplish the widening.

Utilities. Additionally, off-site construction would include utility improvements including the 33kv distribution/Tortilla Substation improvements. Construction processes are anticipated to include clearing and grubbing, saw cuts and demolition of existing pavement, excavation to approximately 10 feet below ground surface, installation of temporary shoring, placement of circuits and distribution lines, fill placement and removal of temporary shoring, and roadway repair.

Roadways/Intersections. A bridge over Lenwood Channel for Main Street would be constructed to replace the existing low water crossing and accommodate widening of Main Street in that immediate area. Additionally, BIG proposes roadway/intersection improvements/modifications, including the installation of traffic signals at various intersections.

Typical construction processes for these off-site non-rail improvements would include clearing and grubbing, over-excavation, bridge construction, traffic signals with associated underground conduits and cabling, and restriping and asphalt or concrete pavement placement, where needed.

¹⁵ "Over-excavation" refers to removal and re-compaction of soil.

2.0 REGULATORY SETTING

2.1 Federal

To date, national standards have not been established for GHG emissions, nor have any regulations or federal legislation been enacted specifically to address climate change or direct GHG emissions reduction at the project level. Laws have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

Energy Policy and Conservation Act of 1975

The Energy Policy and Conservation Act of 1975 was developed to establish energy conservation programs to efficiently and effectively minimize any adverse economic or employment impacts of changing patterns of energy use and meet local economic, climatic, geographic, and other unique conditions and requirements of each state. The Act established the Strategic Petroleum Reserve, the Energy Conservation Program for Consumer Products, and Corporate Average Fuel Economy (CAFE) regulations (updated regularly).

National Climate Program Action of 1978

The National Climate Program Act requires the Secretary of Commerce to establish a National Climate Program Office to enable the United States (U.S.) and other nations to understand and respond to natural and man-induced climate processes and their implications. The Program includes: (1) procedures for assessing the effect of climate on agriculture, energy supply and demand, land and water resources, transportation, human health, and national security; (2) basic and applied research to improve understanding of climate processes; (3) methods of improving climate forecasts; (4) global data collection and climate monitoring and analysis activities to provide reliable, useful, and available information on a continuing basis; (5) systems for the management and active dissemination of climatological data and information; (6) measures for increasing international cooperation in climate research, monitoring, analysis, and data dissemination; (7) mechanisms for intergovernmental climate-related research and services, including participating by universities and the private sector; (8) experimental climate forecast centers; and (9) biennial revisions for the final five-year plan.

In 1979, the National Research Council released Strategy for the National Climate Program, the first of a number of reviews and advisory documents prepared by the National Research Council on the program. The Global Change Research Act of 1990 as amended is the currently mandated framework within which climate and global change research is implemented among federal departments and agencies.

Energy Policy Act of 1992

The Energy Policy Act of 1992 set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the U.S. The Act has 27 titles detailing various measures designed to lessen the nation's dependence on imported energy, provides incentives for clean and renewable energy, and promotes energy conservation in buildings. Title XVI (Global Climate Change) requires the Secretary of Energy to report to the Congress on specified implications of global climate

change policies, including the generation of GHGs and carbon dioxide (CO₂), and U.S. compliance with its international obligations.

Energy Policy Act of 2005

The Energy Policy Act of 2005 sets forth an energy research and development program covering energy efficiency; renewable energy; oil and gas; coal; Tribal energy resource development; nuclear matters and security; vehicles and motor fuels, including ethanol; hydrogen; electricity; energy tax incentives; hydropower and geothermal energy; and climate change technology.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (U.S. EPA, 2025a), requires, among other key measures, the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium-duty trucks and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

On April 9, 2025, President Trump signed an executive order (EO) calling for the sunset of various environmental regulations. The order affects pieces of several keystone energy and environmental legislation, including the Energy Independence and Security Act of 2007.

Massachusetts v. Environmental Protection Agency (2007)

The U.S. Supreme Court ruled in *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), that CO₂ and other GHGs are pollutants under the Federal Clean Air Act (FCAA), which the United States Environmental Protection Agency (U.S. EPA) must regulate if it determines they pose an endangerment to public health or welfare. The Supreme Court's opinion also referenced a Council on Environmental Quality report issued in 1970 that concluded that "[m]an may be changing his weather" and a 1979 Climate Research Board investigation that determined "If [CO₂] continues to increase, the study group finds no reason to doubt that climate changes will result and no reason to believe that these changes will be negligible... A wait-and-see policy may mean waiting until it is too late." (Council on Environmental Quality, 1970, p. 93; Climate Research Board, 1979, p. viii).

Multi-Pollutant Emissions Standard for MYs 2027 and Later Light-Duty and Medium-Duty Vehicles

In 2024, the U.S. EPA issued a final rule, *Multi-Pollutant Emissions Standards for MYs 2027 and Later Light-Duty and Medium-Duty Vehicles* that sets new, more protective standards to reduce harmful air pollutant

emissions from light-duty and medium-duty vehicles starting with model year 2027 (U.S. EPA, 2025b). The final rule builds upon U.S. EPA’s final standards for federal GHG emissions standards for passenger cars and light trucks for model year 2023 through 2026 and leverages advances in clean car technology to help improve public health from vehicle emissions. These standards will phase in over model year 2027 through 2032. For light-duty vehicles, the standards are projected to result in an industry-wide average target for the light-duty fleet of 85 grams per mile of CO₂ in model year 2032, representing a nearly 50 percent reduction in projected fleet average emissions target levels relative to the existing model year 2026 standards (Ibid). The medium-duty vehicle standards are projected to result in an average target of 274 grams per mile of CO₂ by model year 2032, representing a 44 percent reduction in projected fleet average emissions target levels relative to the existing model year 2026 standards (Ibid). Overall, the U.S. EPA projects that cumulative CO₂ reductions as a result of the new standards are approximately 7.2 billion metric tons over the life of the program (Ibid).

In response to President Trump’s “Unleashing American Energy” EO, published on January 20, 2025, the U.S. EPA announced its intention to reconsider regulations and actions that rely on the 2009 GHG Endangerment Finding (Endangerment Finding) on March 12, 2025. This includes the Multi-Pollutant Emissions Standard for MY 2027 and Later Light-Duty and Medium-Duty Vehicles. California currently has no authority to implement these standards.

U.S. EPA Endangerment Finding

The U.S. EPA authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing FCAA and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court’s ruling, the U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs (CO₂, methane [CH₄], nitrous oxide [N₂O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF₆]) constitute a threat to public health and welfare. Therefore, it is the Supreme Court’s interpretation of the existing FCAA and the U.S. EPA’s assessment of the scientific evidence that form the basis for the U.S. EPA’s regulatory actions.

In response to President Trump’s “Unleashing American Energy” EO, published on January 20, 2025, the U.S. EPA announced its intention to reconsider regulations and actions that rely on the Endangerment Finding on March 12, 2025. The March 12 announcement specifically targets the following which impact GHG emissions:

- Advanced Clean Trucks (ACT) Plan
 - Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards
 - Multi-Pollutant Emissions Standards for MY 2027 and Later Light- and Medium-Duty Vehicles
 - GHG Emissions Standards for Heavy-Duty Vehicles – Phase 3.
- Corporate Average Fuel Economy (CAFÉ) Standards

Federal Vehicle Standards

In response to the U.S. Supreme Court ruling in *Massachusetts v. EPA* (2007) discussed above, EO 13432 was issued in 2007 directing the U.S. EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the U.S. EPA and NHTSA issued a final rule regulating cars and light trucks for model year 2012 to 2016. The NHTSA is responsible for establishing vehicle standards and for revising existing standards. Compliance with federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the U.S.

CAFE standards are federal regulations that are set to reduce energy consumed by on-road motor vehicles. The NHTSA regulates the standards, and the U.S. EPA measures vehicle fuel efficiency. The standards specify minimum fuel consumption efficiency standards for new automobiles sold in the U.S. On May 19, 2009, President Obama issued a Presidential Memorandum proposing a new national fuel economy program that adopts uniform federal standards to regulate both fuel economy and GHG emissions. The program covers model year 2012 to model year 2016 and ultimately requires an average fuel economy standard of 35.5 mpg in 2016 (39 mpg for cars and 30 mpg for heavy-duty trucks). In response to the Presidential Memorandum, an October 2010 Regulatory Announcement developed with support from industry, the State of California, and environmental stakeholders was issued by the U.S. EPA and the U.S. Department of Transportation.

On August 28, 2012, the U.S. EPA and the NHTSA issued a joint final rule to establish 2017 through 2025 GHG emissions and CAFE standards. To further California's support of the national program to regulate emissions, the California Air Resources Board (CARB) submitted a proposal that would allow automobile manufacturer compliance with the U.S. EPA's average fuel economy regulations to show conformity with California's requirements for the same model year. The Final Rulemaking Package was filed on December 6, 2012, and the final rulemaking became effective on December 31, 2012. Building on Advanced Clean Cars (ACC) I, rulemaking for ACC II was finalized on November 30, 2022. This further accelerates California's transition to zero-emissions vehicles (ZEVs) by setting a ZEV sales target of 100 percent by 2035 instead of ACC I's target of 35 percent.

On June 7, 2024, the NHTSA finalized their CAFE standards for model year 2030 to 2035. The final rule requires an industry-wide fuel average of approximately 50.4 mpg for passenger cars and light-duty trucks and an industry fleet-wide average for heavy-duty pickup trucks and vans of roughly 2.851 gallons per 100 miles.

In response to President Trump's "Unleashing American Energy" EO, published on January 20, 2025, the U.S. EPA announced its intention to reconsider regulations and actions that rely on the Endangerment Finding on March 12, 2025. This includes the CAFE standards. On June 6, 2025, the NHTSA published an interpretive rule that establishes the NHTSA's authority to revise the CAFE standards without consideration of EVs. California currently has no authority to implement these standards.

Recent Changes in Federal GHG Policy

In August 2022, President Biden signed the Inflation Reduction Act (IRA) into Law (IRA, 2025). The IRA is the largest investment in clean energy and climate action that has ever been enacted and marks the most significant action Congress has taken on clean energy and climate change in the nation's history. The IRA invests \$350 million for grants, technical assistance and tools, including carbon labeling, to help manufacturers, institutional buyers, real estate developers, builders and others measure, report and substantially lower the levels of embodied carbon and other GHG emissions associated with all relevant stages of production, use and disposal of construction materials and products including steel, concrete, asphalt and glass (U.S. EPA, 2025d). Public and private sector investments driven by the IRA are expected to reduce GHG emissions by approximately 1 billion tons in 2030. In response to President Trump's "Unleashing American Energy" EO, published on January 20, 2025, disbursement of all funds supporting the IRA were paused and all contracts supporting clean energy and climate-related initiatives were terminated.

In March 2022, the U.S. EPA released state-level data as a resource to support states as they work to address the climate crisis and reduce climate pollution (U.S. EPA, 2022). These resources include new state-level GHG emissions and sinks, updates to the U.S. EPA's existing State Inventory Tool to help states compile their own emission and sink estimates, and information on state-level opportunities to reduce emissions of highly-potent GHGs.

In November 2021, the Infrastructure Investment and Jobs Act was approved by the U.S. Congress and was signed by President Biden. The act aims to build modernized environmentally friendly infrastructure and update outdated structures which would reduce GHG emissions. In response to President Trump's "Unleashing American Energy" EO, published on January 20, 2025, disbursement of all funds supporting the Infrastructure Investment and Jobs Act were paused and all contracts supporting clean energy and climate-related initiatives were terminated.

2.2 State

California Air Resources Board (CARB)

CARB is responsible for the coordination and oversight of state and local air pollution control programs in California. Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects. California is a significant emitter of CO₂ equivalents (CO₂e) in the world and produced 369 gross million metric tons of CO₂e (MMTCO₂e) in 2020 (CARB, 2024). In the state, the transportation sector is the largest emitter of GHGs, followed by industrial operations such as manufacturing and oil and gas extraction.

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation, such as the landmark Assembly Bill (AB) 32, *California Global Warming Solutions Act of 2006*, was specifically enacted to address GHG emissions. Other legislation, such as Title 24 building efficiency standards and Title 20 appliance energy standards,

were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of California legislation.

AB 32 (California Global Warming Solutions Act of 2006)

AB 32 instructs the CARB to develop and enforce regulations for reporting and verifying statewide GHG emissions. AB 32 also directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. It set a timeline for adopting a Scoping Plan for achieving GHG reductions in a technologically and economically feasible manner.

CARB Scoping Plan

Overview. CARB adopted the Scoping Plan to achieve AB 32 goals. The Scoping Plan and its updates establish an overall framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emissions level would require a reduction of GHG emissions of approximately 29 percent below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business-as-usual" [BAU]).¹⁶ The Scoping Plan and its updates evaluate opportunities for sector-specific reductions, including the transportation sector, integrates early actions and additional GHG reduction measures by both CARB and the State's Climate Action Team, identifies additional measures to be pursued as regulations, and outlines the adopted role of a cap-and-trade program, which is discussed below.¹⁷ Additional development of these measures and adoption of the appropriate regulations occurred through the end of 2013.

Key elements of the Scoping Plan and its updates include:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33 percent by 2020.
- Developing a California cap-and-trade program that links with other programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions (adopted in 2011).
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets (several sustainable communities strategies [SCSs] have been adopted).
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, heavy-duty truck measures, the Low Carbon Fuel Standard (LCFS) (amendments to the Pavley Standard adopted 2009; ACC standard adopted 2012), and goods movement measures.

¹⁶ CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.

¹⁷ The Climate Action Team, led by the secretary of the California Environmental Protection Agency, is a group of state agency secretaries and heads of agencies, boards, and departments. Team members work to coordinate statewide efforts to implement global warming emissions reduction programs and the State's Climate Adaptation Strategy.

- Creating targeted fees, including a public goods charge on water use, fees on gases with high global warming potential (GWP), and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.
- The California Sustainable Freight Action Plan was developed in 2016 and provides a vision for California's transition to a more efficient, more economically competitive, and less polluting freight transport system. This transition of California's freight transport system is essential to supporting the state's economic development in coming decades while reducing pollution.
- CARB's Mobile Source Strategy demonstrates how the state can simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease health risk from transportation emissions, and reduce petroleum consumption over the next fifteen years. The Mobile Source Strategy includes increasing ZEV buses and trucks.

The following revisions to the CARB Scoping Plan are provided chronologically.

Updated BAU Estimates and Inventory Forecasts. In 2012, CARB released revised estimates of the expected 2020 emissions reductions. The revised analysis relied on emissions projections updated in light of current economic forecasts that accounted for the economic downturn since 2008, reduction measures already approved and put in place relating to future fuel and energy demand, and other factors. This update reduced the projected 2020 emissions from 596 MMTCO₂e to 545 MMTCO₂e. The reduction in forecasted 2020 emissions means that the revised BAU reduction necessary to achieve AB 32's goal of reaching 1990 levels by 2020 was adjusted to 21.7 percent, down from 29 percent. CARB also provided a lower 2020 inventory forecast that incorporated state-led GHG emissions reduction measures already in place. When this lower forecast is considered, the necessary reduction from BAU needed to achieve the goals of AB 32 is approximately 16 percent.

2014 Scoping Plan Update. In 2014, CARB adopted the first major update to the Scoping Plan. The updated Scoping Plan summarizes the most recent science-related to climate change, including anticipated impacts to California and the levels of GHG emissions reductions necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32.

Senate Bill (SB) 32. In 2016, the Legislature passed SB 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels and is discussed further below. With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. Two major updates to the Scoping Plan have occurred since the passing of SB 32 and AB 197 and are discussed further below:

2017 CARB Scoping Plan. On December 14, 2017, CARB adopted a second update to the Scoping Plan. The 2017 Scoping Plan details how the State will reduce GHG emissions to meet the 2030 target set by EO B-30-15 and codified by SB 32; EO B-30-15 is discussed further in the **Other EOs Related to GHG Emissions** section below. Other objectives listed in the 2017 Scoping Plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and support other federal actions. Key elements from the 2017 Scoping Plan include:

- The California Sustainable Freight Action Plan aims to have 25 percent improvement of freight system efficiency by 2030 through the deployment of over 100,000 freight vehicles and

equipment capable of ZE operation and maximizing near-ZE freight vehicles and equipment powered by renewable energy.

- The Cleaner Technology and Fuels Scenario of CARB’s ongoing Mobile Source Strategy includes GHG regulations for medium-duty trucks and heavy-duty trucks, periodic assessment, and promotion of cleaner fleet standards, and increasing ZEV across all vehicle classes, including rail vehicles, along with charging infrastructure.

2022 CARB Scoping Plan. On December 15, 2022, CARB adopted the *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) (CARB, 2022a). The 2022 Scoping Plan sets a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels by 2045 in accordance with AB 1279. To achieve the targets of AB 1279, the 2022 Scoping Plan relies on existing and emerging fossil fuel alternatives and clean technologies, as well as carbon capture and storage. Specifically, the 2022 Scoping Plan focuses on ZE transportation; phasing out use of fossil gas use for heating homes and buildings; reducing chemical and refrigerants with high GWP; providing communities with sustainable options for walking, biking, and public transit; displacement of fossil-fuel fired electrical generation through use of renewable energy alternatives (e.g., solar arrays and wind turbines); and scaling up new options such as green hydrogen. The 2022 Scoping Plan sets one of the most aggressive approaches to reach carbon neutrality in the world. Unlike the 2017 Scoping Plan, CARB no longer includes a numeric per capita threshold and instead advocates for compliance with a local GHG reduction strategy (i.e., CAP) consistent with California Environmental Quality Act (CEQA) Guidelines § 15183.5.

The key elements of the 2022 Scoping Plan focus on transportation. Specifically, the 2022 Scoping Plan aims to rapidly move towards ZE transportation (i.e., electrifying cars, buses, trains, and trucks), since transportation constitutes California’s single largest source of GHGs. The regulations that impact the transportation sector are adopted and enforced by CARB on vehicle manufacturers and are outside the jurisdiction and control of local governments. The 2022 Scoping Plan accelerates development of new regulations as well as amendments to strengthen regulations and programs already in place. The 2022 Scoping Plan also presents the following relevant strategies for transitioning the transportation sector:

- Transitioning vehicles to ZE technology by achieving 100 percent ZEV sales of light-duty vehicles (light trucks) by 2040.¹⁸
- Promote private investment in the transition to ZEV technology, bolstered by regulatory certainty such as infrastructure credits in the LCFS for hydrogen and electricity and hydrogen station grants from the California Energy Commission’s (CEC) Clean Transportation Program.
- Evaluate and align relevant CARB policies such as ACT, Advanced Clean Fleets (ACF), ZE Forklifts, In-use Locomotives, Clean Off-Road Fleet Recognition Program, Amendments to the In-use Off-

¹⁸ On May 22, 2025, the U.S. Senate voted to revoke the waiver granted by the Biden administration for the ACC II program. On June 12, 2025, President Trump formally nullified the California’s ACT rule and the ACC II program (Congressional Resolutions H.J. Res 87 and H.J. Res 88, respectively).

Road Diesel-Fueled Fleets Regulation, carbon pricing through the Cap-and-Trade Program, and the LCFS.^{19, 20, 21}

Included in the 2022 Scoping Plan is a set of Local Actions (2022 Scoping Plan Appendix D) aimed at providing local jurisdictions with tools to reduce GHGs and assist the state in meeting the ambitious targets set forth in the 2022 Scoping Plan. The 2022 Scoping Plan Appendix D includes a section on evaluating plan-level and project-level alignment with the state's Climate Goals in CEQA GHG analyses. In this section, CARB identifies several recommendations and strategies that should be considered for new development in order to determine consistency with the 2022 Scoping Plan. Notably, this section is focused on Residential and Mixed-Use Projects (CARB, 2022b, p. 21). CARB specifically states that 2022 Scoping Plan Appendix D does not address other land uses (e.g., industrial or rail) (CARB, 2022b, p. 4). However, the 2022 Scoping Plan Appendix D plans to explore new approaches for other land use types in the future (CARB, 2022b, p. 21).

SB 32 (California Global Warming Solutions Act of 2006: Emissions Limit)

Enacted in September 2016, SB 32 codifies the 2030 GHG reduction target in EO B-30-15 (40 percent below 1990 levels by 2030); EO B-30-15 is discussed further in the **Other EOs Related to GHG Emissions** section below. The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG reductions.

With SB 32, the State Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017, CARB adopted the 2017 Scoping Plan, discussed above (CARB, 2017). The 2017 Scoping Plan details how California will reduce GHG emissions to meet the 2030 target set by EO B-30-15 and codified by SB 32.

SB 535 (Disadvantaged Communities)

Enacted in 2012, SB 525 establishes requirements for minimum funding levels to disadvantaged communities. Disadvantaged communities in California are specifically targeted for investment of proceeds from the state's Cap-and-Trade Program. These investments are aimed at improving public health, quality of life and economic opportunity in California's most burdened communities, and at the same time, reducing pollution that causes climate change. The City is identified as a disadvantaged community per SB 535 (OEHHA, 2022).

¹⁹ On January 13, 2025, CARB withdrew their requests for FCAA waivers from the U.S. EPA needed to support four recently adopted vehicle emissions regulations: (1) the ACF Regulations; (2) the In-Use Locomotive Regulations; (3) part of the Commercial Harbor Craft and Ocean-Going Vessels At-Berth Regulations; and (4) part of the Transport Refrigeration Unit Engine Standards Regulations. Therefore, implementation of these regulations is currently unknown.

²⁰ The ACT regulation, which requires manufacturers to sell increasing percentages of zero-emission vehicles, was granted a separate waiver in 2023. On May 22, 2025, the U.S. Senate voted to revoke the waiver granted by the Biden administration for California's ACT rule (as well as the ACC II program and Heavy-Duty Omnibus regulation). On June 12, 2025, President Trump formally nullified the California's ACT rule and the ACC II program (Congressional Resolutions H.J. Res 87 and H.J. Res 88, respectively).

²¹ As part of a legal settlement, CARB has agreed to repeal the High Priority Fleet and Drayage Fleet requirements of the ACF regulation. Final action on the repeal is required by August 31, 2026.

Cap-and-Trade Program

California developed a Cap-and-Trade Program that links with other Western Climate Initiative partner programs to create a regional market system. The California Cap-and-Trade Program caps GHG emissions and requires the purchase of emission allowances for covered activities. The Cap-and-Trade Program is designed to reduce GHG emissions from major sources (deemed “covered entities”) by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32’s emission-reduction mandate of returning to 1990 levels of emissions by 2020. The statewide cap for GHG emissions from the capped sectors (i.e., electricity generation, industrial sources, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program’s duration. The passage of AB 398 in July 2017 extended the duration of the Cap-and-Trade Program to 2030.

The 2017 Scoping Plan sets forth measures to reduce GHG emissions to achieve state GHG emission reduction targets for 2030 as prescribed by statute, as well as 2050 targets set forth in EOs S-3-05 and B-16-2012 issued by the California Governor’s office. The Cap-and-Trade Program is included in the 2017 Scoping Plan, without a termination date of 2030. The Cap-and-Trade Program is also included in the 2022 Scoping Plan without a termination date of 2030. The 2022 Scoping Plan noted that CARB will use the modeling for the 2022 Scoping Plan to assess what changes may be warranted to the Cap-and-Trade Programs to ensure achievement of the 2030 target. Based on CARB’s expert opinion, the inclusion of a Cap-and-Trade Program through 2050 in the 2017 Scoping Plan, and other relevant climate laws, regulations, and policies, it is likely the Cap-and-Trade Program would continue beyond 2030.

Under the Cap-and-Trade Program, covered entities that emit more than 25,000 MTCO₂e per year must comply with Program requirements. Triggering of the 25,000 MTCO₂e per year “inclusion threshold” is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule). CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits.

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California’s direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program would be responsible for relatively fewer emissions reductions. If California’s direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program would be responsible for relatively more emissions reductions. Therefore, the Cap-and-Trade Program assures that California would meet its 2020 GHG emissions reduction mandate.

Due to the regulatory framework adopted by CARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the state’s emissions forecasts and the effectiveness of direct regulatory measures. As of January 1, 2015, the Cap-and-Trade Program covered approximately 85 percent of California’s GHG emissions. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. The Cap-and-Trade Program was extended in 2015 to cover the combustion of fossil fuels including transportation fuels

used in California. Accordingly, GHG emissions associated with the electricity usage and mobile sources of most projects that are subject to CEQA are covered by the Cap-and-Trade Program.

SB 375 (The Sustainable Communities and Climate Protection Act of 2008)

Enacted on September 30, 2008, SB 375 provides a process to coordinate land use planning, RTPs, and funding priorities to help California meet AB 32's GHG reduction goals. SB 375 requires metropolitan planning organizations (MPO) to include SCSs in their RTPs for reducing GHG emissions, aligns planning for transportation and housing, and creates specified incentives for the implementation of the strategies.

Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 MPO. The SCAG is the MPO for the Southern California region, which includes Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial counties. Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. CARB adopted revised SB 375 targets for the MPOs in March 2018 that became effective in October 2018. All SCSs adopted after October 1, 2018, are subject to these new targets. CARB's updated SB 375 targets for the SCAG region were an 8 percent per capita GHG reduction in 2020 from 2005 levels (unchanged from the 2010 target) and a 19 percent per capita GHG reduction in 2035 from 2005 levels (compared to the 2010 target of 13 percent) (CARB, 2018).

The targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan (for SB 32), while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of "percent per capita" reductions in GHG emissions from automobiles and light trucks relative to 2005; this excludes reductions anticipated from implementation of State technology and fuels strategies and any potential future State strategies, such as statewide road user pricing. The proposed targets call for greater per-capita GHG emission reductions from SB 375 than are currently in place, which for 2035 translate into proposed targets that either match or exceed the emission reduction levels in the MPOs' currently adopted SCSs to achieve the SB 375 targets. CARB foresees that the additional GHG emissions reductions in 2035 may be achieved from land use changes, transportation investment, and technology strategies (CARB, 2018).

AB 1493 (Pavley Regulations and Fuel Efficiency Standards)

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. Implementation of the statute was delayed by lawsuits filed by automakers and by the U.S. EPA's denial of an implementation waiver. The U.S. EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011. The regulations establish one set of emission standards for passenger vehicle and light-duty truck model year 2009–2016 and a second set of emissions standards for model year 2017

to 2025. By 2025, when all rules will be fully implemented, new passenger vehicles are anticipated to emit 34 percent fewer CO₂e emissions and 75 percent fewer smog-forming emissions.

SB 1368 (Emission Performance Standards)

SB 1368, enacted in September 2006, is the companion bill to AB 32, which directs the California Public Utilities Commission (CPUC) to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 limits carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. The law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The CPUC adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, for 1,100 pounds of CO₂ per megawatt-hour.

SB 1078, SB 107, and SBX1-2 (Renewable Electricity Standards)

SB 1078 (CLI, 2002) required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 (CLI, 2006) changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed EO S-14-08, which established a Renewable Portfolio Standard (RPS) target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. EO S-21-09 also directed CARB to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010, by Resolution 10-23. SBX1-2, which codified the 33 percent by 2020 goal.

SB 350 (Clean Energy and Pollution Reduction Act of 2015)

Enacted on October 7, 2015, SB 350 implements EO B-30-15's goals; EO B-30-15 is discussed further in the **Other EOs Related to GHG Emissions** section below. The SB 350 objectives are to increase the procurement of electricity from renewable sources from 33 percent to 50 percent (with interim targets of 40 percent by 2024, and 25 percent by 2027) and to double the energy efficiency savings in electricity and natural gas end uses of retail customers through energy efficiency and conservation. SB 350 also reorganizes the California Independent System Operator (CAISO) to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western U.S.

AB 398 (Market-Based Compliance Mechanisms)

Signed on July 25, 2017, AB 398 extended the duration of the Cap-and-Trade program from 2020 to 2030. AB 398 required CARB to update the Scoping Plan and for all GHG rules and regulations adopted by the State. It also designated CARB as the statewide regulatory body responsible for ensuring that California meets its statewide carbon pollution reduction targets, while retaining local air districts' responsibility and authority to curb toxic air contaminants (TACs) and criteria pollutants from local sources that severely impact public health. AB 398 also decreased free carbon allowances over 40 percent by 2030 and

prioritized Cap-and-Trade spending to various programs including reducing diesel emissions in impacted communities.

SB 150 (RTPs)

Signed on October 10, 2017, SB 150 aligns local and regional GHG reduction targets with State targets in SB 32 (i.e., 40 percent below their 1990 levels by 2030). SB 150 creates a process to include communities in discussions on how to monitor their regions' progress on meeting these goals. The bill also requires the CARB to regularly report on that progress, as well as on the successes and the challenges regions experience associated with achieving their targets. SB 150 provides for accounting of climate change efforts and GHG reductions and identify effective reduction strategies.

SB 100 (California RPS Program: Emissions of GHGs)

Enacted in September 2018, SB 100 increased California's renewable electricity portfolio target from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

AB 1346 (Air Pollution: Small Off-Road Engines)

Enacted in October 2021, AB 1346 required CARB to adopt cost-effective and technologically feasible regulations to prohibit engine exhaust and evaporative emissions from new small off-road engines consistent with federal law by July 1, 2022. The bill requires CARB to identify and, to the extent feasible, make available funding for commercial rebates or similar incentive funding as part of any updates to existing applicable funding program guidelines to local air pollution control districts and air quality management districts to implement to support the transition to zero-emission (ZE) small off-road equipment operations.

SB 1020 (100 Percent Clean Electric Grid)

Signed on September 16, 2022, SB 1020 provides additional goals for the path to the 2045 goal of 100 percent clean electricity retail sales. It creates a target of 90 percent clean electricity retail sales by 2035 and 95 percent clean electricity retail sales by 2040.

SB 905 (Carbon Sequestration Program)

Signed on September 16, 2022, SB 905 establishes regulatory framework and policies that involve carbon removal, carbon capture, utilization, and sequestration. It also prohibits the injecting of concentrated CO₂ fluid into a Class II injection well for the purpose of enhanced oil recovery.

AB 1279 (The California Climate Crisis Act)

Signed on September 16, 2022, AB 1279 established the goal to achieve net-zero GHG emissions no later than 2045 and net negative thereafter. The bill establishes a goal toward at least an 85 percent reduction target for anthropogenic GHG emissions below statewide 1990 emissions by 2045. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO₂ removal solutions and carbon capture, utilization, and storage technologies. As described above, the 2022 Scoping Plan lays out a path to achieve

targets for carbon neutrality and reduce GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279.

AB 1384 (Resiliency Through Adaptation, Economic Vitality, and Equity Act)

Signed on September 16, 2022, AB 1384 required the release of a draft *Safeguarding California Plan* by January 1, 2024, and every three years thereafter. The intent of AB 1384 is to prioritize the most vulnerable communities, ecosystems, and economic sectors in the State's climate adaptation and resilience strategy set forth in the *Safeguarding California Plan* by ensuring that all State departments and agencies accurately identify, collaboratively prepare for, and are sufficiently resourced to adequately respond to the impacts of climate change, such as extreme weather events, the urban heat island effect, habitat loss, wildfire, sea level rise, and drought.

AB 1389 (Clean Transportation Program)

Signed on September 16, 2022, AB 1389 establishes the Clean Transportation Program, administered by the State Energy Resources Conservation and Development Commission, to provide funding to certain entities to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the State's climate change policies. This bill expands the list of criteria that a project is required to meet in order to be given preference for funding by the commission to include that the project is in a nonattainment area, as specified, and that the project advances the comprehensive strategy for vehicles, as provided.

AB 1749 (Community Emissions Reduction Programs: TACs and Criteria Air Pollutants)

Signed on September 16, 2022, AB 1749 develops additional measures to address TACs and criteria air pollutants by increasing the duties of the air districts. The bill would require an air district to provide annual summaries of updates to the community emissions reduction programs to ensure consistency with the statewide strategy. Air districts with a population of 1,000,000 or higher would also be required to show any permits issued for stationary sources of criteria air pollutants or TACs in an easily identifiable location on the air district's website.

AB 1857 (Solid Waste)

Signed on September 16, 2022, AB 1857 would require the Department of Resources, Recycling, and Recovery to run the Zero-Waste Equity Grant Program to promote strategies and investments in communities developing toward a zero-waste circular economy. The bill also requires the department to submit policy recommendations to the Legislature on methods to improve employment and labor standards in the zero-waste job sector.

AB 1985 (Organic Waste)

Signed on September 16, 2022, AB 1985 requires that penalties handed to local jurisdictions that fail to achieve their recovered organic waste procurement target to be imposed based on the percentage of the organic waste procurement target achieved. The bill also exempts rural jurisdiction that currently are exempt from these requirements to remain exempt until December 31, 2026. On and after January 1, 2027, the Department of Resources Recycling and Recovery would provide an extended recovered organic

waste procurement target schedule for rural jurisdictions that are exempt. Furthermore, existing regulations allow renewable gas acquired through publicly owned treatment works to count toward a jurisdiction's organic waste procurement target if certain conditions are met.

AB 2075 (Energy: EV Charging Standards)

Signed on September 16, 2022, AB 2075 requires the California Building Standards Commission and the Department of Housing and Community Development to consult with the State Energy Resource Conservation and Development Commission in adopting building standards regarding the installation of future vehicle charging infrastructure for parking spaces in different developments. This bill also requires the California Building Standards Commission to collaborate on EV infrastructure standards and to incorporate the most up-to-date statewide assessment of EV charging infrastructure, any electric load forecasts, and the statewide transportation electrification goals. The bill would ensure that voluntary and mandatory vehicle charging standards in the building standards code are anticipating future needs.

SB 905 (Carbon Sequestration: Carbon Capture, Removal, Utilization, and Storage Program).

Signed on September 16, 2022, SB 905 establishes regulatory framework and policies that involve carbon removal, carbon capture, utilization, and sequestration. It also prohibits the injecting of concentrated CO₂ fluid into a Class II injection well for the purpose of enhanced oil recovery.

SB 1010 (State ZEV Fleet Vehicles)

Signed on September 16, 2022, SB 1010 requires the Department of General Services and other State agencies to develop an evaluation criterion for bidders based on their vehicle fleets. More specifically, the number of ZEVs or plug-in hybrid EVs in their rental fleet. This evaluation would determine the bidder's eligibility for a commercial rental car services contract. This bill also states that the infrastructure supporting EVs or hydrogen fueling by State entities does not constitute gifts from public funds.

SB 1020 (Clean Energy, Jobs, and Affordability Act of 2022)

Signed on September 16, 2022, SB 1020 provides additional goals for the path to the 2045 goal of 100% clean electricity retail sales. It creates a target of 90 percent clean electricity retail sales by 2035 and 95% clean electricity retail sales by 2040.

SB 1145 (State GHG Dashboard)

The California Global Warming Solutions Act of 2006 designated CARB as the State agency charged with monitoring and regulating sources of GHG emissions. SB 1145, signed on September 16, 2022, requires CARB to create, and maintain on its internet website, a GHG emissions dashboard that provides updated publicly available information regarding how the State is progressing toward meeting its statewide climate change goals.

SB 1158 (GHG Reporting for Retail Electricity Suppliers)

Signed on September 16, 2022, the GHG Reporting for Retail Electricity Suppliers Bill requires retail suppliers to provide hourly reports of load factors and GHG emissions to the CPUC. This information would

be published as a percentage of each load-serving entity's local and system adequacy requirements from the previous calendar year that was met with capacity from eligible renewable energy resources, other zero-carbon resources, or energy storage resources as specified. However, this bill is starting in 2028.

SB 1203 (Net-ZE for State Agencies)

Signed on September 16, 2022, SB 1203 requires State agencies to achieve net-zero GHG operational emissions by 2035 and to publish an annual GHG emissions inventory for the public by 2024. The bill also requires the Department of General Services to develop a plan before January 1, 2026, that details actions and investments that are required to move toward net-ZE.

SB 1205 (Water Rights: Appropriate Permits)

Signed on September 16, 2022, SB 1205 requires the State Water Resources Control Board to develop regulations that focus on the climate impacts on watershed hydrology and the water availability analyses used in the board's review of applications for water rights permits. The bill requires a consultation with the Department of Water Resources, the California Department of Fish and Wildlife, and qualified hydrologists and climate change scientists in preparing the regulations. The bill also prohibits the board from refusing to accept or delay processing or approval of an application on the grounds that the regulations have not been adopted.

SB 1230 (ZEV Incentive Program)

Signed on September 16, 2022, SB 1230 requires CARB to adopt revisions to various ZE incentive programs. If the revision is infeasible, CARB would be required to prepare a report describing the reason for the infeasibility. This report would be published on the internet, and a notice would have to be prepared to the relevant policy and the fiscal committee of the legislature. This bill also requires CARB to create a single-unified education and application portal that aids applicants to the incentive programs access information and submit one application for all the programs.

CARB ACT Regulation

CARB adopted the ACT Regulation in June 2020 requiring truck manufacturers to transition from diesel trucks and vans to electric ZE trucks beginning in 2024. By 2045, every new truck sold in California is required to be ZE. This rule directly puts California on the path for an all ZE cross-dock intermodal drayage fleet in ports and rail yards by 2035, and ZE "last-mile" delivery trucks and vans by 2040. The ACT Regulation accelerates the transition of ZE medium-and heavy-duty vehicles from Class 2b to Class 8. The regulation has two components including a manufacturer sales requirement, and a reporting requirement:

- **ZE Truck Sales:** Manufacturers who certify Class 2b through 8 chassis or complete vehicles with combustion engines are required to sell ZE trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, ZE truck/chassis sales need 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.
- **Company and Fleet Reporting:** Large employers including retailers, manufacturers, brokers and others would be required to report information about shipments and shuttle services. Fleet

owners, with 50 or more trucks, would be required to report about their existing fleet operations. This information would help identify future strategies to ensure that fleets purchase available ZE trucks and place them in service where suitable to meet their needs.

The ACT regulation was granted a separate waiver in 2023 by the Biden administration. On May 22, 2025, the U.S. Senate voted to revoke the waiver granted by the Biden administration for California's ACT rule (as well as the ACC II program and Heavy-Duty Omnibus regulation). On June 12, 2025, President Trump formally nullified California's ACT rule and ACC II program (Congressional Resolutions H.J. Res 87 and H.J. Res 88, respectively). California currently has no authority to implement ACT.

CARB ACF Regulation

CARB adopted the ACF Regulation in April 2023, requiring the use of ZEVs for targeted fleets and that manufacturers only produce ZEV trucks starting in 2036. The ACF regulation was adopted to complement the recently adopted ACT regulation to help advance the introduction of ZE technology into California's trucks and bus fleets. By 2050, the ACF regulation is expected to introduce 1,690,000 ZEVs into the California fleet and result in \$26.5 billion in statewide health benefits from improved air quality. This regulation will help contribute to the goals set by EO N-79-20 (described further below) and will help achieve emission reductions outlined in the State Implementation Plan, SB 350, AB 32, SB 32, and AB 32. The regulation has four components including a manufacturer sales mandate, drayage fleets requirements, high priority and federal fleets phase-in, and State and local agency procurement requirement.

On January 13, 2025, CARB withdrew their requests for FCAA waivers from the U.S. EPA needed to support four recently adopted vehicle emissions regulations: (1) the ACF Regulations; (2) the In-Use Locomotive Regulations; (3) part of the Commercial Harbor Craft and Ocean-Going Vessels At-Berth Regulations; and (4) part of the Transport Refrigeration Unit Engine Standards Regulations. In addition, on September 25, 2025, CARB repealed the ACF drayage truck requirements (13 CCR § 2014) and the high priority and federal fleet requirements (13 CCR § 2015 through 2015.6). California currently has no authority to implement ACF. In addition, on September 25, 2025, CARB repealed the ACF drayage truck requirements (13 CCR § 2014) and the high priority and federal fleet requirements (13 CCR § 2015 through 2015.6).

CARB ZE Forklifts

In June 2024, CARB approved for adoption the ZE Forklift Regulation. The ZE Forklift Regulation will drive greater deployment of ZE forklifts within fleets throughout California to replace the 100,000 forklifts currently operating in California. This measure is one of several actions that will facilitate ZE equipment penetration in the off-road sector and has been identified in CARB's Mobile Source Strategy, State Implementation Plan, and Sustainable Freight Action Plan.

In-Use Locomotive Regulation

CARB adopted the In-Use Locomotive Regulation on April 27, 2023. Effective January 1, 2024, the regulation reduces emissions from locomotives operating in California by requiring locomotive operators to fund a spending account based on the public health costs to Californians from locomotive emissions and activity levels. Locomotive operators may use funds held in the spending account to purchase cleaner

locomotive technologies. The regulation prohibits locomotives with engine build dates 23 years and older from operating in California starting in 2030. The In-Use Locomotive regulation, starting in 2030, also requires that switch, industrial and passenger locomotives with original engine build dates of 2030 or later operate in a ZE configuration in California. Additionally, in 2035, line haul locomotives with original engine build dates of 2035 or later must operate in a ZE configuration in California. The regulation will achieve emission reductions that will minimize health risk associated with exposure to toxic and criteria pollutants, help meet federal air quality standards, and support California's GHG reduction goals. The regulation also increases the use of ZE technology in the off-road sector and support the goals of EO N-79-20.

As the In-Use Locomotive Regulation would be more stringent than federal standards, CARB will need to obtain approval from the U.S. EPA. On January 13, 2025, CARB withdrew their requests for FCAA waivers from the U.S. EPA needed to support four recently adopted vehicle emissions regulations: (1) the ACF Regulations; (2) the In-Use Locomotive Regulations; (3) part of the Commercial Harbor Craft and Ocean-Going Vessels At-Berth Regulations; and (4) part of the Transport Refrigeration Unit Engine Standards Regulations. Therefore, these regulations will not be implemented.

Other EOs Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs using EOs.

EO S-3-05. EO S-3-05 was issued on June 1, 2005, which established the following GHG emissions reduction targets:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

EO S-01-07. Issued on January 18, 2007, EO S-01-07 mandated that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. The EO established a LCFS and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. CARB adopted the LCFS on April 23, 2009.

EO S-13-08. Issued on November 14, 2008, EO S-13-08 facilitated the California Natural Resources Agency development of the 2009 California Climate Adaptation Strategy. Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

EO S-14-08. Issued on November 17, 2008, EO S-14-08 expanded the State's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, EO S-21-09 (signed on September 15, 2009) directed CARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. CARB adopted the Renewable Electricity Standard on September 23, 2010, which required 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

EO S-21-09. Issued on July 17, 2009, EO S-21-09 directed CARB to adopt regulations to increase California's RPS to 33 percent by 2020. This builds upon SB 1078 (CLI, 2002), which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006), which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

EO B-30-15. Issued on April 29, 2015, EO B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030 and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of MMTCO₂e. The 2030 target acts as an interim goal on the way to achieving reductions of 80 percent below 1990 levels by 2050, a goal set by EO S-3-05. The EO also requires the state's climate adaptation plan to be updated every three years and for the state to continue its climate change research program, among other provisions. With the enactment of SB 32 in 2016, the Legislature codified the goal of reducing GHG emissions by 2030 to 40 percent below 1990 levels. EO B-30-15 is also discussed above in AB 32 (California Global Warming Solutions Act of 2006), SB 32 (California Global Warming Solutions Act of 2006: Emissions Limit), and SB 350 (Clean Energy and Pollution Reduction Act of 2015).

EO B-55-18. Issued on September 10, 2018, EO B-55-18 establishes a goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing GHG emissions. The EO requires CARB to work with relevant State agencies to develop a framework for implementing this goal. It also requires CARB to update the Scoping Plan to identify and recommend measures to achieve carbon neutrality. The EO also requires State agencies to develop sequestration targets in the NWL Climate Change Implementation Plan.

EO N-79-20. Signed in September 2020, EO N-79-20 establishes as a goal that where feasible, 100 percent of new passenger cars and trucks, as well as all drayage/cargo trucks and off-road vehicles and equipment, sold in California, will be ZE by 2035. The EO sets a similar goal requiring that all medium- and heavy-duty vehicles will be ZE by 2045 where feasible. It also directs CARB to develop and propose rulemaking for passenger vehicles and trucks, medium- and heavy-duty fleets where feasible, drayage trucks, and off-road vehicles and equipment "requiring increasing volumes" of new ZEVs "towards the target of 100 percent." The EO directs the California Environmental Protection Agency, the California Geologic Energy Management Division, and the California Natural Resources Agency to transition and repurpose oil production facilities with a goal toward meeting carbon neutrality by 2045. The EO also directed the State Transportation Agency, Caltrans, the California Transportation Commission, and the Department of Finance and other State agencies to identify near term actions and investment strategies to improve clean transportation while continuing a "fix-it-first"²² approach by July 15, 2021. EO N-79-20 builds upon the CARB ACT regulation, which was adopted by CARB in July 2020. On May 22, 2025, the U.S. Senate voted to revoke the waivers granted by the Biden administration for the ACC II program and ACT regulation. On June 12, 2025, President Trump formally nullified the ACT regulation and ACC II program (Congressional

²² "Fix-it-first" approach includes building towards an integrated, statewide rail and transit network, consistent with the California State Rail Plan, to provide seamless, affordable multimodal travel options for all.

Resolutions H.J. Res 87 and H.J. Res 88, respectively). Therefore, implementation of these regulations is currently unknown.

EO N-27-25. Signed on June 12, 2025, EO N-27-25 reaffirms California's commitment to advancing ZEVs and the GHG emission targets established in EO N-79-20. The EO directed CARB to develop an ACC III program, consistent with State and federal laws, and work with manufacturers that continue to follow the ACC II program, ACT regulation, and Heavy-Duty Omnibus regulation. The EO required the CARB, CEC, Governor's Office of Business and Economic Development, California State Transportation Agency, and Department of Consumer Affairs to identify additional actions that would advance ZEV adoption in California.

California Code of Regulations (CCR)

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 Appliance Efficiency Regulations. The appliance efficiency regulations (CCR Title 20, §§ 1601-1608) include standards for new appliances. Twenty-three categories of appliances are included in the scope of these regulations. These standards include minimum levels of operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances.

Title 24 Building Energy Efficiency Standards. California's Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

The CEC adopted the 2022 Energy Code on August 11, 2021, which was subsequently approved by the California Building Standards Commission for inclusion into the California Building Standards Code. The 2022 Title 24 standards will result in less energy use, thereby reducing air pollutant emissions associated with energy consumption across California. Among other updates like strengthened ventilation standards for gas cooking appliances, the 2022 Energy Code includes updated standards such as new electric heat pump requirements for residential uses, schools, offices, banks, libraries, retail, and grocery stores; the promotion of electric-ready requirements for new homes including the addition of circuitry for electric appliances, battery storage panels, and dedicated infrastructure to allow for the conversion from natural gas to electricity; and the expansion of solar photovoltaic and battery storage standards to additional land uses including high-rise multifamily residences, hotels and motels, tenant spaces, offices, (including medical offices and clinics), retail and grocery stores, restaurants, schools, and civic uses (including theaters auditoriums, and convention centers). Projects whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code (CEC, 2022).

The CEC adopted the 2025 Energy Code on September 11, 2024, further advancing the State's building decarbonization goals. The 2025 Energy Code requires electric heat pumps for space and water heating in

most new residential and commercial buildings, expands solar photovoltaic and battery storage requirements to more building types, and mandates electric-ready infrastructure to support future appliance electrification. Projects whose permit applications are applied for on or after January 1, 2026, must comply with the 2025 Energy Code (CEC, 2024).

Title 24 California Green Building Standards (CALGreen) Code. The California Green Building Code (CCR, Title 24, Part 11) commonly referred to as the CALGreen Code, is a statewide mandatory construction code developed and adopted by the California Building Standards Commission and the Department of Housing and Community Development. The CALGreen Code requires new residential and commercial buildings to comply with mandatory measures under the topics of planning and design, energy efficiency, water efficiency/conservation, material conservation and resource efficiency, and environmental quality. The CALGreen Code also provides voluntary tiers and measures that local governments may adopt that encourage or require additional measures in the five green building topics. Updates to the 2019 CALGreen Code took effect on January 1, 2023 (2022 CALGreen Code). The 2022 CALGreen Code has improved upon the 2019 standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The most recent update to the CALGreen Code, the 2025 CALGreen Code, was adopted by the CEC on September 11, 2024, and will go into effect January 1, 2026. Projects whose permit applications are applied for on or after January 1, 2026, must comply with the 2025 CALGreen Code.

2.3 Regional

San Bernardino County Regional GHG Reduction Plan

In 2021, San Bernardino Council of Governments released the San Bernardino County Regional GHG Plan. This plan summarizes the actions that 23 jurisdictions within San Bernardino County (County) (including the City) selected to reduce jurisdictional GHG emissions, as well as state-mandated actions. The GHG reduction measures selected by jurisdictions for this report are non-binding unless the decision-making body of a jurisdiction decides to formally adopt them. At the time of writing, the City has not adopted these measures, and therefore the measures are non-binding within City boundaries.

Southern California Association of Governments (SCAG)

With the goal of ensuring that the SCAG region can meet its regional GHG reduction targets set by CARB, the SCAG Regional Council adopted Connect SoCal 2024 (2024 - 2050 RTP/SCS). Connect SoCal 2024 charts a course for closely integrating land use and transportation so that the region can grow smartly and sustainably. The strategy was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses, and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura.

The RTP is a long-range transportation plan that provides a vision for regional transportation investments over 20 years or more. The SCS is an RTP element that demonstrates the integration of the RTP's land use, transportation strategies, and transportation investments. The overarching accessibility vision of the SCAG RTP, Connect SoCal 2024, includes innovative technologies and Intelligent Transportation Systems aimed at expanding accessibility, relieving congestion, and reducing emissions (SCAG, 2024b, p.8).

Connect SoCal is a long-range vision plan that balances future mobility and housing needs with economic, environmental, and public health goals. Connect SoCal subgoals relevant to the Project include supporting investments that result in improved safety and air quality and minimized GHG emissions (Mobility); integrating the region’s development pattern and transportation network to improve air quality, reduce GHG emissions, and enable more sustainable use of energy and water (Environment); conserving the region’s resources (Environment); improve access to jobs (Economy); and advancing a resilient and efficient goods movement system that supports the economic vitality of the region, attainment of clean air, and quality of life for our communities (Economy) (SCAG, 2024b, p. 85). The SCAG region strives to implement sustainable planning through integrated land use and transportation planning.

2.4 Local

Mojave Desert Air Quality Management District (MDAQMD)

The BIG footprint falls within the jurisdiction of the MDAQMD. The 2020 MDAQMD California Environmental Quality Act and Federal Conformity Guidelines (MDAQMD CEQA Guidelines) establish significance thresholds for GHGs (MDAQMD, 2020). As stated in the MDAQMD CEQA Guidelines, the GHG threshold established for projects is 548,000 pounds of CO₂e per day or 100,000 tons of CO₂e per year (consistent with the U.S. EPA Tailoring Rule). The MDAQMD CEQA Guidelines notes that projects with a construction phase shorter than one year and a separate operational phase can be compared to the daily value.

County of San Bernardino Countywide Plan (CWP)

The County adopted the Countywide Plan (CWP) in October 2020 (San Bernardino, 2020). The CWP Policy Plan addresses the physical, social, and economic issues facing the unincorporated areas of the County.

Table 4: Countywide Plan Policy Plan – Relevant GHG Emission Goals and Policies includes the GHG emissions-related goals and policies relevant to the Project. For applicability of the CWP goals and policies to the Project.

Table 3: Countywide Plan Policy Plan – Relevant GHG Emission Goals and Policies	
Goal or Policy	
LAND USE ELEMENT	
Goal LU-2	Land Use Mix and Compatibility. An arrangement of land uses that balances the lifestyle of existing residents, the needs of future generations, opportunities for commercial and industrial development, and the value of the natural environment.
Policy LU-2.7	Countywide jobs-housing balance. We prioritize growth that furthers a countywide balance of jobs and housing to reduce vehicle miles traveled, increase job opportunities and household income, and improve quality of life. We also strive for growth that furthers a balance of jobs and housing in the North Desert region and the Valley region.
Policy LU-2.10	Unincorporated commercial development. We intend that new commercial development in the unincorporated areas serve unincorporated residential areas, tourists, and/or freeway travelers. We encourage new commercial development to be concentrated to enhance pedestrian circulation and reduce vehicular congestion and vehicle miles traveled, with new development directed into existing centralized areas when possible.
Policy LU-2.12	Office and industrial development in the region. We encourage office and industrial uses in the unincorporated Valley region in order to promote a countywide jobs-housing balance.

Table 3: Countywide Plan Policy Plan – Relevant GHG Emission Goals and Policies	
Goal or Policy	
INFRASTRUCTURE & UTILITIES ELEMENT	
Goal IU-1	Water Supply. Water supply and infrastructure are sufficient for the needs of residents and businesses and are resilient to drought.
Policy IU-1.3	Recycled water. We promote the use of recycled water for landscaping, groundwater recharge, direct potable reuse, and other applicable uses in order to supplement groundwater supplies.
Policy IU-1.4	Greywater. We support the use of greywater systems for non-potable purposes.
Policy IU-1.9	Water conservation. We encourage water conserving site design and the use of water conserving fixtures, and advocate for the adoption and implementation of water conservation strategies by water service agencies. For existing County-owned facilities, we incorporate design elements, building materials, fixtures, and landscaping that reduce water consumption, as funding is available.
Goal IU-4	Solid Waste. Adequate regional landfill capacity that provides for the safe disposal of solid waste, and efficient waste diversion and collection for unincorporated areas.
Policy IU-4.3	Waste diversion. We shall meet or exceed state waste diversion requirements, augment future landfill capacity, and reduce greenhouse gas emissions and use of natural resources through the reduction, reuse, or recycling of solid waste.
NATURAL RESOURCES ELEMENT	
Goal NR-1	Air Quality. Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.
Policy NR-1.1	Land use. We promote compact and transit-oriented development countywide and regulate the types and locations of development in unincorporated areas to minimize vehicles miles traveled and greenhouse gas emissions.
Policy NR-1.3	Coordination on air pollution. We collaborate with air quality management districts and other local agencies to monitor and reduce major pollutants affecting the county at the emission source
Policy NR-1.7	Greenhouse gas reduction targets. We strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.
Policy NR-1.9	Building design and upgrades. We use CALGreen Code to meet energy efficiency standards for new buildings and encourage the upgrading of existing buildings to incorporate design elements, building materials, and fixture that improve environmental sustainability and reduce emissions
RENEWABLE ENERGY & CONSERVATION ELEMENT	
Goal RE-1	Energy Conservation and Efficiency. The County will pursue energy efficiency tools and conservation practices that optimize the benefits of renewable energy.
Policy RE-1.1	Continue implementing the energy conservation and efficiency measures identified in the County of San Bernardino Greenhouse Gas Emissions Reduction Plan.
Policy RE-1.2	Optimize energy efficiency in the built environment. RE 1.2.1: Support low- to no-cost retrofits to improve energy efficiency of existing homes through grant and loan programs. RE 1.1.2: Encourage property owners to participate in a PACE program for access to energy efficiency retrofit financing. RE 1.2.3: Encourage utilities to expand free to low-cost audit and retrofit programs in the built environments. RE 1.2.4: Work with utilities (Southern California Edison (SCE), Southern California Gas Company (SCG), etc.) to identify retrofit opportunities with short payback periods, such as

Table 3: Countywide Plan Policy Plan – Relevant GHG Emission Goals and Policies	
Goal or Policy	
	variable-speed pool pumps, building air sealing, and attic insulation, for County use in conducting focused energy efficiency outreach. RE 1.2.5: Collaborate with community partners to promote the benefits of energy efficiency to County residents, businesses, and industries. RE 1.2.6: Encourage new development to comply with the optional energy efficiency measures of the CALGreen Code. RE 1.2.6: Encourage new development to comply with the optional energy efficiency measures of the CALGreen Code.
Policy RE-1.3	Promote the local economic benefits of energy efficiency retrofits. RE 1.3.1: Support workforce development and certification for green trades. RE 1.3.2: Provide networking opportunities to connect local contractors with energy efficiency retrofit programs such as the PACE program and Energy Upgrade California. RE 1.3.3: Encourage energy efficiency retrofit projects as components of adaptive re-use of historic structures.
Policy RE-1.4	Encourage residents and businesses to conserve energy. RE 1.4.1: Collaborate with utilities to support and learn from annual energy benchmarking reports that large energy users are conducting pursuant to AB 1103. RE 1.4.2: Collaborate with the CEC, utilities, and local partners to launch online energy tracking competitions.
Goal RE-2	Renewable Energy Systems. The County will be home to diverse and innovative renewable energy systems that provide reliable and affordable energy to our unique Valley, Mountain, and Desert regions.
Policy RE-2.1	Support solar energy generation, solar water heating, wind energy and bioenergy systems that are consistent with the orientation, siting and environmental compatibility policies of the proposed General Plan. RE 2.1.1: Utilize renewable energy development standards in the Development Code to minimize impacts on surrounding properties.
Policy RE-2.2	Promote use of energy storage technologies that are appropriate for the character of the proposed location. RE 2.2.1: Encourage onsite energy storage with RE generation facilities, consistent with County Development Code requirements. RE 2.2.2: Encourage and allow energy storage facilities as an accessory component of RE generation facilities. RE 2.2.3: Establish thresholds for conditions under which energy storage facilities are a primary use and subject to separate permit processes. RE 2.2.4: Periodically review and encourage appropriate technology types for energy storage facilities. RE 2.2.5: Support state policies and efforts by utility companies to plan for and develop energy storage technologies through legislative advocacy and coordination with utility companies.
Policy RE-2.3	Encourage the use of feasible emerging and experimental renewable energy technologies that are compatible with County regulatory standards. RE 2.3.1: Monitor emerging renewable energy technologies and amend County development standards as needed to accommodate suitable new technology types. RE 2.3.2: Monitor improvements in existing renewable energy technologies, and consider allowing additional types of renewable energy facilities as they become compatible with County regulatory standards.
Policy RE-2.4	Identify and prioritize programs that support cost-effective and universal access to renewable energy.

Table 3: Countywide Plan Policy Plan – Relevant GHG Emission Goals and Policies

Goal or Policy	
	RE 2.4.1: Expand outreach and education efforts through the County’s online Community Development Toolkit on programs such as the availability of federal and state tax credits, participation in the PACE program, and other mechanisms to reduce the cost of renewable energy facilities for onsite use on new and existing buildings. RE 2.4.2: Educate developers about the County’s RE goals and policies, and encourage the inclusion of renewable energy facilities for onsite use in new developments. RE 2.4.3: Engage with residential developers to discuss and identify opportunities and incentives to expand onsite renewable energy facilities consistent with the goals and policies of this Element. RE 2.4.4: Encourage installation of renewable energy systems on rental properties, multi-family buildings, and buildings with multiple commercial tenants by working with property developers and owners, using tools such as green leases, split incentive programs, and the California Solar Initiative’s MASH program. RE 2.4.5: Encourage the pursuit of community choice aggregation programs in collaboration with other interested jurisdictions in the region. RE 2.4.6: Proactively coordinate RE programs with other jurisdictions in the County to promote countywide collaboration and consistency.
Policy RE-2.5	Support renewable energy systems that accelerate zero net energy (ZNE) through innovative design, construction, and operations of residences, businesses, and institutions that are grid-neutral and independent of centralized energy infrastructure. RE 2.5.1: Allow and encourage construction of new buildings designed to ZNE standards consistent with state programs. RE 2.5.2: Incorporate ZNE into outreach and educational strategies about renewable energy and energy efficiency. RE 2.5.3: Allow and encourage construction of new buildings or developments in remote locations with stand-alone energy systems not connected to the grid. RE 2.5.4: Encourage energy independence and resiliency, including zero net energy and stand-alone systems not connected to the grid, in County economic development presentations and outreach efforts. RE 2.5.5: Collaborate with incorporated cities and other jurisdictions to create region-specific ZNE programs and Community Development toolkit tools tailored to the climates and characteristics of each region to provide consistency and leverage resources.
Policy RE-2.6	Encourage energy efficiency through appropriate renewable energy systems. RE 2.6.1: Pursue and consider development incentives such as density bonuses and streamlined permitting for projects that install accessory renewable energy facilities. RE 2.6.2: Allow developers of nonresidential properties to reduce required on-site parking spaces below minimum standards when space equivalent to the parking space reduction is devoted to renewable energy generation and storage facilities designed to serve onsite energy needs. RE 2.6.3: Encourage solar energy generation on rooftops and on covered parking as the first priority for on-site energy generation.
Goal RE-3.1	Community-Oriented Renewable Energy. Community-oriented renewable energy facilities will be prioritized to complement local values and support a high quality of life in unincorporated communities.
Policy RE-3.1	Prioritize, facilitate, and encourage onsite accessory RE generation to serve the unincorporated county, with a primary focus on rooftop and parking lot solar energy generation.

Table 3: Countywide Plan Policy Plan – Relevant GHG Emission Goals and Policies	
Goal or Policy	
	RE 3.1.1: Permit rooftop, parking lot, and similar accessory RE generation facilities that primarily serve on-site energy needs in all zoning districts, including micro-grid systems, with minimal regulation and permitting requirements.
Policy RE-3.2	Encourage community-oriented renewable energy (CORE) generation that primarily serves local uses in the county. RE 3.2.1: Specific standards shall be established and maintained for community-oriented RE generation facilities appropriate to the Valley, Desert, and Mountain regions. RE 3.2.2: Encourage through the regulatory system the establishment of local and regional organizations to pursue community-oriented RE production and storage. RE 3.2.3: CORE facilities shall be designed primarily to meet the needs of the local users, with an adequate overage margin to meet peak demands and defray the cost of the systems. RE 3.2.3: Encourage utilities and developers to establish community-shared solar programs that allow residents and businesses to purchase shares of the output of RE generation facilities to offset their electricity bills. RE 3.2.4: Provide information and educational opportunities in the Countywide Plan Community Development Tool Kit for local organizations pursuing the acquisition of Community-Oriented Renewable Energy (CORE). RE 3.2.5: Encourage utilization of micro-grid technologies to support the principle of “local production primarily for local consumption,” to enhance local energy security and to improve local costs of living and commerce. RE 3.2.6: Apply minimal discretion in the permit approval process for CORE facilities. RE 3.2.7: Encourage infrastructure, net metering and regulatory systems that support CORE facilities.
Policy RE-3.3	Promote an adaptive distributed energy infrastructure that sustains local communities and improves resiliency to grid failures and increasing energy prices. RE 3.3.1: Support research, planning and investment in accessory and community-oriented energy generation, distribution, and storage infrastructure by adapting regulatory tools to respond to rapidly evolving RE technologies. RE 3.3.2: Encourage new institutional campuses and large residential/commercial developments to include micro-grids with onsite renewable energy generation and energy storage systems.
Policy RE-3.4	Require renewable energy facilities developed in spheres of influence of incorporated cities to be compatible and consistent with standards of the sphere cities.
Policy RE-3.5	Incorporate resident, business owner, and stakeholder input into the development and implementation of County policies for renewable energy.
Policy RE-3.6	Encourage renewable energy facilities to meet community goals, including supporting community health, wellness, and recreational needs. RE 3.6.1: Include opportunities to incorporate public art and encourage design features that provide screening in renewable energy facilities on public spaces, nonresidential facilities, and multi-family buildings. RE 3.6.2: Encourage the use of renewable energy facilities as shade structures in parks and community centers, and over parking lots and parking structures.
Policy RE-3.7	Continue to foster local economic benefits of renewable energy facilities through community involvement. RE 3.7.1: Require CORE project development applications to be sponsored or co-sponsored by local users who will be the primary consumers of the energy generated by the projects. RE 3.7.2: Encourage RE generation facility developers to give preference to San Bernardino County residents in hiring for construction, operation, and decommissioning of the facility.

Table 3: Countywide Plan Policy Plan – Relevant GHG Emission Goals and Policies	
Goal or Policy	
	RE 3.7.3: Encourage local community colleges, vocational schools, and workforce training centers to offer programs on renewable energy installation and maintenance. RE 3.7.4: Encourage innovation zones for manufacturers to locate and operate in the unincorporated county to research, construct, test, and distribute renewable energy technologies
TRANSPORTATION & MOBILITY ELEMENT	
Goal TM-3	Vehicle Miles Traveled. A pattern of development and transportation system that minimizes vehicle miles traveled.
Policy TM-3.1	VMT reduction. We promote new development that will reduce household and employment VMT relative to existing conditions.
Policy TM-3.2	Trip reduction strategies. We support the implementation of transportation demand management techniques, mixed use strategies, and the placement of development in proximity to job and activity centers to reduce the number and length of vehicular trips.
Goal TM-4	Complete Streets, Transit, and Active Transportation. On- and off-street improvements that provide functional alternatives to private car usage and promote active transportation in mobility focus areas
Policy TM-4.8	Local bicycle and pedestrian networks. We support local bike and pedestrian facilities that serve unincorporated areas, connect to facilities in adjacent incorporated areas, and connect to regional trails. We prioritize bicycle and pedestrian network improvements that provide safe and continuous pedestrian and bicycle access to mobility focus areas, schools, parks, and major transit stops.
Policy TM-4.9	Bike and pedestrian safety. We promote pedestrian and bicyclist safety by providing separated pedestrian and bike crossings when we construct or improve bridges over highways, freeways, rail facilities, and flood control areas. We monitor pedestrian and bicycle traffic accidents and promote safety improvements in unincorporated high-accident areas.
Source: County of San Bernardino. 2020. <i>Countywide Policy Plan</i> . https://countywideplan.sbcounty.gov/policy-plan/ .	

Codified Ordinances of the County of San Bernardino

The Codified Ordinances of the County of San Bernardino (County Code) regulations addressing GHG are provided below.

County Code § 63.0501: Adoption of California Energy Code. Under this section, the 2019 California Energy Code contained in Part 6 of Title 24 of the CCR, is designated and adopted by reference as the Energy Code for the design and installation of energy systems for the unincorporated area of the County. (San Bernardino, 2022a)

County Code § 63.1501: Adoption of California Green Building Standards Code. Under this section, the 2019 CALGreen Code, contained in Chapters 1-8 of Part 11 of Title 24 of the CCR, is designated and adopted by reference as the CALGreen Code for the unincorporated area of the County. (San Bernardino, 2022b)

County Code Chapter 83.14: Transportation Control Measures. The purpose of this chapter is to reduce vehicle trips thereby reducing air congestion and pollutants and improving air quality, to comply with State law, and to promote an improved quality of life. This Chapter is intended to satisfy the legal

requirements of Chapter 6 of the San Bernardino County Congestion Management Program. (San Bernardino, 2007)

City of Barstow 2015-2020 General Plan

The City adopted the City of Barstow 2015-2020 General Plan (2015 General Plan) in February 2015. The 2015 General Plan is the overarching guide in implementation of the Development Code, which defines development regulations and establishes zoning districts throughout the City. The City establishes goals and policies that address GHG emissions within the City. The plan addresses GHG emissions in the Barstow GHG Analysis Report which lists the City's goals and policies that impact GHGs. Consistency with the general plan would be achieved if the Project follows the applicable general plan policies. **Table 4:** includes the applicable goals and policies relevant to BIG.

Table 4: City of Barstow 2015 General Plan Policies	
Number	Goal or Policy
CIRCULATION ELEMENT	
Goal 3	Foster improved traffic flow and air quality by encouraging the use of non-motorized transportation, alternative fuel vehicles and multi-occupant vehicles
Policy 3A	Encourage pedestrian travel by improving the means by which residents and visitors may walk throughout the community
Policy 3B	Establish a network of bicycle routes as illustrated on Exhibit C-2.
Policy 3C	Encourage carpooling and the use of alternative fuel vehicles by city residents and employees.
Policy 3D	Implement incentives outlined in Municipal Code Chapter 19.49 – Design Guidelines such as relaxation of parking requirements, density bonuses and exceptions to building height and lot coverage requirements in exchange for on- or off-site provision of bicycle racks and/or storage facilities, bikeways, electric vehicle charging facilities, designated pedestrian pathways or other design features designed to foster alternatives to single-occupancy, internal combustion engine driven vehicle use.
RESOURCE CONSERVATION AND OPEN SPACE ELEMENT	
Goal 2	Ensure protection of air quality by reducing air pollution and emissions from pollutants
Policy 2B	Public Facilities and Operations – Local government should take a leadership role in reducing the emissions from its own vehicle fleet as a model for the private sector.
Goal 6	Provide programs and incentives to encourage residents, businesses, and developers to reduce consumption and efficiently use energy resources.
Policy 6A	Educate the development community with regard to green building principles and other strategies for conserving natural resources.
Goal 4	Reduce traffic congestion and vehicle trips through more efficient infrastructure and support for trip reduction programs.
Policy 4.1	Utilize Transportation Demand Management (TDM) Strategies as an integral component of the City's transportation program to reduce total vehicle trips on Barstow roadways and reduce the corresponding vehicle emissions. Strategies to incentivize drivers to reduce solo driving: ▪ Increase carpooling and vanpooling ▪ Increase the use of transit and bicycling and walking

Table 4: City of Barstow 2015 General Plan Policies

Number	Goal or Policy
	▪ Redistribute vehicle trips from peak periods to non-peak periods by shifting work times/days/locations ▪ Encourage greater use of telecommuting ▪ Other “first mile/last mile” strategies to allow travelers to easily connect to and from transit service at their origin and destination. These strategies include the development of mobility hubs around major transit stations, the integrations of bicycling and transit through folding-bike-on-buses programs, triple bike racks on buses, and dedicated racks on light and heavy rail vehicles.
Policy 4.2	Work with employers and developers to provide employees and residents with attractive and affordable transportation alternatives and to provide facilities and programs that increase the effectiveness of TDM strategies and transportation control measures (e.g., employer-based trip reduction programs and transit programs).
Goal 5	Invest in more efficient and effective transportation infrastructure, and support for trip reduction programs to reduce traffic congestion, vehicle trips and the need for costly new or expanded roadways.
Policy 5.2	Provide transportation and alternative transit infrastructure that allows the efficient local and regional movement of people, raw materials, and goods.
Goal 7	Reduce the City’s proportionate contribution to greenhouse gas emissions and potential impact that may result in climate change from internal governmental operations and land use activities within its authority.
Policy 7.1	Strive to reduce greenhouse gas emissions from its internal governmental operations and land use activities within its authority by 15 percent below 2008 levels by the year 2020 pending adoption of emission reduction targets for the City’s Climate Action Plan. The City will also work with the SCAG to ensure that the City receives its proportionate fair share reduction in greenhouse gas emissions as may be identified under the provisions of SB 375 (2008 Chapter 728) for any projects or activities requiring approval by SCAG. The California Air Resources Board (CARB) Scoping Plan suggests that cities strive to achieve a 15 percent emission reduction from government operations and the overall community by 2020. As part of SB 375 implementation, the SB 375 Regional Targets Advisory Committee recommended approaches to set greenhouse gas reduction targets to ARB in September 2009. ARB adopted final regional targets on September 23, 2010. The City will work with SCAG to determine the City’s proportionate fair share reduction of the regional targets. The results of this process could inform the City’s draft internal greenhouse gas targets.
Goal 8	Ensure that projects subject to environmental review are thoroughly assessed using best available air quality techniques and implement feasible mitigation measures to reduce significant environmental effects.
Policy 8.5	Encourage developers to propose innovative measures to reduce greenhouse gas emission impacts, such as bike paths and trail systems to facilitate non-vehicular transportation.
Goal 9	Minimize air emissions related to energy consumption and area sources in government operations and the community.
Policy 9.1	Increase the use of energy conservation features, renewable sources of energy and low-emission equipment in new and existing development projects within the city.
Policy 9.2	Require new development to use energy efficient lighting systems and energy efficient appliances, if commercially available.
Goal 13	Improve project site designs to encourage walking, bicycling, and transit use.
Policy 13.2	Require developers of projects that generate emissions in excess of MDAQMD CEQA significance thresholds to submit a project greenhouse gas transportation design analysis that

Table 4: City of Barstow 2015 General Plan Policies

Number	Goal or Policy
	reduces greenhouse gas emission, prepared by a civil engineer, architect, or urban designer familiar with design measures. Such an analysis shall be submitted prior to the City accepting the project application. The City of Barstow will review the subject analysis and see that appropriate measures are implemented.
Sources: City of Barstow, 2015 FirstCarbon Solutions. 2014. Greenhouse Gas Analysis Report Barstow, City of. 2015. 2015-2020 General Plan Update.	

City of Barstow Municipal Code

The Code of the City of Barstow (Barstow Code) regulations addressing GHG emissions are provided below (Barstow, 2015). For applicability of the Barstow Code standards to the Project.

Barstow Code § 10.09.030: Trip reduction. This section establishes objectives for trip reductions in the City by identifying large employers to evaluate trip reduction strategies and supporting various transportation initiatives and land use regulations aimed at reducing vehicle emissions and promoting alternative modes of transportation.

Barstow Code § 10.09.040: Travel demand management. This section identifies measures to implement strategies and programs which reduce traffic congestion, VMT, and/or vehicle trips, which result in reduction of mobile source emissions.

Barstow Code Title 15: Buildings and Construction. This title includes various regulations concerning erection, construction, maintenance, etc. of all buildings and/or structures in the City.

Barstow Code § 15.08.010: Building Codes. Codes adopted specifies the various State Codes the City has adopted, including among others the 2019 Edition of California Energy Code (Part 6, Title 24, CCR) and the 2019 CALGreen Code (Part 11, Title 24, CCR).

Barstow Code § 19.06.090: Alternative Energy. This section establishes standards for the permitting, design, and installation of alternative energy systems such as solar.

Barstow Code § 19.08.090: As stated in § 19.08.090, developments would be encouraged to build or remodel with sustainable building materials and energy-conservation measures in their interior and exterior spaces. Projects would also aim to improve aesthetics and energy efficiency of developments. The section lists available incentives for site developments which can be found below.

- Modification of site development guidelines, zoning requirements, or architectural design guidelines including but are not limited to:
 - Reductions in setback and minimum square footage requirements;
 - Reductions in the number of required vehicular parking spaces (not to exceed 20 percent of total required spaces);
 - Density bonuses and other incentives for projects qualifying for Leadership in Energy and Environmental Design certification;

- Density bonuses and other incentives for projects that provide day care, carpooling, EV charging stations, or other features that promote jobs/housing balance and/or environmental sustainability;
- Other regulatory incentives or concessions proposed by the developer or the city that result in identifiable reductions in energy, water use, or GHG emissions.

3.0 ENVIRONMENTAL SETTING

3.1 Regional Setting

Certain gases in the earth's atmosphere classified as GHGs play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space, a portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

3.2 Carbon Cycle and Greenhouse Effect

The global carbon cycle is comprised of large carbon flows to and from various reservoirs (e.g., atmosphere, ocean, and biomass). Billions of tons of carbon are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes (i.e., the net exchange) among these various reservoirs are roughly balanced.

Through man-made activities such as fossil fuel combustion and other industrial processes, the increase in GHG emissions is outpacing the natural carbon sources and sinks, increasing the planet's greenhouse effect, and effectively disrupting this balance.

3.3 GHG Emissions and GWP

The primary GHGs contributing to the greenhouse effect are CO₂, CH₄, and N₂O. Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Examples of fluorinated gases include chlorofluorocarbons (CFCs), HFC, PFCs, SF₆, and nitrogen trifluoride (NF₃); however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of GHGs exceeding natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the Earth's climate, known as global climate change or global warming.

GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of a GHG molecule is dependent on multiple variables and cannot be pinpointed, more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms of carbon sequestration. Of the total annual human-caused CO₂ emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remains stored in the atmosphere (IPCC, 2013).

Many other trace gases have greater ability to absorb and re-radiate longwave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a GWP for each GHG based on its ability to absorb and re-radiate longwave radiation. The GWP is a dimensionless metric that determines the relative ability of any gas to trap heat in the atmosphere and propagate the greenhouse effect. It quantifies the climate change impact of emitting 1 kilogram of a GHG, normalized by the impact of emitting 1 kilogram of CO₂ for a specific timeframe (e.g., 20 years, 100 years, 500 years). This time dependence is set to reflect the different values of atmospheric persistence based on each GHG's chemistry and structure.

Table 6: Description of GHGs describes the primary GHGs attributed to global climate change, including their physical properties.

Table 5: Description of GHGs	
GHG	Description
Carbon Dioxide (CO ₂)	CO ₂ is a colorless, odorless gas that is emitted naturally and through human activities. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. The largest source of CO ₂ emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. The atmospheric lifetime of CO ₂ is variable because it is readily exchanged in the atmosphere. CO ₂ is the most widely emitted GHG and is the reference gas (GWP of 1) for determining GWPs for other GHGs.
Nitrous Oxide (N ₂ O)	N ₂ O is largely attributable to agricultural practices and soil management. Primary human-related sources of N ₂ O include agricultural soil management, sewage treatment, combustion of fossil fuels, and adipic and nitric acid production. N ₂ O is produced from biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N ₂ O is approximately 120 years. The GWP of N ₂ O is 298.
Methane (CH ₄)	CH ₄ , a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. CH ₄ is the major component of natural gas, about 87 percent by volume. Human-related sources include fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. Natural sources of CH ₄ include wetlands, gas hydrates, termites, oceans, freshwater bodies, non-wetland soils, and wildfires. The atmospheric lifetime of CH ₄ is about 12 years and the GWP is 25.
Hydrofluorocarbons (HFCs)	HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is increasing, as the continued phase out of CFCs and HCFCs gains momentum. The 100-year GWP of HFCs range from 124 for HFC-152 to 14,800 for HFC-23.
Perfluorocarbons (PFCs)	PFCs have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Two main sources of PFCs are primary aluminum production and semiconductor manufacturing. GWPs range from 6,500 to 9,200.
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in CH ₄ or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and

Table 5: Description of GHGs

GHG	Description
	chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987. GWPs for CFCs range from 3,800 to 14,400.
Sulfur Hexafluoride (SF ₆)	SF ₆ is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. This gas is manmade and used for insulation in electric power transmission equipment in the magnesium industry, in semiconductor manufacturing, and as a tracer gas. The GWP of SF ₆ is 23,900.
Hydrochlorofluorocarbons (HCFCs)	HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, HCFCs are subject to a consumption cap and gradual phase out. The U.S. is scheduled to achieve a 100 percent reduction to the cap by 2030. The 100-year GWPs of HCFCs range from 90 for HCFC-123 to 1,800 for HCFC-142b.
Nitrogen Trifluoride (NF ₃)	Nitrogen Trifluoride was added to Health and Safety Code § 38505(g)(7) as a GHG of concern. This gas is used in electronics manufacturing for semiconductors and liquid crystal displays. It has a GWP of 17,200.
Sources: U.S. EPA. 2025. <i>Overview of Greenhouse Gases</i> . https://www.epa.gov/ghgemissions/overview-greenhouse-gases U.S. EPA. 2018. <i>Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016</i> . IPCC. 2007. <i>Climate Change 2007: The Physical Science Basis</i> . National Research Council. 2010. <i>Advancing the Science of Climate Change</i> . U.S. EPA. 2010. <i>Methane and Nitrous Oxide Emission from Natural Sources</i> .	

3.4 Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate and the quantity of climate change pollutants in the Earth's atmosphere that is attributable to human activities.

The Intergovernmental Panel on Climate Change AR6 (IPCC, 2022) summarizes the latest scientific consensus on climate change. It finds that atmospheric concentrations of CO₂ have increased by 50 percent since the Industrial Revolution and continue to increase at a rate of two parts per million each year. By the 2030s, and no later than 2040, the world will exceed 1.5°C warming (CARB, 2022a). These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants. In the past, gradual changes in the Earth's temperature changed the distribution of species, availability of water, and other conditions. Human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but within a human lifetime (IPCC, 2007b).

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are hard to predict.

Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historical trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas.
- Warmer and more frequent hot days and nights over most land areas.
- An increase in frequency of warm spells/heat waves over most land areas.
- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas.
- Larger areas affected by drought.
- Intense tropical cyclone activity increases.
- Increased incidence of extreme high sea level (excluding tsunamis).

3.5 Potential Climate Change Impacts for California

There is at least a greater than 50 percent likelihood that global warming will reach or exceed 1.5°C in the near-term, even for the very low GHG emissions scenario (IPCC, 2022). Climate change is already impacting California and will continue to affect it for the foreseeable future. For example, the average temperature in most areas of California is already 1°F (~0.56°C) higher than historical levels, and some areas have seen average increases in excess of 2°F (~1.1°C) (Cal OES, 2020). The California Fourth Climate Change Assessment identifies the following climate change impacts under a BAU scenario, in which no new actions are taken to curb GHG emissions:

- Annual average daily high temperatures in California are expected to rise by 2.7°F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. These changes are statewide averages. Heat waves are projected to become longer, more intense, and more frequent.
- Warming temperatures are expected to increase soil moisture loss and lead to drier seasonal conditions. Summer dryness may become prolonged, with soil drying beginning earlier in the spring and lasting longer into the fall and winter rainy season.
- High heat increases the risk of death from cardiovascular, respiratory, cerebrovascular, and other diseases.
- Droughts are likely to become more frequent and persistent through 2100.²³
- Climate change is projected to increase the strength of the most intense precipitation and storm events affecting California.

²³ Overall, California has become drier over time, with five of the eight years of severe to extreme drought occurring between 2007 and 2016, and with unprecedented dry years in 2014 and 2015 (OEHHA, 2018). Statewide precipitation has become increasingly variable from year to year, with the driest consecutive four years occurring from 2012 to 2015 (OEHHA, 2018).

- Mountain ranges in California are already seeing a reduction in the percentage of precipitation falling as snow. Snowpack levels are projected to decline significantly by 2100 due to reduced snowfall and faster snowmelt.
- Marine layer clouds are projected to decrease, though more research is needed to better understand their sensitivity to climate change.
- Extreme wildfires (i.e., fires larger than 10,000 hectares or 24,710 acres) would occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century.
- Exposure to wildfire smoke is linked to increased incidence of respiratory illness.
- Sea level rise is expected to continue to increase erosion of beaches, cliffs, and bluffs. (Cal OES, 2020).

Global climate change risks to California are shown in **Table 7: Summary of GHG Emissions Risks to California**, and include impacts to public health, water resources, agriculture, coastal sea level, forest and biological resources, and energy.

Table 6: Summary of GHG Emissions Risks to California	
Impact Category	Potential Risk
Public Health Impacts	Heat waves will be more frequent, hotter, and longer Fewer extremely cold nights Poor air quality made worse Higher temperatures increase ground-level ozone levels
Water Resources Impacts	Decreasing Sierra Nevada snow pack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea level rise Increasing coastal floods Shrinking beaches Worsened impacts on infrastructure
Forest and Biological Resource Impacts	Increased risk and severity of wildfires Lengthening of the wildfire season Movement of forest areas Conversion of forest to grassland Declining forest productivity Increasing threats from pest and pathogens Shifting vegetation and species distribution Altered timing of migration and mating habits Loss of sensitive or slow-moving species
Energy Demand Impacts	Potential reduction in hydropower Increased energy demand
Sources: CEC 2006, 2009; CCCC 2012; CNRA 2014; Cal OES 2020.	

3.6 California's GHG Sources and Relative Contribution

In 2023, the statewide GHG emissions inventory was updated for 2000 to 2021 emissions using the GWPs in the Intergovernmental Panel on Climate Change AR4 (IPCC, 2007b) and reported that California produced 381.3 MMTCO₂e GHG emissions in 2021 (49.7 MMTCO₂e below the 2020 GHG Limit of 431 MMTCO₂e) (CARB, 2023). The growth in statewide emissions from 2020 to 2021 was likely due in large part to the increase of transportation and other economic activity that occurred in 2021 relative to 2020, as California emerged from the COVID-19 pandemic.

California's transportation sector was the single-largest generator of GHG emissions, producing 38.2 percent of the state's total emissions. Industrial sector emissions made up 19.4 percent, and electric power generation made up 16.4 percent of the state's emissions inventory. Other major sectors of GHG emissions include residential and commercial (10.2 percent), agriculture and forestry (8.1 percent), high GWP (5.6 percent), and recycling and waste (2.2 percent) (CARB, 2023).

Since the peak level in 2004, California's GHG emissions have generally followed a decreasing trend. In 2014, statewide GHG emissions dropped below the 2020 GHG Limit (AB 32 target for year 2020) and have remained below the Limit since that time. Additionally, per capita GHG emissions have dropped from a 2001 peak of 13.8 MTCO₂e per person to 9.7 MTCO₂e per person in 2021, a 30 percent decrease.

Transportation emissions increased from 2020, likely from passenger vehicles whose emissions rebounded after COVID-19 shelter-in-place orders were lifted. Electricity emissions also increased compared to 2020; however, there has been continued growth of in-state solar generation and imported renewable electricity. High-GWP emissions have continued to increase as high-GWP gases replace ozone-depleting substances being phased out under the 1987 Montreal Protocol. Overall trends in the inventory also continue to demonstrate that the carbon intensity of California's economy (i.e., the amount of carbon pollution per million dollars of gross domestic product) is declining. From 2000 to 2021, the carbon intensity of California's economy decreased by 50.8 percent while the gross domestic product increased by 67.9 percent (CARB, 2023).

4.0 METHODOLOGY

BIG construction and operational emissions sources were calculated based on BIG-specific activity levels. Climate change is a global phenomenon. The geographic scope for GHG emissions is global because impacts of climate change are experienced on a global scale regardless of the location of GHG emission sources. Detailed modeling assumptions and modeling outputs are provided in **Appendix A1 of Appendix 5.3 BIG-1: Greenhouse Gas Emissions Modeling Data**.

4.1 Construction

Construction is assumed to occur over approximately 34 months beginning in the third quarter of 2025 and ending in the third quarter of 2028. Construction emissions can vary substantially from day to day, depending on the level of activity, and the specific type of equipment used. Construction emissions result from on-site and off-site activities. On-site construction emissions principally consist of exhaust emissions from the load factors and hours of use of heavy-duty construction equipment and motor vehicle operation. Off-site construction emissions are caused by motor vehicle exhaust from vendor delivery vehicles and worker trips. Additionally, off-site emissions would occur from trains hauling construction materials (e.g., ballast, rails, railroad ties, etc.) from locations within California and outside of California. The construction emissions account for the total emissions that would occur in and out of the State. Total construction emissions are modeled based on the below assumptions, then amortized over a 30-year period and added to operational emissions.

Models

GHG emissions from BIG demolition and construction were calculated using emission factors from CARB's OFFROAD model. The use of emission rates from the OFFROAD models reflects the recommendation of CARB to capture the latest off-road construction assumptions. OFFROAD default load factors (the ratio of average equipment horsepower utilized to maximum equipment horsepower) and useful life parameters were used for emission estimates. Mobile-source emissions from worker vehicle trips and truck trips were calculated using VMT and truck miles traveled (TMT) estimates and appropriate emission factors from CARB's EMFAC model. As noted above, EMFAC2021 emissions projections assumed implementation of the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. These regulations were disapproved by Congressional Resolutions H.J. Res 87 and H.J. Res 89, respectively. Therefore, EMFAC2021 emission rates would be expected to increase without the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. CARB is reviewing the effect of these resolutions on EMFAC and has not provided emissions modeling guidance. Overall, GHG emissions associated with BIG construction as set forth herein are overestimated. As the TMT reductions represent a net decrease in total BIG emissions, any emission rate increases would represent a greater emissions reduction than the emissions calculated in this analysis. Therefore, GHG emissions associated with BIG are overestimated.²⁴

²⁴ EMFAC2021 emissions projections assumed implementation of the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. These regulations were disapproved by Congressional Resolutions H.J. Res 87 and H.J. Res 89, respectively. The resolutions were signed by the President on June 12, 2025. These resolutions, along with H.J. Res. 88 (revoking federal light-duty vehicle GHG standards), nullify California regulations that had been authorized by U.S. EPA waivers under the FCAA. CARB is currently evaluating the impact of the actions (H.J. Res 87, H.J. Res 88, and H.J. Res 89) under the Congressional Review Act, but has not yet provided emissions modeling guidance. Because the State

Table 8: Regulations and Agreements Assumed in the Unmitigated Construction and Operational Emissions summarizes the regulations that were assumed in the construction emissions unmitigated scenario.

Table 7: Regulations and Agreements Assumed in the Unmitigated Construction and Operational Emissions			
Off-Road Construction Equipment	On-Road Trucks	Trains	Fugitive Dust
Emission Standards for Nonroad Diesel Engines – Tier 1, 2, 3, and 4 standards gradually phased in over all years (accounted for in emissions factor projections) due to normal construction equipment fleet turnover. California Diesel Fuel Regulations – 15 parts per million (ppm) sulfur starting 9/1/06. CARB In-Use Off-Road Diesel Vehicle Rule – Off-road mobile equipment powered by diesel engines 25 hp or larger must meet the fleet average or best available control technology requirements for NO_x and PM emissions by March 1 of each year. CARB Portable Diesel-Fueled Engines Air Toxics Control Measure - Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel shall meet weighted fleet average PM emission standards. CARB Off-Road Large Spark Ignition Equipment Rule – LSI engines greater than 25 hp, powered by gasoline, LPG, or other alternative fuels to meet HC + NO_x requirement beginning January 1, 2009.	Emission Standards for On-road Trucks – Engine emission standards gradually phased in due to normal truck fleet turnover and accounted for in emissions factor projections. California Diesel Fuel Regulations – 15 ppm sulfur starting September 1, 2006. Airborne Toxic Control Measure to Limit Diesel Fueled Commercial Motor Vehicle Idling – Diesel trucks are subject to idling limits starting 2/1/05. Port of Los Angeles Clean Truck Program – Heavy-duty diesel drayage trucks calling on port terminals shall meet the U.S. EPA 2007 emission standards for on-road heavy-duty diesel engines (U.S. EPA, 2001) by 2012. CARB Statewide Truck and Bus Regulation – Installation of PM retrofits on all heavy-duty trucks beginning January 1, 2012, and replacement of older trucks starting January 1, 2015. By January 1, 2023, all vehicles need to have MY 2010 engines or equivalent.	Emission Standards for Locomotives – Tiered engine emission standards gradually phased in due to normal locomotive fleet turnover and accounted for in emissions factor projections. 1998 Fleet Average Agreement – Fleet average emission factors for NO_x for linehaul locomotives operating in the South Coast area. 2005 CARB/Railroad Statewide Agreement – Reduced line haul locomotive idling times assumed to take effect starting in 2006. Nonroad Diesel Fuel Rule – 500 ppm sulfur starting June 2007 and 15 ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. California Diesel Fuel Regulations – 15 ppm sulfur starting January 1, 2007. Applies to all switch locomotives.	MDAQMD Rue 403 Compliance – Properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour.
Note:			

has no authority to implement these regulations, the model overestimate emissions associated with TMT emissions in California and therefore GHG emissions associated with BIG, as a general matter, are overestimated in this document.

Table 7: Regulations and Agreements Assumed in the Unmitigated Construction and Operational Emissions

Off-Road Construction Equipment	On-Road Trucks	Trains	Fugitive Dust
This table is not intended to be a comprehensive list of all potentially applicable regulations; rather, the table lists key regulations and agreements that quantifiably affect the emission calculations for BIG construction and assumed in the analysis. Emissions reductions are reflected in EMFAC emission factors for on-road vehicles and reflected in U.S. EPA locomotive emission factors.			

Construction Schedule

For analysis purposes, construction is assumed to begin in third quarter 2025 and be completed by third quarter 2028 with an overall duration of approximately 34 months. Construction continuing into 2028 would include track and signal work, while equipment testing would occur at the intermodal facility. The assumed construction phase timing is shown in **Table 9: Construction Schedule**. During peak construction periods, work would be under way at several locations within the BIG footprint simultaneously, with overlapping construction of various elements.

Table 8: Construction Schedule

Phase	Approximate Number of Days
South Main Lines	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	220
Bridges and Box Culverts	248
Fine Grading/Place Subballast	25
Track and Signal Construction	151
Intermodal Facility	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	165
Drainage and Underground	333
Bridges and Box Culverts	333
Fine Grading/Place Subballast	165
Buildings/Pavement	361
Track and Signal Construction	319
Block Swap Yard	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	109
Drainage and Underground	277
Bridges and Box Culverts	277
Fine Grading/Place Subballast	361
Track and Signal Construction	389
North Main Lines	
Demolition, Site Preparation, and Mobilization	39
Mass Grading	109
Bridges and Box Culverts	109
Fine Grading/Place Subballast	53

Table 8: Construction Schedule	
Phase	Approximate Number of Days
Track and Signal Construction	179
Transload Warehouse Construction	
Warehouse Construction	319
Civil Site Improvements	263
33 kV Distribution	601
Solar Site	344
Sources: BIG construction schedule provided by TranSystems/Burns & McDonnell.	

Construction Equipment

BIG construction would involve the use of off-road construction equipment, heavy-duty trucks, and locomotives for delivery of bulk materials, which produce diesel exhaust. Vendor delivery vehicles and worker commute trips would generate vehicle exhaust.

Construction emissions are estimated by assuming construction occurs at the earliest feasible date (i.e., a conservative estimate of construction activities) and applying off-road, fugitive dust, and on-road emissions factors from CARB's OFFROAD model. The anticipated construction equipment is shown in **Table 10: Construction Equipment**. All equipment in **Table 10** is assumed to be Tier 4 except for track laying machines, articulated trucks, auger borers, tampers and regulators.

Table 9: Construction Equipment					
Construction Phase	Equipment ¹	Number	Hours per Day	Horsepower ²	Load Factor ²
South Main Demolition, Site Preparation, Mobilization (34 days)	Dozers	1	8	367	0.40
	Dump Trucks	5	10	376	0.38
	Excavators	1	3	36	0.38
	Generators	4	2	14	0.74
	Loaders	1	3	150	0.36
	Scrapers	2	10	423	0.48
	Water Trucks	2	4	376	0.38
South Main Mass Grading (190 days)	Dozers	4	10	367	0.40
	Dump Trucks	275	10	376	0.38
	Excavators	2	10	36	0.38
	Generators	4	2	14	0.74
	Graders	1	10	148	0.41
	Grapple/Pump Trucks	1	1	376	0.38
	Loaders	2	10	150	0.36
	Rollers	1	1	36	0.38
	Scrapers	4	10	423	0.48
	Water Trucks	20	10	376	0.38
South Main Bridges and Box	Auger Boring Machine	1	3	83	0.50
	Cranes	1	7	367	0.29

Table 9: Construction Equipment					
Construction Phase	Equipment ¹	Number	Hours per Day	Horsepower ²	Load Factor ²
Culverts (214 days)	Dozers	1	3	190	0.40
	Dump Trucks	3	10	376	0.38
	Excavators	2	10	236	0.38
	Generators	4	2	20	0.74
	Graders	1	3	250	0.41
	Grapple/Pump Trucks	3	8	376	0.38
	Light Carts/Generator Sets	8	8	20	0.74
	Loaders	2	10	265	0.36
	Rollers	1	3	150	0.38
	Skid Steers	1	4	90	0.37
	Water Trucks	20	10	376	0.38
South Main Fine Grading/Place Subballast (22 days)	Dozers	4	10	367	0.40
	Generators	4	2	14	0.74
	Graders	8	10	148	0.41
	Rollers	8	10	36	0.38
	Water Trucks	20	10	376	0.38
South Main Track and Signal Equipment (130 days)	Cranes	1	5	367	0.29
	Dozers	1	3	190	0.40
	Dump Trucks	3	10	376	0.38
	Excavators	2	10	236	0.38
	Generators	4	2	20	0.74
	Grapple/Pump Trucks	4	10	376	0.38
	Light Carts/Generator Sets	8	8	20	0.74
	Loader/Swing Loaders	3	10	265	0.36
	Regulators	1	2	82	0.42
	Skid Steers	1	4	90	0.37
	Track Laying Machines	1	3	525	0.42
	Tampers	1	2	89	0.36
	Water Trucks	2	10	376	0.38
Intermodal Facility Demolition, Site Preparation, Mobilization (34 days)	Dozers	7	10	419	0.40
	Dump Trucks	36	10	376	0.38
	Excavators	3	10	450	0.38
	Loaders	3	10	360	0.36
	Generators	4	2	20	0.74
	Scrapers	11	10	1,051	0.48
	Water Trucks	2	4	376	0.38
Intermodal Facility Mass Grading	Dozers	34	10	419	0.40
	Dump Trucks	41	10	376	0.38

Table 9: Construction Equipment

Construction Phase	Equipment ¹	Number	Hours per Day	Horsepower ²	Load Factor ²
(142 days)	Excavators	13	10	450	0.38
	Generators	4	2	20	0.74
	Graders	1	7	250	0.41
	Loader	16	10	360	0.36
	Rollers	1	7	325	0.38
	Scrapers	39	10	1,051	0.48
	Water Trucks	20	10	376	0.38
Intermodal Facility Drainage and Underground (286 days)	Crane	1	6	367	0.29
	Dump Trucks	23	10	376	0.38
	Excavators	7	10	236	0.38
	Generators	4	2	20	0.74
	Loaders	9	10	265	0.36
	Trencher	1	9	115	0.50
	Water Trucks	2	10	376	0.38
Intermodal Facility Bridges and Box Culverts (286 days)	Auger Boring Machine	1	8	83	0.50
	Cranes	3	10	367	0.29
	Dozer	1	8	190	0.40
	Dump Trucks	7	10	376	0.38
	Excavator	5	10	236	0.38
	Generators	4	2	20	0.74
	Grader	2	8	250	0.41
	Light Carts	8	8	20	0.74
	Loaders	4	10	265	0.36
	Pump Truck	1	6	376	0.38
	Roller	1	8	150	0.38
	Skid steers	2	10	90	0.37
	Water Trucks	2	10	376	0.38
Intermodal Facility Fine Grading/Place Subballast (142 days)	Dozers	5	10	190	0.40
	Generators	4	2	20	0.74
	Graders	10	10	250	0.41
	Rollers	10	10	150	0.38
	Water Trucks	20	10	376	0.38
Intermodal Facility Buildings/Pavement (310 days)	Auger Boring Machine	1	4	83	0.50
	Backhoe	1	4	84	0.37
	Crane	1	7	367	0.29
	Dozer	1	10	100	0.40
	Dump Trucks	4	10	376	0.38
	Excavator	2	10	36	0.38

Table 9: Construction Equipment					
Construction Phase	Equipment ¹	Number	Hours per Day	Horsepower ²	Load Factor ²
	Generators	4	2	20	0.74
	Grader	1	10	250	0.41
	Light Carts	8	8	20	0.74
	Loader	2	10	150	0.36
	Pump Truck	1	3	376	0.38
	Roller	1	10	136	0.38
	Skid steers	2	10	90	0.37
	Water Trucks	1	10	376	0.38
Intermodal Facility Track and Signal (274 days)	Crane	1	9	367	0.29
	Dozer	1	4	190	0.40
	Dump Trucks	2	10	376	0.38
	Excavator	2	10	236	0.38
	Generators	4	2	20	0.74
	Grapple Truck	1	1	376	0.38
	Light Carts	8	8	20	0.74
	Loader	2	10	265	0.36
	Regulator	1	3	82	0.42
	Skid steer	1	1	90	0.37
	Swing Loader	1	4	265	0.36
	Tamper	1	3	89	0.36
	Track Laying Machine	1	4	525	0.42
	Water Trucks	1	10	376	0.38
Block Swap Yard Demolition, Site Preparation, Mobilization (34 days)	Dozer	19	10	419	0.40
	Dump Truck	101	10	376	0.38
	Excavator	7	10	450	0.38
	Generators	4	2	20	0.74
	Loader	7	10	360	0.36
	Scrapers	30	10	1,051	0.48
	Water Trucks	2	4	376	0.38
Block Swap Yard Mass Grading (94 days)	Dozers	142	10	419	0.40
	Dump Trucks	172	10	376	0.38
	Excavators	51	10	450	0.38
	Generators	4	2	20	0.74
	Graders	3	10	250	0.41
	Loaders	66	10	360	0.36
	Rollers	3	10	325	0.38
	Scrapers	163	10	1,051	0.48
	Water Trucks	20	10	376	0.38

Table 9: Construction Equipment					
Construction Phase	Equipment ¹	Number	Hours per Day	Horsepower ²	Load Factor ²
Block Swap Yard Drainage and Underground (238 days)	Crane	1	1	367	0.29
	Dump Trucks	7	10	376	0.38
	Excavators	3	10	236	0.38
	Generators	4	2	20	0.74
	Loaders	3	10	265	0.36
	Pump Truck	1	1	376	0.38
	Water Trucks	2	10	376	0.38
Block Swap Yard Bridges and Box Culverts (238 days)	Auger Boring Machine	1	9	83	0.50
	Crane	3	10	367	0.29
	Dozer	1	9	190	0.40
	Dump Trucks	8	10	376	0.38
	Excavators	6	10	236	0.38
	Generators	4	2	20	0.74
	Grader	1	9	250	0.41
	Light Carts	8	8	20	0.74
	Loaders	5	10	265	0.36
	Pump Truck	1	8	376	0.38
	Roller	1	9	150	0.38
	Skid Steers	2	10	90	0.37
	Water Trucks	2	10	376	0.38
Block Swap Yard Fine Grading, Place Subballast (310 days)	Dozers	11	10	190	0.40
	Generators	4	2	20	0.74
	Graders	20	10	250	0.41
	Loaders	4	10	150	0.36
	Rollers	20	10	150	0.38
	Trencher	4	10	115	0.50
	Water Trucks	20	10	376	0.38
Block Swap Yard Track and Signal (334 days)	Dozers	2	10	190	0.40
	Dump Truck	1	1	376	0.38
	Excavator	5	10	236	0.38
	Generators	4	2	20	0.74
	Grapple Truck	2	10	376	0.38
	Light Carts	8	8	20	0.74
	Loaders	5	10	265	0.36
	Regulator	1	9	82	0.42
	Skid Steer	1	2	90	0.37
	Swing Loader	2	10	265	0.36
	Tamper	1	9	89	0.36

Table 9: Construction Equipment

Construction Phase	Equipment¹	Number	Hours per Day	Horsepower²	Load Factor²
	Track Laying Machine	2	10	525	0.42
	Water Trucks	1	10	376	0.38
North Main Demolition, Site Preparation, Mobilization (34 days)	Dozer	1	5	419	0.40
	Dump Truck	3	10	376	0.38
	Excavator	1	2	450	0.38
	Generators	4	2	20	0.74
	Loader	1	2	360	0.36
	Scrapers	1	8	1,051	0.48
	Water Trucks	2	4	376	0.38
North Main Mass Grading (94 days)	Dozer	5	10	419	0.40
	Dump Trucks	2	10	376	0.38
	Excavators	2	10	450	0.38
	Generators	4	2	20	0.74
	Grader	1	1	250	0.41
	Loaders	3	10	360	0.36
	Roller	1	1	325	0.38
	Scrapers	5	10	1,051	0.48
	Water Trucks	20	10	376	0.38
North Main Bridges and Box Culverts (94 days)	Auger Boring Machine	1	8	83	0.50
	Crane	3	10	367	0.29
	Dozer	1	8	190	0.40
	Dump Trucks	9	10	376	0.38
	Excavator	6	10	236	0.38
	Generators	4	2	20	0.74
	Grader	1	8	250	0.41
	Light Carts	8	8	20	0.74
	Loaders	6	10	265	0.36
	Pump Truck	1	4	376	0.38
	Roller	1	8	150	0.38
	Skid Steers	2	10	90	0.37
	Water Trucks	2	10	376	0.38
North Main Fine Grading, Place Subballast (46 days)	Dozers	2	10	190	0.40
	Generators	4	2	20	0.74
	Graders	3	10	250	0.41
	Rollers	3	10	150	0.38
	Water Trucks	20	10	376	0.38
North Main Track and Signal	Crane	1	4	367	0.29
	Dozer	1	1	190	0.40

Table 9: Construction Equipment					
Construction Phase	Equipment ¹	Number	Hours per Day	Horsepower ²	Load Factor ²
(154 days)	Dump Truck	2	10	376	0.38
	Excavator	2	10	236	0.38
	Generators	4	2	20	0.74
	Grapple/Pump Trucks	3	10	376	0.38
	Light Carts	8	8	20	0.74
	Loaders	2	10	265	0.36
	Regulator	1	1	82	0.42
	Skid Steer	1	8	90	0.37
	Swing Loader	1	1	265	0.36
	Tamper	1	1	89	0.36
	Track Laying Machine	1	1	525	0.42
	Water Trucks	1	10	376	0.38
Transload Warehouses Warehouse Construction (274 days)	Dozers	3	10	419	0.40
	Dump Trucks	69	10	376	0.38
	Generators	4	2	20	0.74
	Graders	3	10	250	0.41
	Light Carts	8	8	20	0.74
	Pump Trucks	4	10	376	0.38
	Roller	3	10	36	0.38
	Water Trucks	2	4	376	0.38
Transload Warehouses Civil Site Improvements (226 days)	Backhoe	1	2	84	0.37
	Dozer	3	10	419	0.40
	Dump Trucks	7	10	376	0.38
	Excavator	3	10	450	0.38
	Generators	4	2	20	0.74
	Graders	3	10	250	0.41
	Light Carts	8	8	20	0.74
	Loaders	3	10	360	0.36
	Roller	3	10	325	0.38
	Trencher	3	10	115	0.50
	Water Trucks	2	4	376	0.38
33kV Transmission Line Construction (516 days)	Auger Boring Machine	1	1	83	0.50
	Backhoes	2	10	84	0.37
	Boom Trucks	3	10	376	0.38
	Crane	1	2	367	0.29
	Dump Truck	1	1	376	0.38
	Excavators	3	10	450	0.38
	Generators	4	2	20	0.74

Table 9: Construction Equipment					
Construction Phase	Equipment ¹	Number	Hours per Day	Horsepower ²	Load Factor ²
	Boring Machine	1	5	200	0.42
	Light Carts	8	8	20	0.74
	Skid Steer	1	1	90	0.37
	Tampers	3	10	89	0.36
	Water Truck	3	10	376	0.38
Solar Farm Construction (296 days)	Backhoe	1	5	84	0.37
	Boom Truck	1	5	376	0.38
	Crane	1	1	367	0.29
	Dozer	1	1	419	0.40
	Excavator	1	8	450	0.38
	Flat Bed Truck	1	5	82	0.42
	Generators	4	2	20	0.74
	Light Carts	8	8	20	0.74
	Loader	1	2	360	0.36
	Pile Driver	1	1	82	0.42
	Skid Steer	1	3	90	0.37
	Tamper	1	6	89	0.36
	Water Truck	1	6	376	0.38
Sources: BIG construction equipment provided by TranSystems/Burns & McDonnell. Horsepower and load factor based on CAPCOA. 2022. CalEEMod User Guide Appendix G, Table G-12, Horsepower and Load Factors for Construction Equipment by Fuel Type.					

Demolition and Earthwork

GHG emissions associated with demolition and earthwork would originate from equipment, trucks, concrete batch plants, and rail deliveries. Construction would require the demolition and removal of approximately 150,000 square feet of structures and the removal of 36,000 square feet of concrete slab. Although the CALGreen Code requires 65 percent of construction and demolition materials to be diverted away from the landfill by either recycling or reusing materials, it is currently unknown how much of the demolished material can be recycled and re-used on-site. Therefore, as a conservative estimation of impacts, all demolished materials were assumed to be hauled off-site. Demolition was assumed to occur during the initial stages of the Civil and Site Work phase. Earthwork would follow the demolition stage during the Civil and Site Work phase. Approximately 26,000,000 cubic yards of balanced cut and fill would be required for the project as well as 2,000,000 cubic yards of subcut.

Concrete and Asphalt Batch Plants

Concrete would also be required for components such as the intermodal facility as well as the construction of bridges and retaining walls. Asphalt would be required for parking areas and roadways/drive aisles. BIG construction would require approximately 1.9 million cubic yards of concrete and 700,000 tons (approximately 345,379 cubic yards) of asphalt for warehouse parking areas. Due to the size of the BIG

footprint, the analysis assumed three batch plants would operate during construction, three concrete batch plants and one asphalt batch plant. The locations of the anticipated batch plants would be determined by the construction contractor and are currently unknown. Concrete batch plants would generate GHGs from burning of fossil fuels in off-site power plants to generate electricity and would not consume fuel onsite, such as diesel. In addition, the transport and treatment of water needed to make concrete will be responsible for generating GHGs. GHG emissions from truck trips associated with transporting material to and from the concrete batch plants were included in the mobile source emissions as vendor trips, discussed below.

Construction Trips

Mobile source GHG emissions from worker trips and heavy-duty truck trips were calculated using VMT and TMT estimates and appropriate EMFAC emission rates. Construction trips are summarized **Table 11: Construction Trips**. BIG-specific data, including construction equipment lists and construction schedule, were also incorporated into the modeling. As noted above, EMFAC2021 emissions projections assumed implementation of the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. These regulations were disapproved by Congressional Resolutions H.J. Res 87 and H.J. Res 89, respectively. Therefore, EMFAC2021 emission rates would be expected to increase without the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. CARB is reviewing the effect of these resolutions on EMFAC and has not provided emissions modeling guidance. However, as the TMT reductions represent a net decrease in total BIG emissions, any emission rate increases would represent a greater emissions reduction than the emissions calculated in this analysis. Thus, GHG emissions associated with BIG are overestimated

Table 10: Construction Trips		
Construction Year	Peak Worker Trips per Day (Passenger Cars)	Peak Truck Trips ¹ per Day (Heavy-duty Trucks)
2025	2,048	714
2026	2,418	1,732
2027	1,435	1,065
2028	275	239
Note: ¹ Truck trips during intermodal infrastructure include concrete pavement, base course, and warehouse construction material deliveries. Deliveries at various locations for intermodal infrastructure would occur concurrently.		
Sources: Appendix 5.15 BIG-1: CEQA Assessment – VMT Analysis, Active Transportation, and Public Transit Analysis.		

Rail Deliveries

Bulk materials, including ballast, and welded rails, and rail ties, could be hauled by rail. Rail emission factors from the U.S. EPA document *Emission Factors for Locomotives* (2009) and the travel distance by rail within the Mojave Desert Air Basin were used to estimate construction rail delivery emissions (see **Appendix A1 of Appendix 5.3 BIG-1** of this technical report for modeling assumptions and details). Construction rail delivery emissions were calculated by assuming that locomotives meeting fleet average line-haul emission standards would be used for all rail deliveries.

Concrete rail ties, welded rails, and ballast could be delivered by rail. Construction would require approximately 80 trains for rail tie delivery, 44 trains for welded rail delivery, and 315 trains for ballast delivery for a total of approximately 439 trains over a 10-month construction period (approximately two trains per day). Trains delivering rail ties, welded rails, and ballast were assumed to have one locomotive and 50 cars. Track ballast would be delivered in 100-ton rail ballast cars. Train hauling was conservatively assumed to occur over a one-way distance of 900 miles to account for the potential emissions from Colorado to capture the worst-case train hauling distance for construction materials and the GHG emissions that would occur beyond California. Additionally, trains were assumed to idle for eight hours per day.

Summary of Construction Assumptions

Table 12: Construction Assumptions Summary summarizes the methodology, models used, and other construction assumptions described above. See **Appendix A1 of Appendix 5.3 BIG-1** for more information regarding the construction assumptions used in this analysis, as well as the modeled emissions.

Table 11: Construction Assumptions Summary		
Emissions Source	Assumptions	Methodology or Model Used
Off-Road Equipment ¹	See Table 10 for equipment assumptions	CARB OFFROAD
Earthwork (fugitive dust)	26,000,000 cubic yards of balanced cut and fill, truck loading, and storage piles 2,000,000 cubic yards of subcut and soil	U.S. EPA AP-42 §§ 11.9 and 13.2
Electricity from water conveyance for dust suppression	Approximately 2,103 million gallons	CalEEMod Version 2022.1
On-Road Hauling and Worker Vehicle Trips	See Table 11 for construction trip assumptions. Peak worker trips would occur during building construction and peak truck trips would occur during demolition, site preparation, and mobilization.	CARB EMFAC2021
Demolition	150,000 square feet of structures 36,000 square feet of concrete slab removal	U.S. EPA AP-42 §§ 11.9 and 13.2
Rail Deliveries (Locomotive Hauling and Idling)	80 trains for rail tie delivery 44 trains for welded rail delivery 315 trains for ballast delivery - Total of approximately 439 trains over a 10-month construction period. - Each train was assumed to idle 8 hours per day. - Approximately 2 trains per day	U.S. EPA, Emission Factors for Locomotives, April 2009
Concrete and Asphalt Batch Plants	2.3 million cubic yards total over a 21-month period Three electrically powered concrete batch plants (1.9 million cubic yards total, approximately 3,500 cubic yards per day).	U.S. EPA AP-42 § 11.12

Table 11: Construction Assumptions Summary

Emissions Source	Assumptions	Methodology or Model Used
	One electrically powered asphalt bath plant Approximately 345,379 cubic yards (approximately 633 cubic yards per day)	
Note: ¹ Includes Demolition, Grading, Bridges and Box Culverts, Building Construction, Track and Signal Work, Solar Farm, and 33 kV Transmission Line		

Temporary Mainline Relocation Train Trips

During construction, the existing mainline would be reconstructed. Prior to reconstruction, a new south mainline would be constructed immediately north of Main Street. Trains would then be diverted to this south mainline while the existing mainline is reconstructed. Upon reconstruction, trains would be evenly split between the two mainlines. Thus, construction air quality analysis assumes 100 percent of trains would use the south mainline from 2025-2027, and beginning 2027, half of trains using BNSF's mainline would use the south mainline and half would use the reconstructed mainline. Train count projections are provided for 2026, 2027, and 2028, to consider potential changes in emissions as trains are diverted from the existing mainline to the proposed south mainline until 2027, then split between the two mainlines from 2027 to 2028. The location of the trains affects localized pollutant concentrations, but would not affect overall mass emissions of GHGs.

Train count data is based on actual train data from the last quarter of 2022 and the first three quarters of 2023 as these were the most recent available data at the time environmental analysis commenced. Growth rates were applied to the existing train counts for future year data. Growth is based on a compounded annual growth rate derived from the historical change in container volumes and associated train trips (see the CAGR data prepared by EnSafe, which can be found in Appendix B [BNSF CAGRs used in BIG] of EnSafe's BNSF Barstow International Gateway Corridor Emissions Analysis). EnSafe's corridor emissions analysis is located within Appendix B of **Appendix 5.3 BIG-1**). The changes in emissions associated with moving trains closer or farther from sensitive receptors was included in construction emissions dispersion modeling given these changes would occur during the construction period.

Operational Emissions

BIG operational GHG emission sources were calculated based on BIG-specific activity levels. Operational GHG emission sources include rail yard equipment, stationary sources, area sources²⁵, locomotives, and heavy-duty truck and employee commute. The following approximate building area was assumed for modeling purposes:

- Intermodal Facility: 150,000 square feet of building area
- Transload Facility: 9,000,000 square feet of building area

Operational emission source assumptions were obtained from BNSF. Operational mobile source activity assumptions were based on traffic data within the BIG transportation analysis (including TMT); see

²⁵ Area sources occur from consumer products, architectural coatings, and landscaping that were previously not present on the site.

Appendix 5.15 BIG-1: CEQA Assessment – Vehicle Miles Traveled, Active Transportation, and Public Transit Analysis. intermodal transport grows by approximately two percent per year. However, as discussed above, BIG would introduce a unique cross-dock intermodal operation which would present competitive benefits to suppliers compared to long-distance transport via heavy-duty truck. As such, BNSF anticipates that during this “initial transition period” after opening year and while suppliers transition supply chains to use BIG, a higher growth percentage than typical would occur. Following this initial transition period and through horizon year, BIG’s growth would continue at the normal approximately 2 percent per year. Therefore, the analysis evaluates BIG’s environmental impacts during Opening Year (2028), Interim Year (2033), and Horizon Year (2048) conditions (see Appendix B of **Appendix 5.3 BIG-1**).

Models

GHG emissions from BIG operational line-haul locomotives were calculated using U.S. EPA emission factors (EPA-420-F-09-025). Since on-site switcher locomotives would only operate in California, these emissions were calculated with emissions factors from CARB’s 2017 Carl Moyer Program Guidelines. On-road mobile-source emissions from worker vehicle trips and truck trips were calculated using VMT and TMT estimates and appropriate emission factors from CARB’s EMFAC model. EMFAC2021 emissions projections assumed implementation of the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. These regulations were disapproved by Congressional Resolutions H.J. Res 87 and H.J. Res 89, respectively. The resolutions were signed by the President on June 12, 2025. These resolutions, along with H.J. Res. 88 (revoking federal light-duty vehicle GHG standards), nullify California regulations that had been authorized by U.S. EPA waivers under the FCAA. CARB is currently evaluating the impact of the actions (H.J. Res 87, H.J. Res 88, and H.J. Res 89) under the Congressional Review Act but has not yet provided emissions modeling guidance.

Equipment and Stationary Sources

The operational equipment that would be used within the intermodal rail yard is listed in **Table 13: Operational Electric Equipment** and **Table 14: Operational Diesel Equipment**. The operational equipment shown in **Table 13** would all be electric powered and direct GHG emissions from such equipment would not occur. Indirect GHG emissions related to electricity required to power such equipment has been quantified (see Energy Sources below).

Table 12: Operational Electric Equipment			
Equipment	Quantity (2028)	Quantity (2033)	Quantity (2048)
Widespan Rail Mounted Gantry Cranes	10	12	14
Chassis Stacking Forklifts	2	2	3
Intermodal Facility Forklifts	2	2	3
Top Pick/Side Loaders	2	2	3
Terminal Electric Hostlers	47	62	73
Transload Electric Hostlers	81	107	124
Warehouse Forklifts	540	540	540
Sources: AECOM. 2023. BNSF Barstow Simulation Analysis.			

Table 12: Operational Electric Equipment

Equipment	Quantity (2028)	Quantity (2033)	Quantity (2048)
Warehouse forklifts per South Coast Air Quality Management District. 2014. High Cube Warehouse Truck Trip Study White Paper Summary of Business Survey Results.			

The operational equipment shown in **Table 14** would all use diesel fuel and would release GHG emissions. Cargo handling equipment GHG emissions factors were modeled using CARB's OFFROAD2021 model. Less than five percent of containers handled at BIG would have TRUs. Electrical plug-in facilities would be provided for transportation refrigeration units, and transportation refrigeration unit GHG emissions were only estimated for the short time between arrival of transportation refrigeration units and plug-in.

Table 13: Operational Diesel Equipment

Equipment ¹	2028		2033		2048		Horse-power ²	Load Factor ²
	Quantity	Hours per Day per Unit (peak)	Quantity	Hours per Day per Unit (peak)	Quantity	Hours per Day per Unit (peak)		
RTG Cranes (Mi-Jack)	7	6.9	8	6.9	10	6.9	165	0.15
Rail Car Wheel Change Machine	2	4	2	4	2	5	160	0.43
Air Compressors	2	2	2	2	2	3	78	0.48
Welders	2	1	2	1	2	2	46	0.45
Truck TRUs ³	15	4.9	19	4.9	23	4.9	50	0.56
Warehouse Yard Trucks	32	4	32	4	32	4	225	0.39
Warehouse Forklifts	540	4	540	4	540	4	106	0.30
EMERGENCY GENERATORS (TESTING, MAINTENANCE, AND TRAINING)								
2000 kW (Intermodal Facility)	10	1	10	1	10	1	2,682	0.74
750 kW (Warehousing)	5	1	5	1	5	1	1,006	0.74
500 kW (Warehousing)	2	1	2	1	2	1	671	0.74
350 kW (Warehousing)	1	1	1	1	1	1	469	0.74
250 kW (Warehousing)	15	1	15	1	15	1	335	0.74
175 kW (Warehousing)	6	1	6	1	6	1	235	0.74
Note: ¹ Cargo handling equipment and generators and activity/usage hours provided by BNSF and AECOM; see Appendix A1 of Appendix 5.3 BIG-1 . ² Horsepower and load factors from CARB CHE inventory and CARB OFFROAD. The RTG Load Factor is from the Port of Long Beach RTG Crane Load Factor Study, 2009. ³ Truck TRUs are 5 percent of the total one-way trucks and hours per unit are from CARB OFFROAD.								
Source: Compiled from discussions with BNSF engineers, 2023.								

Area Sources

Area source GHG emissions would be generated through the use of landscaping equipment that were previously not present on the site.²⁶ Area source GHG emissions were calculated based on generation and GHG emissions factors from the California Emissions Estimator Model (CalEEMod) version 2022 User Guide, Appendix C (GHG Emissions Calculation Details) and Appendix G (Default Data Tables); see **Appendix A1 of Appendix 5.3 BIG-1** for modeling assumptions and details).

Energy Sources

Electricity and natural gas consumption consists of GHG emissions from BIG consumption of electricity; see **Appendix A1 of Appendix 5.3 BIG-1** for modeling assumptions and details. BIG would not use natural gas, thus, GHG emissions from natural gas consumption would be zero. GHG emissions from on-site use of electricity is directly attributable to the BIG footprint. Primary uses of electricity by BIG would be for electric cargo handling equipment, lighting, electric hostler charging, miscellaneous railroad building and transload equipment, space heating and cooling, water heating, lighting, ventilation, appliances, and electronics. Energy GHG emissions are calculated based on consumption rates from BNSF and GHG emissions factors from the CalEEMod 2022 Users Guide.

Solid Waste

Solid waste releases GHG emissions in the form of CH₄ when these materials decompose. Solid waste GHG emissions are calculated based on generation rates and GHG emissions factors from the CalEEMod 2022 Users Guide.

Water and Wastewater

BIG GHG emissions would be generated from energy consumption associated with water and wastewater conveyance and treatment. Water and wastewater GHG emissions are calculated based on consumption rates and GHG emissions factors from the CalEEMod 2022 Users Guide.

Locomotive Emissions within BIG Footprint

As noted above, baseline train count data is based on actual train data from the last quarter of 2022 and the first three quarters of 2023 as these were the most recent available data at the time the environmental analysis commenced. Growth rates were developed based on looking at historic growth rates for the various container and train types that would utilize BIG, and were applied to the existing train counts for future year data (see Appendix B of **Appendix 5.3 BIG-1**). BIG would construct a new mainline immediately north of Main Street. The existing mainline would be reconstructed. GHG emissions from existing mainline operations has been modeled and deducted from future BIG GHG emissions to estimate the net change in GHG emissions. Future train volumes would be evenly distributed between the new main lines.

Locomotive GHG emissions associated with the intermodal rail yard are from two major categories: switcher locomotive GHG emissions during yard activities (i.e., moving rail cars within the block swap yard

²⁶ Note that area sources including architectural coatings and consumer products are not considered because emissions for these area sources are limited to VOC and would not contribute to GHG emissions.

or intermodal facility); and line-haul locomotive GHG emissions during transport and idling (arriving and departing locomotives). Locomotive GHG emissions are based on locomotive activity data from the BIG Corridor Emissions Model (EnSafe, 2025). These emission sources would use diesel fuel and are described below.

Line-haul refers to the movement of cargo over long distances (e.g., cross-country) and occurs within the intermodal rail yard as the initiation or termination of a line-haul trip, as cargo is either picked up or dropped for transport to destinations across the region or country.²⁷ Line-haul locomotives would access the BIG intermodal facility and block swap yard.

Switching refers to the assembling and disassembling of trains at various locations in the intermodal rail yard, sorting of the cars of inbound cargo trains into contiguous “fragments” for subsequent delivery. Switching locomotives would stay within BIG. Each switching locomotive operates in consists²⁸ of two locomotives each. Switching would primarily occur at the block swap yard to transfer a block of train cars between trains without re-classification. Switching locomotives would not be needed for intermodal facility operations except for some block swap trains that are switched over to the intermodal facility. This switching activity has been attributed to the block swap yard for modeling purposes. Switching may occur at the intermodal rail yard to break smaller subsets of cars from the larger segments brought in for loading/unloading (i.e. to remove a single bad car for minor repair). Regular breakdown and build activities of arriving and departing trains at the intermodal facility would occur with line-haul locomotives under self-powered conditions (i.e. not conducted by switch engines).

All switcher and line-haul locomotives are assumed to be equipped with Automatic Engine Start Stop technology, which limits idling time for any single location to 15 minutes per Program 1(b) of the Statewide Rail Agreement (CARB, 2005, p.3). After 15 minutes, the Automatic Engine Start Stop will cause all but one locomotive per train to shut down. All GHG emissions analysis of movements of the line-haul locomotives in breaking down arriving trains and building departing trains assume that only one locomotive per train is operational. The remaining locomotives would only be restarted immediately prior to train departure.

Locomotive GHG emissions were modeled using current BNSF fleet data and locomotive emissions factors from the U.S. EPA document *Emission Factors for Locomotives* (EPA-420-F-09-025) (U.S. EPA, 2009) and from the U.S. EPA’s Eastern Regional Technical Advisory Committee Emissions Modeling Platform Collaborative: Rail – 2017 National Emissions Inventory (U.S. EPA, 2019). GHG emissions from rail yard switcher and line-haul locomotives were modeled using a detailed layout of track segments, and assumptions for the movement of locomotives along track segments based on the proposed track and facility layout, as well as detailed duty cycle data locomotive notch settings. The total switcher locomotive activity consists of two engines operating three shifts per day, seven days per week. **Table 14: Train**

²⁷ CARB categorizes U.S. diesel-electric freight and passenger locomotives into three major groups, primarily based on horsepower and types of operations: (1) inter-state line haul (>4,000 horsepower); (2) medium horsepower (2,301 to 3,999 horsepower); and (3) Switch (yard) (1,006 to 2,300 horsepower). U.S. EPA defines the smaller switch (yard) locomotive, also called a switcher, to be between 1,006 and 2,300 horsepower. U.S. EPA also defines higher horsepower locomotives as line haul locomotives (i.e., >2,300 horsepower) (40 Code of Federal Regulations Part 1033.901).

²⁸ In railroad terminology, a “consist” refers to the specific arrangement and composition of a train, including the locomotives and railcars.

Operational Assumptions shows the number of locomotives assumed and **Table 15: Locomotive Fleet Mix** shows the line-haul and switcher locomotive fleet mix.

Table 14: Train Operational Assumptions within the BIG Footprint

Scenario	Existing		2026		2028				2048	
	Average Trains Per Day	Average Locomotives Per Train	Average Trains Per Day	Average Locomotives Per Train	Average Trains Per Day	Average Locomotives Per Train	Average Trains Per Day	Average Locomotives Per Train	Average Trains Per Day	Average Locomotives Per Train
No BIG										
Mainline (All Trains)	45.3	3.5	47.3	3.5	48.7	3.5	52.4	3.6	66.6	3.6
With BIG										
N. and S. Mainline	-	-	47.3	3.5	32.0	3.3	34.3	3.4	43.3	3.4
BIG East Lead	-	-	-	-	24.4	3.1	27.6	3.1	35.4	3.1
BIG West Lead	-	-	-	-	19.4	3.9	21.7	3.9	27.3	3.8
Block Swap Yard and Through Trains ²	-	-	-	-	20.3	3.4	22.6	3.4	28.9	3.3
Note: ¹ With BIG 2026 mainline trains would occur on the South Main only while the Existing Main is being reconstructed. After BIG opens, some mainline trains would be routed to the Intermodal Facility and Block Swap Yard. ² The number of trains include through trains that do not stop in the facility. (see Appendix A1 of Appendix 5.3 BIG-1 for modeling assumptions and details).										
Sources: EnSafe. 2025. Corridor Emissions Report.										

Table 15: Locomotive Fleet Mix							
U.S. EPA Tier Standard	Line-Haul Locomotives ^{1, 2, 3}				Switcher Locomotives ^{1, 2}		
	Without BIG and With BIG			With BIG	With BIG		
	2028	2033	2048	Dedicated Fleet (All Years) ⁴	2028	2033	2048
Uncontrolled (1973-1999)	0.0%	0.0%	0.0%	0.0%	18.0%	18.0%	13.0%
Tier 0 (2000-2001)	0.0%	0.0%	0.0%	0.0%	62.0%	62.0%	60.0%
Tier 0+	0.0%	0.0%	0.0%	0.0%	11.0%	11.0%	8.0%
Tier 1 (2002-2004)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tier 1+	26.48%	22.12%	8.62%	0.0%	3.8%	3.8%	7.6%
Tier 2 (2005-2011)	0.0%	0.0%	0.0%	0.0%	1.0%	1.0%	1.0%
Tier 2+	37.01%	37.27%	38.05%	0.0%	4.0%	4.0%	10.0%
Tier 3 (2012-2014)	27.91%	28.10%	28.69%	0.0%	0.0%	0.0%	0.0%
Tier 4 (2015)	8.60%	12.52%	24.64%	100%	0.2%	0.2%	0.4%
Note: ¹ Line-haul locomotives are 4,000 horsepower or higher; switcher locomotives are less than 2,300 horsepower. ² Line-haul locomotive life is assumed to be 40 years; switcher locomotive life is assumed to be 70 years. ³ Future year locomotive projections assume a fleet turnover rate based on actual locomotive purchases over the last five years (i.e., locomotive fleets would add new Tier 4 engines and remove older tier engines over time based on historical purchase and replacement rates). ⁴ Cross-dock intermodal containers (i.e., those taken by rail from the Ports to BIG's intermodal facility) would be transported using a dedicated fleet of Tier 4 linehaul locomotives.							
Sources: BNSF locomotive inventory data.							

Corridor GHG Emissions in California

BIG trains would travel along a Corridor defined as the rail line operated by BNSF between the San Pedro Ports and Needles Station at approximately the California/Arizona border. BNSF's ownership in the Corridor occurs between downtown Los Angeles and the Needles Station. The rail Corridor traverses both the South Coast Air Basin and Mojave Desert Air Basin. The emissions modeling breaks the Corridor into four segments, including 1) San Pedro Ports to San Bernardino station, 2) San Bernardino station to Summit station, 3) Summit station to Barstow station/BIG, and 4) Barstow station/BIG to Needles station. The following data are used to calculate locomotive GHG emissions on the rail Corridor between the Ports and Needles, California, for analysis years 2028, 2033, and 2048 (ENSAFE, 2025):

- **Train Profiles:** The number of locomotives, locomotive weight, freight weight, direction of travel, and distance traveled for an average train type along the Corridor.
- **Train Trips:** The number of trips for each train type.
- **Fleet Mix:** The blend of locomotive types used for each analysis year (locomotive types are classified by the engine tier, ranging from Tier 1 to Tier 4). The locomotive inventory is based on the 1998 Locomotive NO_x Fleet Average Emissions Agreement in the South Coast Air Basin (1998 MOU), signed by CARB, Union Pacific Railroad, and BNSF. As part of BIG, cross-dock intermodal containers (i.e., those taken by rail from the Ports to BIG) would be transported using a dedicated fleet of Tier 4 linehaul locomotives.
- **Fuel Blend:** The mix of conventional and renewable fuels used for each scenario and analysis year. Starting in BIG opening year 2028, BNSF would increase the renewable diesel composition within the Ports' existing fueling site from 1 percent to 10 percent, a 9 percent point increase in renewable diesel. This would improve the emissions of all BNSF trains fueling at the Ports, including those BNSF trains that would not stop at BIG. BIG is expected to increase the use of renewable diesel in the locomotives traveling in the eastbound direction (fueled in California). However, it is not expected to increase the use of renewable diesel in westbound travel (fueled outside of California).
- **Fuel Efficiency:** To estimate the fuel efficiency for the various scenarios and operational years, Corridor Emissions Model incorporates the BNSF Fuel Efficiency Model, a regression model based on actual 2023 fuel usage data.

Rail emission factors from the U.S. EPA document *Emission Factors for Locomotives* (2009) and the railroad miles along BNSF's Corridor. The GHG emission factors are based on The Climate Registry, 2021 Emissions Factors (2021) and were adjusted to reflect a 62 percent reduction based on the carbon intensity of renewable diesel compared to conventional diesel (CARB, 2025). BIG includes using dedicated Tier 4 locomotives to transport cross-dock intermodal containers from the Ports to BIG's intermodal facility, Tier 4 switcher locomotives, the retirement of all existing switcher locomotives at the existing Barstow classification yard and the addition of six Tier 4 switcher locomotives, and increasing the renewable diesel composition within the BNSF's existing Southern California fueling sites. These would reduce Corridor emissions and are incorporated into the With Project model analysis.

Corridor GHG Emissions Outside of California

Locomotive emissions on railroads outside of California were calculated with the same emission factors described above. The GHG emission rates are from The Climate Registry’s 2021 Emissions Factors, which are provided in grams per gallon. Total train gallons were calculated from the average tonnage per train and the gross ton mpg per train. Total train miles were provided by BNSF.

Other Mobile Sources (Employee Transportation)

Mobile sources of GHG emissions will include employee vehicles (passenger cars). The emissions factors for on-road vehicles accessing the intermodal rail yard were modeled for future years (Opening Year 2028, Interim Year 2033, and Horizon Year 2048) using EMFAC2021. **Table 17: BIG Passenger Vehicle Trip Generation** summarizes BIG’s average daily vehicle trips.

Table 16: BIG Passenger Vehicle Trip Generation				
Land Use	Vehicle Type	Average Daily Vehicle Trips		
		2028	2033	2048
Transload Facility	Passenger Cars	6,962	9,204	10,620
Intermodal Facility	Passenger Cars	1,765	2,085	2,325

Sources: Appendix 5.15 BIG-1: CEQA Assessment – VMT Analysis, Active Transportation, and Public Transit Analysis.

Net National Network TMT Improvements

As described above, BIG would transport almost all containers with trains instead of heavy-duty trucks, which would eliminate almost all truck trips and TMT.²⁹ Climate change is a global phenomenon. The geographic scope for GHG emissions is global because impacts of climate change are experienced on a global scale regardless of the location of GHG emission sources. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have much longer atmospheric lifetimes of one year to several thousand years that allow them to be dispersed around the globe.³⁰ Furthermore, State CEQA Guidelines address GHG emissions as a cumulative impact because of the global nature of climate change (Public Resource Code § 21083(b)(2)). As the California Supreme Court explained, “because of the global scale of climate change, any one project’s contribution is unlikely to be significant by itself” (Cleveland National Forest Foundation v. San Diego Association of Governments, 2017). Therefore, this analysis considers the national GHG reductions from TMT. The annual TMT added and removed from the national roadway network by BIG are shown in **Table 18: Annual Net TMT Removed from National Network by BIG**. Mobile source emissions reductions were modeled for future years (Opening Year 2028, Interim Year 2033, and Horizon Year 2048) using EMFAC2021. EMFAC2021 emissions projections assumed implementation of the ACT Regulation and the Heavy-Duty Low NO_x Omnibus Regulation. These regulations were disapproved by Congressional Resolutions H.J. Res 87 and H.J. Res 89, respectively. The resolutions were signed by the President on June 12, 2025. These

²⁹ Kimley-Horn and Associates, Inc., CEQA Assessment – Vehicle Miles Traveled, Active Transportation, and Public Transit Analysis, May 2025

³⁰ Geophysical Fluid Dynamics Laboratory, Atmospheric Composition and Air Quality, <https://www.gfdl.noaa.gov/atmospheric-composition-and-air-quality/#:~:text=The%20lifetime%20of%20air%20pollutants,regional%2C%20and%20even%20hemispheric%20scales.,> accessed June 16, 2025.; and California Air Resources Board, GHG Global Warming Potentials, <https://ww2.arb.ca.gov/ghg-gwps>, accessed June 16, 2025.

resolutions, along with H.J. Res. 88 (revoking federal light-duty vehicle GHG standards), nullify California regulations that had been authorized by U.S. EPA waivers under the FCAA. CARB is currently evaluating the impact of the actions (H.J. Res 87, H.J. Res 88, and H.J. Res 89) under the Congressional Review Act, but has not yet provided emissions modeling guidance. For this reason, the model overestimate emissions associated with TMT emissions in California and therefore GHG emissions associated with BIG, as a general matter, are overestimated in this document.

Table 17: Annual Net TMT Removed from National Network by BIG			
	Opening Year 2028	Interim Year 2033	Horizon Year 2048
BIG Annual TMT	13,008,600	16,490,700	20,345,100
Annual TMT Removed from National Network	-217,824,523	-286,312,231	-333,123,035
Net Annual TMT within National Network	-204,815,923	-269,821,531	-312,777,935
BIG Annual Truck Trips	216,810	274,845	339,085
Annual Truck Trips Removed	-596,780	-784,417	-912,666
Net Annual Truck Trips	-379,970	-509,572	-573,581
Source: Kimley-Horn and Associates, Inc. (2025). CEQA Assessment – VMT Analysis, Active Transportation, and Public Transit Analysis.			

Solar Improvements

BIG includes an on-site solar farm totaling approximately 140 acres, which would generate approximately 21 MW of electricity. Additionally, BIG would comply with CALGreen Code regulations requiring rooftop solar generation to be installed on industrial warehouse rooftops (Title 24, § 140.10). Based on 9 million square feet of transload warehouse, BIG would include approximately 6.4 MW of rooftop solar generation.

Barstow Yard Switcher Elimination and Replacement

Prior to operations, BNSF would voluntarily retire all existing Tier 0/0+/1+ switcher locomotives at the unrelated existing Barstow Classification Yard, and in their place add six Tier 4 switcher locomotives.

Summary of Operational Assumptions

Table 19: Operational Assumptions Summary summarizes the methodology, models used, and other operational assumptions described above for all operational analysis years. See **Appendix A1 of Appendix 5.3 BIG-1** for more information regarding the construction assumptions used in this analysis, as well as the modeled emissions.

Table 18: Operational Assumptions Summary		
Emissions Source	Assumptions	Methodology or Model Used
Equipment and Stationary Sources	See Table 14 for diesel equipment assumptions	CARB OFFROAD
Energy Sources	Based on 150,000 square feet of intermodal facility buildings and 9,000,000 square feet of warehouse building area and associated electricity	CalEEMod Consumption Rates and SCE energy intensity factors from the CEC Annual Power Content Labels. Future years projected based on SB

Table 18: Operational Assumptions Summary

Emissions Source	Assumptions	Methodology or Model Used
	consumption.	100 and AB 1279 goals.
Solar Generation	6.4 MW of rooftop solar on transload warehouses to comply with the CALGreen Code 21 MW of solar power from the onsite solar farm	SCE energy intensity factors from the CEC Annual Power Content Labels. Future years projected based on SB 100 and AB 1279 goals.
Locomotive GHG Emissions	See Table 15 and Table 16 for train assumptions. Baseline train count data is based on actual train data from the last quarter of 2022 and the first three quarters of 2023. Growth rates were applied to the existing train counts for future year data.	U.S. EPA Emissions Factors for Locomotives (April 2009)
Rail Corridor Between Ports and Needles Station GHG Emissions	Actual 2022 and 2023 train count data provided by BNSF Locomotive inventory based on the 1998 MOU annual reporting. Compound Annual Growth Rates (CAGR) and GHG emissions for With BIG and Without BIG are found in Appendix B of the Corridor Emissions Analysis, which is located within Appendix B of Appendix 5.3 BIG-1. For 2028, 2033, and 2048, the net BIG GHG emissions is the increment between the BIG project condition and Without BIG. See Table 15 .	U.S. EPA Emissions Factors for Locomotives (April 2009) The Climate Registry, 2021 Emissions Factors (2021) CARB, LCFS Pathway Certified Carbon Intensities
Other Mobile Sources (Passenger Cars)	See Table 17 for mobile source assumptions	CARB EMFAC2021
National Roadway Network TMT Improvements	See Table 18 for TMT assumptions	CARB EMFAC2021 (EMFAC2021 emission rates represent a conservative reduction estimate because reductions would be greater without H.J. Res 87 and H.J. Res 89.)
Barstow Yard Switcher Elimination and Replacement	Annual fuel consumption of 50,000 gallons per switcher Six switchers replaced with Tier 4 engines, nine switchers removed	GHG emission factors from The Climate Registry, 2021 Emission Factors, Tables 2.1 and 2.7, 2021
Other (Area Sources, Solid Waste, Water, and Wastewater)	Proposed building area	CalEEMod 2022 Consumption and Emissions Rates

5.0 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 Thresholds and Significance Criteria

Addressing impacts from project-generated net GHG emissions requires an agency to determine what constitutes a significant impact. The State CEQA Guidelines specifically allow lead agencies to determine thresholds of significance that illustrate the extent of an impact and are a basis from which to apply mitigation measures. This means that each agency is left to determine whether a project's GHG emissions will have a "significant" impact on the environment. The CEQA Guidelines direct that agencies are to use "careful judgment" and "make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" the project's GHG emissions (14 CCR § 15064.4(a)). A lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) quantify GHG emissions resulting from a project; and/or (2) rely on a qualitative analysis or performance based standards.

Amendments to State CEQA Guidelines § 15064.4(b) that resulted from SB 97 indicate that a lead agency should consider the following factors when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting.
- Whether project emissions exceed a threshold of significance that the lead agency determines applies to BIG.
- The extent to which a project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Based upon the criteria derived from State CEQA Guidelines Appendix G, a project normally would have a significant effect on the environment if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

MDAQMD CEQA and Federal Conformity Guidelines

According to the MDAQMD's CEQA and Federal Conformity Guidelines, a project is significant if it triggers or exceeds the most appropriate evaluation criteria. A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

The MDAQMD specifies that project emissions must include direct and indirect emissions during construction and operation. Construction and operational emissions were calculated using the models and emissions factors. This analysis conservatively does not use the MDAQMD's GHG (CO₂e) significance threshold of 100,000 tons per year (or 90,718 metric tons) and a comparison of General Plan emissions to this threshold is provided for informational purpose only.

Zero Net Increase Threshold

For the purposes of determining whether the BIG Project's GHG emissions are significant, this EIR considers a more conservative no net increase threshold (i.e., zero net increase) from CEQA baseline in order to provide a more conservative analysis of the BIG Project GHG emissions impacts. A zero net increase threshold means that a project must avoid adding any new GHG emissions to the atmosphere, either by designing the project to be inherently carbon-neutral or offsetting any residual emissions with on-site, off-site, or carbon offsets.

6.0 POTENTIAL IMPACTS AND MITIGATION MEASURES

6.1 Applicable Proposed General Plan Policies

Land Use Element

- **Policy LU-2.1 Balanced mix of land uses.** Plan for and maintain a balanced mix of high quality land uses to ensure a range of residential options, fiscal sustainability, and convenient access to shops, restaurants, services, and well-paid jobs.
- **Policy LU-3.2 Downtown design and land use.** Promote building and site designs that facilitate a walkable, experience-oriented atmosphere in the downtown. Encourage a mix of land uses that provide the opportunity to live, work, shop, and eat during the day and/or night.

Circulation Element

- **Policy CM-2.1 Pedestrian network.** Establish and maintain pedestrian walkways that promote safe and convenient travel to transit stops and between residential and commercial areas, schools, parks, recreation facilities and other key destination points.
- **Policy CM-2.2 Bicycle network.** Establish and maintain a citywide bicycle network that consists primarily of Class I multipurpose trails, Class II bike lanes, or Class IV separated bikeways. Additionally:
 - Class III bike routes are acceptable facilities in constrained circumstances to attain connectivity.
 - When truck routes and bicycle facilities share a right-of-way and when widening or building new Primary Arterials, provide safe separation between bicycles and traffic through a combination of Class I and Class IV facilities, with Class I multipurpose trails at mid-block portions and Class IV bikeways separated by raised curbs at intersections.
- **Policy CM-2.3 Electric bikes.** Support and encourage the use of electric bicycles to reduce resident and employee reliance on cars, resulting in greater mobility while lowering vehicle miles traveled and associated emissions.
- **Policy CM-2.4 Transit service.** Coordinate with Victor Valley Transit Authority (VVTA) to provide residents and workers with accessible and convenient service between residential neighborhoods, commercial centers, educational facilities, employment nodes, and medical facilities. Coordinate with VVTA to install, improve, and maintain safe, clean, comfortable, well-lit and rider-friendly transit stops that are well marked and visible to motorists.
- **Policy CM 2.5 Downtown Barstow.** Enhance the public realm to create a pedestrian- and transit-friendly environment along and connecting to Main Street between Otis and 7th Avenues.
- **Policy CM-2.6 Design of new facilities.** Design new streets and streetscape improvements to accommodate vehicles, transit, bicycles, and pedestrians based on a combination of the land use and roadway context to promote safety and efficiency for all users.
- **Policy CM-2.7 Public space and networks.** Leverage public rights-of-way, easements, and other public spaces to maintain and expand bicycle and pedestrian networks.
- **Policy CM-2.8 Access management.** Minimize access points and curb cuts along primary and secondary arterials and in the proximity of an intersection to improve traffic flow and safety for

vehicles, pedestrians, and bicycles. Eliminate and/or consolidate driveways when new development occurs or when traffic operation or safety warrants.

- **Policy CM-2.9 Site design.** Require new development to incorporate amenities and pathways so that pedestrians and bicyclists can access the site and on-site businesses safely and conveniently from the public right-of-way and parking areas.
- **Policy CM-2.10 VMT reduction.** Promote new development and transportation demand management (TDM) strategies that will reduce household and employment vehicle miles traveled (VMT). Prioritize the implementation of TDM strategies over the expansion of roadway capacity.

Public Facilities and Services Element

- **Policy PFS-1.2 Recycled and reclaimed water.** Expand the City's recycled water capabilities and encourage the use of recycled water for landscaping, groundwater recharge, direct potable reuse, and other appropriate uses. Support the use of greywater systems for non-potable purposes.
- **Policy PFS-1.3 Water conservation.** Encourage water-conserving site design and the use of water-conserving fixtures, and advocate for the adoption and implementation of water conservation strategies by water service agencies.
- **Policy PFS-1.8 Solid waste.** Provide a solid waste management system that meets or exceeds state recycling and waste diversion mandates while providing cost-effective disposal of waste for residents, businesses, and institutions.

Open Space Conservation Element

- **Policy OSC-1.5 Open space linkages.** Establish and maintain pedestrian and bicycle networks that link open space and recreation facilities.
- **Policy OSC-1.6 Heat abatement.** Design parks to include features such as shade structures and hydration stations to provide passive and active relief from extreme heat.
- **Policy OSC-3.2 Pollutant reduction and monitoring.** Coordinate with the Mojave Desert Air Quality Management District (MDAQMD) and San Bernardino County to reduce greenhouse gas emissions consistent with state law and other pollutants to maintain and progress toward state and federal attainment status. Collaborate with MDAQMD and other entities to monitor and reduce major pollutants affecting the City at the emission source.
- **Policy OSC-3.3 Construction and operations.** Invest as resources are available in City facilities and fleet vehicles to improve energy efficiency and reduce emissions. Encourage City contractors and other builders and developers to use low-emission construction vehicles and equipment to improve air quality and reduce emissions.
- **Policy OSC-5.7 Native plant species.** Require the use of native and/or drought-tolerant noninvasive naturalized plant species in development projects to provide or enhance wildlife habitat.
- **Policy OSC-7.2 Resilient landscaping.** Require the use of landscaping that is native and drought tolerant in the public realm to ensure healthy and resilient vegetation. Limit the use of turf in the public realm to when it is functionally required for recreation purposes. Encourage private property to exclusively use landscaping that is both native and drought tolerant.

- **Policy OSC-7.3 Gateways and landmarks.** Promote imaginative and distinctive features that project a positive image and community character at City gateways. Incorporate and preserve mature and specimen trees that are native and drought tolerant at gateways and landmarks.
- **Policy OSC-8.1 Energy conservation.** Pursue strategies that would conserve energy as the preferred mechanisms to reduce energy needs and to meet applicable energy-saving standards.
- **Policy OSC-8.2 Renewable sources.** Promote the use of renewable energy sources for the construction and operation of public and private sector development.
- **Policy OSC-8.3 Zero-emission infrastructure.** Coordinate with regional, state, and federal agencies as well as Victor Valley Transit Authority to plan for, fund, and install facilities that support the clean fueling of automobiles, public transit, electric bikes, and medium- and heavy-duty vehicles.
- **Policy OSC-8.4 Building design and upgrades.** Encourage new development and the upgrading of existing buildings to incorporate design elements, building materials, orientation, and fixtures that improve environmental sustainability and reduce emissions.

Safety Element

- **Policy S-2.8 Healthy, resilient, and efficient buildings.** Encourage and pursue funding for improvements to existing residential and nonresidential buildings consistent with the latest state building code requirements for indoor air quality; energy efficiency; energy storage; disaster and severe weather resilience; and solar power. As funding is obtained, prioritize improvements for buildings that are both within 500 feet of a freeway or railroad and intended for use by residents or employees for at least eight hours a day.
- **Policy S-2.9 Urban heat reduction.** Encourage the use of shade-producing trees and structures that reduce ambient air temperatures and heat radiance from buildings, parking lots, and other impermeable surfaces.

6.2 GHG Emissions

Impact 5.3-1 Would the project generate GHG emissions, either directly or indirectly, that could have a significant impact on the environment?

Construction GHG Emissions

BIG construction would result in direct emissions of GHGs. The approximate quantity of GHG emissions generated by construction equipment and vehicle trips utilized to build BIG is shown in **Table 20: Construction-Related GHG Emissions**.

Table 19: Construction-Related GHG Emissions		
Category	Unmitigated MTCO ₂ e	Mitigated MTCO ₂ e
Construction Year 2025	38,727	19,235
Construction Year 2026	162,244	99,651
Construction Year 2027	46,309	32,290
Construction Year 2028	4,260	3,036

Table 19: Construction-Related GHG Emissions		
Category	Unmitigated MTCO ₂ e	Mitigated MTCO ₂ e
Total Construction Emissions	251,539	154,212
30-year Amortized Construction	8,385	5,140
MTCO ₂ e = metric tons of carbon dioxide equivalents		
Note: ¹ Refer to Appendix A1 of Appendix 5.3 BIG-1 for emissions assumptions details and calculations.		

Table 20 shows BIG would result in the generation of approximately 251,539 MTCO₂e over the course of construction without mitigation. **Appendix 5.3 BIG-1: Barstow International Gateway Air Quality Technical Report** includes various mitigation measures that would minimize construction GHG emissions. Mitigation Measure (MM) **BIG AQ-3** requires Tier 4 off-road equipment, **MM BIG AQ-4** requires off-road equipment to use renewable diesel fuel, and **MM BIG AQ-5** requires clean on-road construction vehicles (i.e., MY 2010 or newer). See below for a list of applicable mitigation measures. With incorporation of these mitigation measures, BIG exhaust emissions from construction equipment would be reduced, resulting in total construction GHG emissions being reduced to 154,212 MTCO₂e (5,140 annually). Once construction is complete, the generation of these GHG emissions would cease.

Operational GHG Emissions

BIG construction would generate temporary construction GHG emissions associated with demolition, grading, and construction. Additionally, operational emissions would occur over the life of BIG. GHG emissions would result from direct sources such as BIG generated vehicular traffic, locomotive activity, cargo handling equipment, and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power, the energy required to convey water to, and wastewater from BIG, the emissions associated with solid waste generated from BIG, and any fugitive refrigerants from air conditioning or refrigerators. BIG construction would generate temporary construction GHG emissions associated with demolition, grading, and construction. In addition to operational GHG emissions, BIG is designed to eliminate thousands of truck trips a day from the nation's roads and highways. Because of these direct GHG emissions reductions, BIG would result in a net GHG emissions reduction under the unmitigated BIG condition for each of the analysis years. See **Table 21: BIG GHG Emissions**.

Laws, Ordinances, and Regulations:

Laws, Ordinances, and Regulations (LORs) are existing requirements that are based on local, state, or federal regulations or laws that are frequently required independently of CEQA review. Typical LORs include compliance with the provisions of the Building Code, MDAQMD Rules, etc. The City may impose additional conditions during the approval process, as appropriate. Because LORs are neither BIG specific nor a result of development of BIG, they are not considered to be mitigation measures. Note that a number of measures may ultimately fall under the responsibility of the party that constructs or operates transload warehouses, thus, the following list of LORs and mitigation measures at times use the term "implementing entity" to refer to the responsible party (either BNSF, it's contractor, or a transload warehouse developer or their contractor).

- LOR GHG-1** Require diesel powered construction equipment to turn off when not in use per California Code of Regulations (CCR), Title 13, § 2449.
- LOR GHG-2** BIG shall be designed in accordance with the applicable Title 24 Energy Efficiency Standards for Nonresidential Buildings (CCR, Title 24, Part 6). These standards are updated, nominally every three years, to incorporate improved energy efficiency technologies and methods. The Building Official, or designee shall ensure compliance prior to the issuance of each building permit. The Title 24 Energy Efficiency Standards (§ 110.10) require buildings to be designed to have 15 percent of the roof area “solar ready” that will structurally accommodate later installation of rooftop solar panels. If future building operators pursue providing rooftop solar panels, they will submit plans for solar panels prior to occupancy.
- LOR GHG-3** BIG shall be designed in accordance with the applicable California Green Building Standards (CALGreen) Code (24 CCR, Part 11). The Building Official, or designee shall ensure compliance prior to the issuance of each building permit. These requirements include, but are not limited to:
- Design buildings to be water efficient. Install water-efficient fixtures in accordance with CALGreen Code, Part 11, § 5.303.
 - Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with CALGreen Code, Part 11, § 5.408.1.
 - Provide storage areas for recyclables and green waste and adequate recycling containers located in readily accessible areas in accordance with CALGreen Code, Part 11, § 5.410.
 - To facilitate future installation of electric vehicle supply equipment (EVSE), nonresidential construction shall comply with CALGreen Code, Part 11, § 5.106.5.3 (nonresidential electric vehicle charging).

Table 20: BIG GHG Emissions			
Emissions Source	2028 MTCO ₂ e ⁷	2033 MTCO ₂ e ⁷	2048 MTCO ₂ e ⁷
Unmitigated Construction Amortized Over 30 Years	8,385	8,385	8,385
Locomotives (within BIG Site Boundary)			
Mainline (Without BIG) ¹	-21,719	-24,010	-29,979
Mainline (With BIG) ^{2, 3}	13,817	15,035	19,267
<i>Net Mainline (Through BIG)</i>	<i>-7,902</i>	<i>-8,973</i>	<i>-10,712</i>
BIG Lead Tracks	4,110	4,642	4,847
BIG Block Swap Yard	3,671	4,062	6,171
BIG Intermodal Facility	294	389	444
BIG Maintenance	222	227	299
Locomotives Within BIG Site Boundary Subtotal	395	346	1,049
On-Road Mobile Sources			
Passenger Cars	29,909	35,272	36,880
Trucks	17,048	19,008	20,030
On-Road Mobile Source Subtotal	46,957	54,280	56,911
Equipment, Area, and Energy Sources			
Equipment (including generators)	52,097	52,323	52,670
Area and Energy Sources	70,675	64,605	42,829
Solar Farm	-9,423	-7,369	0
Rooftop Solar – Code Compliance	-2,237	-1,749	0
Equipment, Area, and Energy Source Subtotal	111,111	107,810	95,499
Rail Corridor Emissions			
California Rail Corridor Emissions - Without BIG	853,389	916,397	1,158,807
California Rail Corridor Emissions - With BIG	890,796	971,385	1,217,579
<i>Net Corridor Emissions in California⁴</i>	<i>37,408</i>	<i>54,987</i>	<i>58,772</i>
Corridor Emissions Outside of California ⁵	115,529	157,860	179,451
Net National Network TMT Reduction ⁶	-325,664	-376,761	-372,415
Total BIG Unmitigated Operational Emissions	-14,265	1,477	19,267
Total Unmitigated Construction and Operational Emissions (BIG and Corridor)	5,880	6,907	27,652
Existing Barstow Yard Switcher Replacement	-522	-522	-522
Net Unmitigated BIG GHG Emissions with Existing Barstow Yard Switcher Replacement	6,403	6,385	27,130

Exceed Zero Net Increase Threshold Without Mitigation	No	Yes	Yes
Reductions from Mitigation Measures			
<i>Air Quality Construction Mitigation Reduction</i>	-3,244	-3,244	-3,244
<i>Air Quality Operational Mitigation Reduction</i>	-49,986	-50,213	-50,041
<i>Energy Mitigation Reduction</i>	-5,942	-4,647	0
Net Mitigated BIG GHG Emissions	-65,575	-51,719	-26,155
Exceed Zero Net Increase Threshold With Mitigation	No	No	No
MTCO ₂ e = metric tons of carbon dioxide equivalents, BIG = Barstow International Gateway; TMT = truck miles traveled			
Note: ¹ Mainline (Without BIG) locomotive emissions represent the trains that travel on the existing mainlines today within the future BIG footprint. ² Mainline (With BIG) locomotive emissions represent the trains that pass through BIG's footprint without stopping at the Block Swap or Intermodal Facility. ³ Mainline (with BIG) includes BIG Dedicated Fleet, which represents locomotive emissions from dedicated fleet of Tier 4 locomotives traveling on the west leads to the Intermodal Facility. ⁴ EnSafe, 2025. Net corridor emissions on the mainline from the Ports to the west leads, and from the east leads to the California Border (does not include the BIG footprint). ⁵ Net corridor emissions on the mainline (i.e., train emissions from additional containers moved by train instead of truck) from the California border to eastern destinations (see Appendix A2 of Appendix 5.3 BIG-1). ⁶ See Table 18 and Appendix A2 of Appendix 5.3 BIG-1 . ⁷ Totals may not add up due to rounding.			

BIG would result in direct GHG emissions reductions of 23,511 MTCO₂e by 2048. According to the U.S. EPA's Greenhouse Gas Equivalencies Calculator, 23,511 MTCO₂e is equivalent to the emissions from 56,433 barrels of oil consumed (U.S. EPA, 2025c). BIG would also increase the renewable diesel composition within BNSF's existing Southern California fueling sites and use electric cargo handling equipment (i.e., electric rail mounted gantry cranes, chassis stacking forklifts, forklifts, top pick/side loaders, and electric hostlers).

Air quality mitigation (listed below) would include **MM BIG AQ-4**, which requires construction to use renewable diesel fuel and **MM BIG AQ-8**, which requires renewable diesel for RTG cranes which also minimize operational GHG emissions. Additionally, **MM BIG AQ-9** limits truck idling, **MM BIG AQ-10** requires the use of Tier 4 backup generators, and **MM BIG AQ-11** and **MM BIG AQ-12** requires truck efficiency measures per CARB's Carl Moyer Program and U.S. EPA's Smart Way Program. **MM BIG AQ-13** requires the use of electric landscape equipment. **MM BIG AQ-14** requires future EV charging infrastructure. Additionally, BIG would be required to implement **MM BIG EN-1** and **MM BIG EN-2** discussed below to reduce impacts related to energy consumption. These mitigation Measures require the use of on-site renewable energy; Leadership in Energy and Environmental Design certification or meeting the CALGreen Code Tier 2 standards; increased diversion of solid waste; and 100 percent electric/ZE landscaping equipment. As shown in **Table 21**, unmitigated BIG would result in a net reduction in annual GHG emissions and incorporation of additional mitigation is not required. GHG emission reductions provided by air quality and energy mitigation would further reduce GHG emissions and is shown in **Table 21**.

Impact 5.3-1 Level of Significance: Less than Significant Impact.

Mitigation Measures: As shown in **Table 21**, BIG implementation would result in net reductions in GHG emissions. Therefore, mitigation measures to reduce GHG emissions is not required. However, BIG would implement the following mitigation to reduce impacts related to air quality and energy.

Air Quality Mitigation Measures

MM BIG AQ-3 Reduce Exhaust Emissions from Off-Road Construction Equipment. Prior to issuance of construction contracts, BNSF or its designee shall incorporate the following off-road construction equipment exhaust emissions requirements into the contract specifications:

- All heavy-duty diesel off-road construction equipment used during the construction phase shall meet Tier 4 Final engine requirements, except for specialized equipment, such as Caterpillar 657 Scrapers, Caterpillar 777 Articulated Off-Highway Trucks, track laying machines, ballast regulators, and other specialized rail equipment that are not available as Tier 4. In the event that non-specialized construction equipment cannot meet Tier 4 Final engine certification, the Project representative or contractor must demonstrate through future documentation with written findings that no Tier 4 equipment of that type are reasonably available. Alternative strategies may include, but would not be limited to, construction equipment with Tier 4 Interim or reduction in the number and/or horsepower rating of construction equipment and/or limiting the number of construction equipment operating at the same time.
- A copy of each unit's certified tier specification and shall be made available to the City in quarterly reports.

MM BIG AQ-4 Renewable Diesel (Construction). During construction, the Contractor shall use renewable diesel fuel to minimize and control exhaust emissions from heavy-duty diesel-fueled construction equipment and off-road heavy diesel trucks, except that traditional diesel can be used where renewable diesel is not available from suppliers within 200 miles of the BIG footprint. Renewable diesel shall meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50 percent of diesel with the lowest carbon intensity among petroleum fuels sold in California. The Contractor shall provide the City with quarterly reports of renewable diesel purchase records and equipment and vehicle fuel consumption. The construction contract shall identify the quantity of traditional diesel purchased and fully document the availability and price of renewable diesel to meet BIG demand.

MM BIG AQ-5 Reduce Exhaust Emissions from On-Road Construction Equipment. Prior to issuance of construction contracts, the general contractor shall incorporate the following material-hauling heavy truck fleet mix requirements into the contract specifications:

- All on-road trucks used to haul construction materials shall consist of an average fleet mix of equipment model year 2010 or newer, but no less than the average fleet mix for the current calendar year as set forth in the CARB's EMFAC2021 database.

- The contractor shall provide documentation to BNSF of efforts to secure such a fleet mix.
- The contractor shall keep a written record of the fleet mix for on-road construction equipment during BIG construction and provide the City with annual reports documenting compliance.

MM BIG AQ-8 Renewable Diesel RTG Cranes. Rubber Tired Gantry (RTG) cranes shall be powered with renewable diesel. BNSF shall provide the City of Barstow with evidence demonstrating use of renewable diesel for RTG cranes prior to the issuance of certificate of occupancy.

MM BIG AQ-9 Truck Idling Limits and Truck Route Signage. Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that all truck access gates and loading docks within the BIG site shall have posted signage posted that states:

- Truck drivers shall turn off engines when not in use.
- Truck drivers shall shut down the engine after two minutes of continuous idling operation. Once the vehicle is stopped, the transmission is set to “neutral” or “park”, and the parking brake is engaged.
- Telephone numbers of the building facilities manager, the South Coast Air Quality Management District, and CARB to report violations.
- Signs shall also inform truck drivers about the health effects of diesel particulates, the California Air Resources Board diesel idling regulations, and the importance of being a good neighbor by not parking in residential areas.
- Clearly mark truck routes with trailblazer signs, so that trucks will not travel next to or near sensitive land uses (e.g., residences, schools, day care centers, etc.).
- Restrict overnight truck parking in sensitive land uses by providing overnight truck parking inside the proposed BIG site.
- The Operator shall designate an officer to monitor trucks on-site for compliance. Signs and drive aisle pavement markings shall clearly identify the onsite circulation pattern to minimize unnecessary onsite vehicular travel.
- Additionally, signs shall be provided at every truck exit driveway showing directional information to the off-site truck route. To the extent feasible, BIG shall direct trucks away from sensitive receptors. All signage installed as part of BIG shall be legible, durable, and weather-proof.

This mitigation measure applies only to tenant improvements and not the building shell approvals.

MM BIG AQ-10 Tier 4 Emergency Back-Up Generators. Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that the BIG plans and specifications require all emergency generators to meet California Air Resources Board Tier 4 Final emissions standards. A copy of each unit’s Best Available Control Technology (BACT) documentation (certified tier specification) and CARB or Mojave Desert AQMD operating permit (if applicable) shall be provided to the City. This mitigation measure applies only to tenant improvements and not the building shell approvals.

- MM BIG AQ-11 Carl Moyer Truck Efficiency Improvements.** Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that tenant lease agreements include specifications that require vendor trucks for the industrial buildings include energy efficiency improvement features through the Carl Moyer Program—including truck modernization, retrofits, and/or aerodynamic kits and low rolling resistance tires— to reduce fuel consumption. This mitigation measure applies only to tenant improvements and not the building shell approvals.
- MM BIG AQ-12 U.S EPA Smart Way Program.** Prior to the issuance of a tenant occupancy permit, the Planning Division shall confirm that tenant lease agreements include specifications that require tenants to enroll in the United States Environmental Protection Agency’s SmartWay program, and tenants shall be required to use carriers that are SmartWay carriers. This mitigation measure applies only to tenant improvements and not the building shell approvals.
- MM BIG AQ-13 Electric Landscape Equipment.** Prior to the issuance of occupancy permits, the implementing entity shall confirm that agreements for landscaping services include contractual language that all handheld landscaping equipment used onsite shall be 100 percent electrically powered. This mitigation measure applies only to tenant permits and not the building shell approvals.
- MM BIG AQ-14 Future EV Charging Infrastructure.** Prior to the issuance of a building permit for transload warehouse facility tenant improvements, the implementing entity shall confirm that the BIG transload facility is designed to include the following:
- Prior to issuance of a Building Permit for the shell design, the buildings’ electrical room shall be sufficiently sized to hold additional panels that may be needed to supply power for the future installation of EV truck charging stations on the site. Conduit should be installed from the electrical room to tractor trailer parking spaces in a logical location(s) on the site determined by the BIG Applicant during construction document plan check, for the purpose of accommodating the future installation of EV truck charging stations at such time this technology becomes commercially available and the buildings are being served by trucks with electric-powered engines.

Energy Mitigation Measure

- MM BIG EN-1 On-Site Renewable Electricity Generation.** Prior to the issuance of building permits for intermodal facility structures or transload facilities, BIG shall install onsite rooftop solar generation beyond Title 24 compliance, or approximately 17MWdc for the total 9 million square-foot warehouse building area. Solar panel installation shall be phased proportionally with buildout of the Transload Warehouse Center (i.e., on-site solar generation shall generally be distributed equally among future buildings and the total 17 MWdc may not be required if all 9 million square feet are not ultimately development).

BIG shall ensure solar photovoltaic panels or other source of renewable energy generation is incorporated into the design based on the maximum solar roof area available. The maximum solar roof area available will be building specific and dependent on the structural considerations of each building and the ability to maximize the solar zone of each building (as defined in § 110.10 of the California Energy Code). The solar zone (i.e., the location where solar panels can be installed) shall comply with 2022 California Energy Code, § 110.10, and shall comply with access, pathway, ventilation, and spacing requirements and excluding any skylight area.

The final photovoltaic generation facility size is dependent on the maximum solar roof area available and shall be approved by Southern California Edison (SCE). SCE's Rule 21 governs operating and metering requirements for any facility connected to SCE's distribution system. Should SCE limit the off-site electricity export, BIG may utilize a battery energy storage system to lower off-site export while maintaining on-site renewable generation to offset consumption.

Each building shall include an electrical system and other infrastructure sufficiently sized to accommodate the photovoltaic arrays. The electrical system and infrastructure shall be clearly labeled with noticeable and permanent signage. This mitigation measure applies only to tenant or occupancy permits and not the building shell approvals.

MM BIG EN-2 CalGreen Tier 2. Prior to the issuance of building permit for intermodal facility structures or transload facilities, the City shall provide documentation to the City of Barstow demonstrating that BIG is designed in a manner consistent with 2022 CALGreen Tier 2 standards in effect at the time of building permit application.

6.3 GHG Reduction Plan Compliance

Impact 5.8-2 Would the project conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions?

Connect SoCal Consistency

GHG emissions resulting from development-related mobile sources are the most potent source of GHG emissions, and therefore BIG comparison to Connect SoCal an appropriate indicator of whether BIG would inhibit the post-2020 GHG reduction goals promulgated by the state. BIG's consistency with the Connect SoCal 2020 (2020 - 2045 RTP/SCS) goals is analyzed in detail in **Table 22: Connect SoCal 2020 Consistency** and **Table 23: Applicable Goals of Connect SoCal 2024**.

Table 21: Connect SoCal 2020 Consistency			
SCAG Goals		Compliance	
GOAL 1:	Encourage regional economic prosperity and global competitiveness.	No Conflict.	BIG proposes an international gateway consisting of an intermodal rail yard, block swap yard, and transload facilities that would contribute to regional and local economic prosperity.

Table 21: Connect SoCal 2020 Consistency

SCAG Goals		Compliance	
GOAL 2:	Improve mobility, accessibility, reliability, and travel safety for people and goods.	No Conflict.	Connect SoCal notes that thoughtfully locating freight delivery facilities and logistics centers can reduce heavy-duty truck travel and the impact of goods movement on communities.¹ BIG would improve goods movement and supply chain efficiency by transporting more containers with trains to reduce approximately 1,715 daily truck trips and approximately 217,824,523 annual TMT from the national network in 2028 (with greater truck trip reductions in future years) (Appendix 5.15, Kimley-Horn, 2025). BIG is anticipated to reduce heavy-duty truck TMT by providing an intermodal facility closer to unit origins than currently exists. The reduction in transloading truck trips would directly improve mobility, accessibility, reliability, and travel safety for people and goods by reducing the number of heavy-duty trucks on the road.
GOAL 3:	Enhance the preservation, security, and resilience of the regional transportation system.	No Conflict.	BIG is anticipated to reduce heavy-duty truck TMT by providing an intermodal facility closer to unit origins than currently exists. BIG would reduce 1,715 daily transloading truck trips and approximately 217,824,523 TMT from the national network in 2028 (with greater truck trip reductions in future years) (Appendix 5.15, Kimley-Horn, 2025), which would reduce roadway congestion and improve regional transportation system operations. BIG would directly achieve the Connect SoCal vision of providing freight enhancements, expanded rail yards, modernized terminals, and truck bottleneck relief.
GOAL 4:	Increase person and goods movement and travel choices within the transportation system.	No Conflict.	By 2045 SCAG anticipates that the goods movement system will include bold new freight enhancements, including new and expanded rail yards, additional main line railroad tracks, improved and modernized port terminals and truck bottleneck relief projects, including dedicated truck lanes. BIG would improve goods movement efficiency and reduce transload truck trips. BIG is anticipated to reduce heavy-duty truck TMT by providing an intermodal facility closer to unit origins than currently exists. BIG would directly achieve the Connect SoCal vision of providing freight enhancements, expanded rail yards, modernized terminals, and truck bottleneck relief.
GOAL 5:	Reduce greenhouse gas emissions.	No Conflict.	Connect SoCal notes that infrastructure improvements that create greater system efficiency would reduce emissions. Reducing air quality

Table 21: Connect SoCal 2020 Consistency

SCAG Goals		Compliance	
			emissions is addressed through cleaner and more efficient operation of vehicles, largely by modifying or replacing the existing regional fleet of goods movement equipment (e.g., locomotives, cargo handling equipment, ocean going vessels and commercial harbor craft) with cleaner technologies or efficiency improvements. BIG's reduction in heavy-duty truck TMT, improvement in goods movement, ZE cargo handling equipment, ZE yard trucks/electric hostlers, Tier 4 locomotives, idling reduction technology, and use of renewable diesel RTG cranes help address the regional attainment objectives identified by SCAG. Therefore, as a result of net reductions in GHG emissions, BIG would be consistent with this goal.
GOAL 6:	Support healthy and equitable communities	No Conflict.	Healthy and equitable communities typically include affordable housing, parks, quality schools, a thriving economy, environmental quality, access to healthy food, and connected transportation systems. BIG proposes a new goods movement facility that would have regional efficiencies and includes electric cargo handling equipment and electric hostler to reduce GHG emissions. Mitigation measures in Appendix 5.3 BIG-1 and this analysis would minimize construction and operational GHG emissions by requiring clean construction equipment and operational locomotives and RTG cranes powered by renewable diesel. Additionally, as identified in Appendix 5.3 BIG-1, the population risk burden is well below standards. BIG would support the local and regional economy and would not conflict with the surrounding community's ability to access healthy food, quality schools, affordable housing, or connected transportation system.
GOAL 7:	Adapt to a changing climate and support an integrated regional development pattern and transportation network.	No Conflict.	BIG proposes an international gateway that would operate as a comprehensive and sustainable transportation hub. BIG would efficiently move goods through use of trains, which would reduce heavy-duty truck travel, and through use of clean technologies at the rail yard (i.e., ZE cargo handling equipment and ZE hostlers). Therefore, BIG would not conflict with this goal.
GOAL 8:	Leverage new transportation technologies and data-driven solutions	No Conflict.	As identified in Section 1.0: Barstow International Gateway Summary, BIG proposes the following transportation technologies to result in more efficient

Table 21: Connect SoCal 2020 Consistency

SCAG Goals		Compliance	
	that result in more efficient travel.		travel: - Containers would be loaded, unloaded, and transported from trains using electric hostlers at the Intermodal Facility and Transload Warehouse Center for BIG. Electric hostlers would use private roads between the Intermodal Facility and Transload Warehouse Center. This would reduce the amount of heavy-duty truck trips in Southern California as containers would arrive at BIG by train directly from the Ports, and be transloaded at BIG, instead of trucked to warehouses in the Los Angeles and Inland Empire areas or moved by heavy-duty truck out of state. - Each transload warehouse for BIG would include EV charging stations. - BIG would utilize renewable diesel-powered RTG cranes.
GOAL 9:	Encourage development of diverse housing types in areas that are supported by multiple transportation options.	N/A.	BIG does not include housing.
Goal 10:	Promote conservation of natural and agricultural lands and restoration of habitats.	No Conflict.	A California Land Evaluation and Site Assessment was conducted to determine if BIG's conversion of approximately 327 acres of Important Farmland to a non-agricultural use would result in a significant impact. The Land Evaluation and Site Assessment determined that the conversion of 327 acres of Important Farmland to non-agricultural use would result in a less than significant. Therefore, while BIG would convert agricultural lands, this would not result in a significant environmental impact based on Land Evaluation and Site Assessment findings. As discussed in Appendix 5.4 BIG-1: Biological Resources Technical Report, BIG would remove ten ornamentally planted Joshua trees during BIG construction. MM BIO-33 requiring weed control and delineation of BIG work limits to prevent work in unsurveyed areas would lessen BIG's potential construction impacts on western Joshua Tree individuals outside the construction work limits and habitat, but impacts from removal of individuals would remain potentially significant. MM BIO-7 requires an Incidental Take Permit under the Western Joshua Tree Conservation Act for any removed

Table 21: Connect SoCal 2020 Consistency

SCAG Goals		Compliance	
			western Joshua trees. With MM BIO-7 incorporated, BIG's potentially significant construction impacts on western Joshua tree would be less than significant. Suitable habitat for Desert Tortoise, Southwestern Willow Flycatcher, Western Yellow-billed Cuckoo, Swainson's Hawk, Mohave ground squirrel, Western Burrowing Owl, Mojave Fringe-toed Lizard, American badger and desert kit fox, and bats that occurs in the BIG footprint, would be directly impacted due to harassment, injury, damage, or removal, which would conflict with this goal to conserve natural lands. MM BIO-33 requires fencing that prevents BIG construction from impacting areas beyond the analyzed footprint and security fencing would lessen BIG's potential direct and indirect construction impacts. MM BIO-1 requires worker awareness training for special status species avoidance; MM BIO-2 requires approval of designated biologists and biological monitors; MM BIO-3 requires work stoppage for biological resources; MM BIO-4 requires vehicle traffic restrictions; MM BIO-33 requires the delineation of construction work limits to prevent inadvertent disturbance to areas outside the delineated construction work areas; MM BIO-38 requires the preparation of a Desert Native Plan Salvage Plan; MM BIO-8 requires nighttime lighting restrictions; MM BIO-9 requires entrapment avoidance; MM BIO-10 requires proper trash and debris disposal; MM BIO-11 requires proper dead wildlife disposal; MM BIO-12 prohibits domestic dogs on site; MM BIO-15 requires common raven avoidance; MM BIO-19 includes equipment use restrictions; and MM BIO-13 through MM BIO-18, MM BIO-20 through MM BIO-27, and MM BIO-36 require clearance surveys, avoidance and relation measures, and compensatory habitat mitigation for affected species; see Appendix 5.4 BIG-1. Therefore, with mitigation incorporated, this conflict would not result in a significant environmental impact.
Note: ¹ From Connect SoCal, pg. 46			
Sources: Southern California Association of Governments. 2020. Regional Transportation Plan/Sustainable Communities Strategy (Connect SoCal).			

Table 22: Applicable Goals of Connect SoCal 2024

SCAG Goals	Compliance
Mobility: Build and maintain an integrated multimodal transportation network.	
Support investments that are well-maintained and operated, coordinated, resilient and result in improved safety, improved air quality and minimized greenhouse gas emissions	No Conflict. BIG would not conflict with its implementation. As discussed above, BIG would be constructed in accordance with Title 24 of the California Building Standards Code – Energy Efficiency Standards. Further, BIG would be constructed according to the 2022 CALGreen Code, which includes water conserving plumbing fixtures and fittings, electric heat pump technology. Furthermore, Connect SoCal notes that infrastructure improvements that create greater system efficiency would reduce GHG emissions. Reducing air quality emissions is addressed through cleaner and more efficient operation of vehicles, largely by modifying or replacing the existing regional fleet of goods movement equipment (e.g., locomotives, cargo handling equipment, ocean going vessels and commercial harbor craft) with cleaner technologies or efficiency improvements. BIG’s reduction in heavy-duty truck TMT, improvement in goods movement, ZE cargo handling equipment, ZE yard trucks/electric hostlers, Tier 4 locomotives, idling reduction technology, and use of renewable diesel RTG cranes help address the regional attainment objectives identified by SCAG. Therefore, as a result of net reductions in GHG emissions, BIG would be consistent with this goal.
Ensure that reliable, accessible, affordable, and appealing travel options are readily available, while striving to enhance equity in the offerings in high-need communities	No Conflict. BIG proposes a new goods movement facility that would have regional efficiencies and includes electric cargo handling equipment and electric hostler to reduce GHG emissions. Mitigation measures in Appendix 5.3
Support planning for people of all ages, abilities, and backgrounds	BIG-1 and this analysis would minimize construction and operational GHG emissions by requiring clean construction equipment and operational locomotives and RTG cranes powered by renewable diesel. Additionally, as identified in Appendix 5.3 BIG-1, the population risk burden is well below standards. BIG would support the local and regional economy and would not conflict with the surrounding community’s ability to access healthy food, quality schools, affordable housing, or connected transportation system.
Communities: Develop, connect, and sustain communities that are livable and thriving	
Create human-centered communities in urban, suburban and rural settings to increase mobility options and reduce travel distances	No Conflict. BIG proposes a new goods movement facility that would have regional efficiencies. BIG would support the local and regional economy and would not conflict with the surrounding community’s mobility options.
Produce and preserve diverse housing types in an effort to improve affordability, accessibility and	N/A. BIG does not include the development of housing.

Table 22: Applicable Goals of Connect SoCal 2024

SCAG Goals	Compliance
opportunities for all households	
Environment: Create a healthy region for the people of today and tomorrow	
Develop communities that are resilient and can mitigate, adapt to and respond to chronic and acute stresses and disruptions, such as climate change.	No Conflict. BIG is anticipated to reduce heavy-duty truck TMT by providing an intermodal facility closer to unit origins than currently exists. BIG would reduce 1,715 daily trucks trips and approximately 217 million TMT from the national network in 2028 (with greater truck trip reductions in future years), which would reduce roadway congestion and improve regional transportation system operations.
Integrate the region's development pattern and transportation network to improve air quality, reduce greenhouse gas emissions and enable more sustainable use of energy and water.	
Conserve the region's resources.	No Conflict. BIG's reduction in heavy-duty truck TMT, improvement in goods movement, ZE cargo handling equipment, ZE yard trucks/electric hostlers, Tier 4 locomotives, idling reduction technology, and use of renewable diesel RTG cranes result in reduced use of non-renewable diesel fuel. In addition, BIG would include the development of a solar farm and rooftop solar (through code compliance and implementation of MM BIG EN-1). Therefore, BIG would be consistent with this goal.
Economy: Support a sustainable, efficient and productive regional economic environment that provides opportunities for all residents.	
Improve access to jobs and educational resources.	No Conflict. BIG would consist of a rail yard with intermodal block swap yards, and a transload facility. By the year 2045, SCAG projects total employment for the County at 1,064,000. Of the estimated 15,700 new jobs (direct, indirect, and induced) attributable by BIG, 11,000 would be within the projected increase in jobs within the County. Thus, BIG would provide development in the region that is consistent with the growth projections in Connect SoCal. BIG would support the local and regional economy and would not conflict with the surrounding community's ability to access jobs or quality schools. BIG would not conflict with this goal.
Advance a resilient and efficient goods movement system that supports the economic vitality of the region, attainment of clean air and quality of life for our communities.	No Conflict. BIG is anticipated to reduce heavy-duty truck TMT by providing an intermodal facility closer to unit origins than currently exists. BIG would reduce 1,715 daily truck trips and approximately 217 million TMT from the national network in 2028 (with greater truck trip reductions in future years), which would reduce roadway congestion and improve regional transportation system operations. BIG would directly achieve the Connect SoCal vision of advancing a resilient and efficient goods movement system that supports the economic vitality of the region.

Table 22: Applicable Goals of Connect SoCal 2024	
SCAG Goals	Compliance
Source: Kimley-Horn, 2025. 1. Southern California Association of Governments. 2024. Connect SoCal: A Plan for Navigating to a Brighter Future. 2. 6 Cal.5th 502. 2018. Sierra Club v. County of Fresno.	

The goals stated in the Connect SoCal were used to determine consistency with the planning efforts previously stated. The overarching vision of the SCAG RTP, Connect SoCal, includes emerging technologies and transportation innovations aimed at relieving congestion, while reducing emissions (SCAG, 2024b, p. 12). According to the Goods Movement Technical Report of Connect SoCal, the efficient movement of goods is an important driver of the economy and directly contributes to the needs for every business and resident in the SCAG region (2024a, p. 2). As shown in **Table 22** and **Table 23**, BIG would not conflict with most Connect SoCal goals by improving regional goods movement efficiency, reducing regional heavy-duty truck traffic, and result in direct reductions of GHG emissions. Therefore, BIG would not result in any significant impacts or interfere with SCAG’s ability to achieve the region’s post-2020 mobile source GHG reduction targets.

CARB Scoping Plan Consistency

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, CARB adopted the *Climate Change Scoping Plan* (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan provides a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as the cap-and-trade program, and an AB 32 implementation fee to fund the program.

2022 Scoping Plan

Adopted December 15, 2022, CARB’s *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) sets a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels by 2045 in accordance with AB 1279. To achieve AB 1279’s targets, the 2022 Scoping Plan relies on existing and emerging fossil fuel alternatives and clean technologies, as well as carbon capture and storage. Specifically, the 2022 Scoping Plan focuses on ZE transportation; phasing out use of fossil gas use for heating homes and buildings; reducing chemical and refrigerants with high GWP; providing communities with sustainable options for walking, biking, and public transit; displacement of fossil-fuel fired electrical generation through use of renewable energy alternatives (e.g., solar arrays and wind turbines); and scaling up new options such as green hydrogen. The 2022 Scoping Plan sets one of the most aggressive approaches to reach carbon neutrality in the world. Unlike the 2017 Scoping Plan, CARB no longer includes a numeric per capita threshold and instead advocates for compliance with a local GHG reduction strategy (i.e., CAP) consistent with CEQA Guidelines § 15183.5.

The key elements of the 2022 CARB Scoping Plan focus on transportation. Specifically, the 2022 Scoping Plan aims to rapidly move towards ZE transportation (i.e., electrifying cars, buses, trains, and trucks), which constitutes California’s single largest source of GHGs. The regulations that impact the

transportation sector are adopted and enforced by CARB on vehicle manufacturers and are outside the jurisdiction and control of local governments. The 2022 Scoping Plan accelerates development of new regulations as well as amendments to strengthen regulations and programs already in place. However, on June 12, 2025, President Trump formally nullified California's ACT regulation, ACC II program, and Heavy-Duty Omnibus regulation, as discussed below.

Statewide strategies to reduce GHG emissions in the latest 2022 Scoping Plan include implementing SB 100, which would achieve 100 percent clean electricity by 2045. In addition, the State includes numerous plans and policies that would contribute to reducing BIG's GHG emissions. These include the following:

- **CARB's ACT Regulation:** Adopted in June 2020, CARB's ACT Regulation requires truck manufacturers to transition from diesel trucks and vans to electric ZE trucks beginning in 2024. By 2045, every new truck sold in California is required to be ZE. The ACT Regulation accelerates the transition of ZE medium-and heavy-duty vehicles from Class 2b to Class 8. The Trump administration has asked Congress to use its powers under the Congressional Review Act to reverse the Biden administration's approval of California's ACT rule (as well as the ACC II program and Heavy-Duty Omnibus regulation). The ACT rule was disapproved by Congressional Resolution H.J. Res 87. California currently has no authority to implement ACT.
- **EO N-79-20 and ZEV Action Plan:** EO N-79-20 establishes the goal for all new passenger cars and trucks, as well as all drayage/cargo trucks and off-road vehicles and equipment, sold in California, will be ZE by 2035 and all medium and heavy vehicles will be ZE by 2045. It also directs CARB to develop and propose rulemaking for passenger vehicles and trucks, medium-and heavy-duty fleets where feasible, drayage trucks, and off-road vehicles and equipment "requiring increasing volumes" of new ZEVs "towards the target of 100 percent." The goals of this EO are incorporated into the ACC II rule, which has been disapproved by Congressional Resolution H.J. Res 88. California currently has no authority to implement these EOs.
- **CARB's Mobile Source Strategy:** CARB's Mobile Source Strategy takes an integrated planning approach to identify the level of transition to cleaner mobile source technologies needed to achieve all of California's targets by increasing the adoption of ZEV buses and trucks.
- **CARB's Sustainable Freight Action Plan:** The Sustainable Freight Action Plan which improves freight system efficiency, utilizes near- ZE technology, and deployment of ZEV trucks. This Plan applies to all heavy-duty trucks accessing BIG and may include existing heavy-duty trucks or new heavy-duty trucks that are part of the statewide goods movement sector.
- **CARB's Emissions Reduction Plan for Ports and Goods Movement:** CARB's Emissions Reduction Plan for Ports and Goods Movement identifies measures to improve goods movement efficiencies such as advanced combustion strategies, friction reduction, waste heat recovery, and electrification of accessories.
- **In-Use Off-Road Diesel-Fueled Fleets Regulation.** CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation reduces emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. CARB is currently proposing amendments to this regulation to further reduce emissions. The Proposed Amendments would reduce emissions by requiring that fleets phaseout operation of their oldest and highest emitting off road diesel vehicles, prohibiting the addition of

high emitting vehicles to a fleet, and requiring the use of R99 or R100 renewable diesel³¹ in off road diesel vehicles.

- **Clean Off-Road Fleet Voucher Incentive Program.** CARB’s Clean Off-Road Equipment Voucher Incentive Project is intended to accelerate deployment of advanced technology in the off-road sector by providing a streamlined way for fleets to access funding that helps offset the incremental cost of such technology.
- **Low Carbon Transportation Investments and the Air Quality Improvement Program.** This program provides mobile source incentives to reduce GHG, criteria pollutant, and TACs through the deployment of advanced technology and clean transportation in the light-duty and heavy-duty sectors. Low Carbon Transportation Investments are supported by Cap-and-Trade auction proceeds.
- **Clean Miles Standard and Incentive Program.** The Clean Miles Standard and Incentive Program requires CARB to adopt and for the CPUC to implement annual GHG reduction targets consistent with the ZEV Action Plan.
- **TRU Regulation.** Beginning December 31, 2022, the TRU regulation requires newly-manufactured truck TRUs, trailer TRUs, and domestic shipping container TRUs are required to use a refrigerant with a GWP less than or equal to 2,200, or no refrigerant at all. Note that CARB withdrew its waiver request for this ZE TRU component of the TRU regulation.

The analysis of BIG’s consistency with the 2022 Scoping Plan’s GHG emission reduction strategies (Table 2-1 of the 2022 Scoping Plan) with mitigation incorporated is presented in **Table 24: BIG Consistency with Applicable CARB Scoping Plan Actions** and **Table 25: BIG Consistency with Scoping Plan Actions for NWL Sectors**.

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions			
Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
GHG Emissions Reductions	40% below 1990 levels by 2030; carbon neutrality by 2045	SB 32: Reduce statewide GHG emissions. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory	No Conflict. BIG would improve goods movement efficiency and reduce transload truck trips. BIG is anticipated to reduce heavy-duty truck VMT by providing an intermodal facility closer to unit origins than currently exists. BIG’s reduction in heavy-duty truck VMT, improvement in goods movement, ZE cargo handling equipment, ZE yard trucks/electric hostlers, Tier 4 locomotives, idling reduction technology, and use of renewable diesel RTG cranes help address statewide GHG emissions reduction goals. Therefore, as a result of net reductions in GHG emissions, BIG would be consistent with this goal.

³¹ Renewable diesel is a transportation fuel produced from non-petroleum renewable sources, including vegetable oils and animal fats. Renewable diesel is chemically the same as diesel, but it is made of recently living biomass.

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
Smart Growth/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, reduce emissions of GHGs, and improve air quality.	No Conflict. Pursuant to SB 375, CARB has set regional targets to work towards achieving GHG emissions reductions from changed land use patterns and improved transportation. Each MPO must prepare a SCS that will reduce GHG emissions to achieve these regional targets. Connect SoCal notes that thoughtfully locating freight delivery facilities and logistics centers can reduce heavy-duty truck travel and the impact of goods movement on communities. BIG would improve goods movement and supply chain efficiency by transporting more containers with trains to reduce approximately 1,715 daily transloading truck trips and approximately 217,824,523 TMT from the national network in 2028 and greater reductions in future years. BIG is anticipated to reduce heavy-duty truck VMT by providing an intermodal facility closer to unit origins than currently exists. The reduction in transloading truck trips would directly improve mobility, accessibility, reliability, and travel safety for people and goods by reducing the number of heavy-duty trucks on the road.
Light-duty Vehicle ZEVs	100% of Light-duty Vehicle sales are ZEV by 2035	EO N-79-20: Reduce demand for fossil transportation fuels, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory	No Conflict. BIG's reduction in heavy-duty truck TMT, improvement in goods movement, ZE cargo handling equipment, ZE yard trucks/electric hostlers, Tier 4 locomotives, idling reduction technology, and use of renewable diesel RTG cranes help address statewide GHG emissions reduction goals.
Truck ZEVs	100% of medium-duty vehicle/heavy-duty vehicle sales are ZEV by 2040 (AB 74 University of California Institute of Transportation Studies report)	EO N-79-20: Reduce demand for fossil transportation fuels, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions	No Conflict. This measure applies to medium and heavy vehicles that operate in the state. BIG would not conflict with implementation of this measure. Medium and heavy vehicles associated with BIG construction and operation would be required to comply with this regulation's requirements and enforced through

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
		for sources covered by the AB 32 Inventory	inspection and registration. BIG's reduction in heavy-duty truck VMT, improvement in goods movement, ZE cargo handling equipment, ZE yard trucks/electric hostlers, Tier 4 locomotives, idling reduction technology, and use of renewable diesel RTG cranes help address statewide GHG emissions reduction goals. Note: California currently has no authority to implement the ACF and ACT programs and rules supporting EO N-79-20.
Aviation	20% of aviation fuel demand is met by electricity (batteries) or hydrogen (fuel cells) in 2045.	Reduce demand for petroleum aviation fuel and reduce GHGs.	No Conflict. This measure applies to aviation fuel demand. BIG would not directly result in the use of aviation fuel. BIG would not conflict with implementation of this measure.
	Sustainable aviation fuel meets most of the rest of the aviation fuel demand that has not already transitioned to hydrogen batteries.	AB 197: direct emission reductions for sources covered by the AB 32 Inventory	
OGVs	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, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory	N/A. BIG would not involve OGVs.
Post Operations	100% of cargo handling equipment at Ports is ZE by 2037. 100% of drayage trucks at Ports are ZE by 2035.	EO N-79-20: Reduce demand for petroleum fuels, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory	N/A. This is a statewide measure that cannot be implemented by an individual development project or Lead Agency.
Freight and Passenger Rail	100% of passenger and other locomotive sales	Reduce demand for petroleum fuels,	No Conflict. This is a statewide measure that cannot be implemented by an

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
	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 emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	individual development project or Lead Agency. Scoping plan actions related to state passenger locomotives are not applicable to BIG.
Oil and Gas Extraction	Reduce oil and gas extraction operations in line with petroleum demand by 2045.	Reduce emissions of GHGs and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	No Conflict. This is a statewide measure that cannot be implemented by an individual development project or Lead Agency.
Petroleum Refining	CCS on majority of operations by 2030, beginning in 2028. Production reduced in line with petroleum demand.	Reduce emissions of GHGs and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	N/A. This is a statewide measure that cannot be implemented by an individual development project or Lead Agency.
Electricity Generation	Sector GHG target of 38 MMTCO ₂ e in 2030 and 30 MMTCO ₂ e in 2035. Retail sales load coverage. 20 gigawatts of offshore wind by 2045. Meet increased demand for electrification without new fossil gas-fired resources.	SB 350 and SB 100: Reduce emissions of GHGs and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	No Conflict. This is a statewide measure that cannot be implemented by an individual development project or Lead Agency. However, BIG would include the construction and operation of a 21 MW solar farm to provide renewable energy for BIG. Further, buildings constructed within the BIG footprint would be required to allow for solar roof areas. Therefore, BIG would support implementation of this action.
New Residential and Commercial Buildings	All electric appliances beginning 2026 (residential) and 2029 (commercial), contributing to 6 million heat pumps	Reduce demand for fossil gas, reduce emissions of GHGs, and improve air quality.	No Conflict. BIG would be an all-electric development that would not require the use of natural gas and would thereby support the goal of phasing out fossil fuels for heating homes and buildings. Additionally, Transload Warehouses would

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
	installed statewide by 2030.	AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	not include any natural gas connections.
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, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	N/A. BIG does not have a residential component.
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, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	N/A. BIG would not retain any existing commercial buildings.
Food Products	7.5% of energy demand electrified directly and/or indirectly by 2030; 75% by 2045	Reduce demand for fossil gas, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory	N/A. BIG would not involve food product process operations.
Construction Equipment	25% of energy demand electrified by 2030 and 75% electrified by	Reduce demand for fossil energy, reduce emissions of GHGs,	No Conflict. This is a statewide measure that cannot be implemented by an individual development project or Lead

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
	2045	and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory	Agency. All off-road diesel-powered construction equipment utilized during BIG construction would meet CARB Tier 4 Final off-road emissions standards, renewable diesel fuel would be used for all heavy-duty diesel-fueled construction equipment and heavy diesel trucks, and all on-road truck utilized for construction would have an average fleet mix of equipment MY 2010 or newer. Therefore, BIG would support implementation of this action.
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, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	N/A. BIG operations would not involve chemical and allied products or pulp and paper process operations.
Stone, Clay, Glass, and Cement	CSS 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, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	N/A. BIG operations would not involve stone, clay, glass, or cement process operations.
Other Industrial Manufacturing	0% energy demand electrified by 2030 and 50% by 2045	Reduce demand for fossil energy, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	N/A. BIG does not have an industrial manufacturing component.
Combined Heat and Power	Facilities retire by 2040	Reduce demand for fossil energy, reduce emissions of GHGs,	No Conflict. BIG proposes an international gateway that would operate as a comprehensive and sustainable

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
		and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory.	transportation hub. BIG would efficiently move goods through use of trains, which would reduce heavy-duty truck travel, and through use of clean technologies at the rail yard (i.e., ZE cargo handling equipment and ZE hostlers). Combined heat and power is not appropriate.
Agriculture Energy Use	25% energy demand electrified by 2030 and 75% by 2045	Reduce demand for fossil energy, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions	N/A. BIG does not have an agricultural component.
Low Carbon Fuels for Transportation	Biomass supply is used to produce conventional and advanced biofuels, as well as hydrogen.	Reduce demand for petroleum fuel, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reductions for sources covered by the AB 32 Inventory	No Conflict. This measure applies to transportation fuels utilized by vehicles in California. BIG would not conflict with implementation of this measure. Motor vehicles associated with construction and operation of BIG would utilize low carbon transportation fuels as required under this measure. Additionally, MM BIG AQ-4 and MM BIG AQ-8 in Appendix 5.3 BIG-1 require the use of renewable diesel for construction equipment and operational RTG cranes, which is a low carbon fuel. In addition, BIG would increase the renewable diesel composition within the Ports' existing fueling site from 1 percent to 10 percent, improving emissions of all BNSF trains fueling at the Ports.
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, reduce emissions of GHGs, and improve air quality. AB 197: direct emissions reduction for sources covered by the AB 32 Inventory.	N/A. This is a statewide measure that cannot be implemented by an individual development project or Lead Agency.
Non-combustion	Increase landfill and dairy digester CH ₄	SB 1383: Reduce short-lived climate	No Conflict. BIG would not conflict with implementation of these actions. BIG is

Table 23: BIG Consistency with Applicable CARB Scoping Plan Actions

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
CH ₄ Emissions	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 CH₄ emissions reduced 50% by 2030 and further reductions as infrastructure components retire in line with reduced fossil gas demand.	pollutants.	required to achieve the recycling mandates via compliance with the CALGreen Code.
High GWP Potential Emissions	Low GWP refrigerants introduced as building electrification increases, mitigating HFC emissions.	SB 1383: Reduced short-lived climate pollutants.	N/A. The regulations are applicable to refrigerants used by large air conditioning systems and large commercial and industrial refrigerators and cold storage system. BIG does not include refrigerated warehouse space or other large air conditioning systems, thus, would not conflict with the refrigerant management regulations adopted by CARB.

Table 24: BIG Consistency with Scoping Plan Actions for NWL Sectors

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
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	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	N/A. BIG does not include natural working lands.

Table 24: BIG Consistency with Scoping Plan Actions for NWL Sectors

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
	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.	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 heath 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.	N/A. BIG does not include forests or shrublands.

Table 24: BIG Consistency with Scoping Plan Actions for NWL Sectors

Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
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.	N/A. BIG does not include grasslands.
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 health soils practices to reduce GHG emissions from agricultural lands. Target increased in response to Governor Newsom's direction to prioritize sustainable land management.	N/A. BIG does not include croplands.
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,	No Conflict. These strategies are intended to direct local jurisdictions' actions. BIG would not conflict with implementation of this measure.

Table 24: BIG Consistency with Scoping Plan Actions for NWL Sectors			
Scoping Plan Sector	Scoping Plan Action	Statutes, Executive Orders, Other Direction, Outcome	BIG Consistency
		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 CO ₂ 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.	N/A. The BIG footprint includes approximately 30.97 acres (237,587.10 linear feet) of non-wetland waters of the U.S./state under USACE and RWQCB jurisdiction and 7.85 acres of vegetated streambed, 36.27 acres of unvegetated streambed, and 68.19 acres of watercourse under CDFW jurisdiction that would be permanently impacted by fill placed during BIG construction. However, BIG would have no effect on Delta wetlands.
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.	No Conflict. BIG is located on Sparsely Vegetated Lands. It is noted that Sparsely Vegetated Lands have the lowest potential for GHG reductions, the lowest rate for social cost of carbon, and the highest average cost per metric ton of reduced CO ₂ e according to the Scoping Plan. The Scoping Plan recommends cutting land conversion of deserts and sparsely vegetated landscapes by at least 50 percent annually from current levels, starting in 2025. Although BIG would convert Sparsely Vegetated Lands, BIG's sensitive species' habitat mitigations (MM BIO-1 through MM BIO-36) would help preserve Sparsely Vegetated Lands; see Appendix 5.4 BIG-1 .

BIG would be consistent with Connect SoCal, the CARB Scoping Plan, and would be required to comply with existing regulations, including applicable measures from the proposed General Plan (discussed below). BIG would be directly affected by the outcomes of applicable regulations and requirements

(vehicle trips and energy consumption would be less carbon intensive due to statewide compliance with future LCFS amendments and increasingly stringent RPS.

As indicated above, GHG reductions are also achieved as a result of State of California energy and water efficiency requirements. These efficiency improvements correspond to reductions in secondary GHG emissions. For example, in California, most electricity is derived from natural gas combustion. Therefore, energy saving measures, such as Title 24, reduce GHG emissions from the power generation facilities by reducing load demand.

The 2022 Scoping Plan would continue to implement SB 375. GHGs would be further reduced through the Cap-and-Trade Program carbon pricing and SB 905. SB 905 requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate CO₂ removal projects and technology.

Conclusion

BIG's energy and mobile source GHG emissions would be reduced with implementation of the 2022 Scoping Plan measures described above. GHG emissions would decline in the future due to statewide measures discussed above (including the reduction in fuels' carbon content, CARB's Mobile Source Strategy, fuel efficiency standards, etc.), as well as cleaner technology, fleet turnover, and use of renewable diesel. Connect SoCal 2024 is also expected to help California reach its GHG reduction goals, with reductions in per capita transportation emissions of 19 percent by 2035 (CARB, ND).

BIG implementation would result in improvements in goods movement and supply chain efficiency by transporting more containers with trains to reduce heavy-duty truck trips, which would primarily occur in the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (South Coast AQMD). The South Coast AQMD identifies goods movement activities as a challenge for cleaning air for the 17 million residents in the South Coast Air Basin (South Coast AQMD, 2022, p. 1-5). The South Coast AQMD's 2022 AQMP includes Transportation Control Measures and Reasonably Available Control Measures that BIG would help implement (South Coast AQMD, 2022, pp. IV-C-31 – IV-C-86). For example, Measure 7.19 involves programs to encourage goods movement by rail and indicates that this is being implemented by CARB. Additionally, Measure 7.20 aims to divert heavy-duty trucks from nonattainment areas (i.e., requiring pass-through heavy-duty trucks to choose routes away from the SCAG region). BIG would transport more containers with trains instead of heavy-duty trucks to reduce approximately 1,715 daily transloading truck trips and approximately 217,824,523 TMT from the national network in 2028 (with greater truck trip reductions in future years), which would achieve this measure that South Coast AQMD has otherwise determined not to be feasible; see **Appendix 5.15 BIG-1**.

According to the Goods Movement Technical Report of Connect SoCal, the efficient movement of goods is an important driver of the economy and directly contributes to the needs for every business and resident in the SCAG region (SCAG, 2024a, p. 2). BIG would improve goods movement and supply chain efficiency. BIG is anticipated to reduce heavy-duty truck VMT by providing an intermodal facility closer to unit origins than currently exists. The reduction in transloading truck trips would directly improve mobility, accessibility, reliability, and travel safety for people and goods by reducing the number of heavy-duty trucks on the road, which would also reduce overall GHG emissions.

In addition to providing regional goods movement efficiency, BIG also includes electric cargo handling equipment and electric hostlers which would reduce GHG emissions.

As noted above, **Appendix 5.3 BIG-1** includes mitigation measures that would minimize construction and operational GHG emissions by requiring the use of renewable diesel fuel for off-road construction equipment, clean on-road construction vehicles, and the use of renewable diesel for RTG cranes during operations. Implementation of mitigation would provide reductions in GHG emissions and would be consistent with GHG emissions reduction planning.

At this time, it is not possible to quantify the GHG emissions savings from future regulatory measures that have not yet been developed; nevertheless, it can be anticipated that BIG operations would benefit from applicable measures are enacted to meet state GHG reduction goals. As discussed above in **Table 21**, BIG would not interfere with SCAG's ability to achieve the region's post-2020 mobile source GHG reduction targets. Additionally, BIG GHG emissions would be indirectly reduced through the implementation of various Scoping Plan measures, such as the LCFS, vehicle emissions standards, building energy efficiency standards, market-based mechanisms (such as the cap-and-trade program) and the RPS. BIG would not impede the state's progress towards carbon neutrality by 2045 under the 2022 Scoping Plan as BIG will comply will statewide strategies, plans, and policies, as outlined above in **2022 Scoping Plan** to reduce GHG emissions. BIG would be required to comply with applicable current and future regulatory requirements promulgated through the 2022 Scoping Plan. As such, BIG would not conflict with any other state-level regulations pertaining to GHGs.

BIG would implement the mitigation measures listed above to reduce its contribution to GHG emissions and to ensure it does not conflict with or impede implementation of reduction goals identified in AB 32, SB 32, AB 1279, and other strategies to help reduce GHGs. In addition, BIG would also be subject to all applicable regulatory requirements, which would also reduce BIG GHG emissions. Therefore, BIG would not conflict with any applicable plan, program, policy, or regulation related to the reduction of GHG emissions. BIG would not impede implementation of the Scoping Plan, or conflict with the policies of the Scoping Plan or any other GHG reduction plan. Therefore, impacts would be less than significant with the implementation of mitigation measures.

Impact 5.8-2 Level of Significance: Less than significant impact. No mitigation is required.

Mitigation Measures: Refer to **MM BIG AQ-3** through **MM BIG AQ-5**, **MM BIG AQ-8** through **MM BIG AQ-10**, **MM BIG AQ-13**, and **MM BIG AQ-14**, in Appendix 5.3 BIG-1 and listed above. Also refer to **MM BIG EN-1** and **MM BIG EN-2**, listed above.

6.4 Cumulative Setting, Impacts, and Mitigation Measures

Cumulative Setting

Climate change is a global phenomenon. The geographic scope for GHG emissions is global because impacts of climate change are experienced on a global scale regardless of the location of GHG emission sources. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have

relatively short atmospheric lifetimes (about 1 day), GHGs have much longer atmospheric lifetimes of 1 year to several thousand years that allow them to be dispersed around the globe.

Cumulative Impacts

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory (CAPCOA, 2008, p. 31). State CEQA Guidelines generally address GHG emissions as a cumulative impact because of the global nature of climate change (Public Resource Code § 21083(b)(2)). As the California Supreme Court explained, “because of the global scale of climate change, any one project’s contribution is unlikely to be significant by itself” (Cleveland National Forest Foundation v. San Diego Association of Governments, 2017). As such, GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of BIG-related GHG emissions would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, BIG as well as other cumulative-related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As discussed above, BIG would improve goods movement efficiencies, remove heavy-duty trucks from the national roadway network, and would not conflict with Connect SoCal, or the CARB Scoping Plan. As such, BIG would be consistent with the state’s long-term goal to achieve statewide carbon neutrality by 2045 through compliance with the strategies, plans, and policies in the 2022 Scoping Plan. Additionally, BIG Net GHG emissions would not be cumulatively considerable due to reductions in GHG emissions. Although unmitigated BIG operations would result in a reduced GHG emissions, air quality and energy mitigation measures would further reduce BIG-related GHG emissions. With adherence to regulatory requirements and implementation of mitigation measures BIG would result in a less than significant cumulative GHG impact.

Impact 5.8-1 Level of Significance: Less than Significant. No mitigation measures are required.

Mitigation Measures: Refer to **MM BIG AQ-3** through **MM BIG AQ-5**, **MM BIG AQ-8** through **MM BIG AQ-10**, **MM BIG AQ-13** and **MM BIG AQ-14**, in Appendix 5.3 BIG-1 and listed above. Also refer to **MM BIG EN-1** and **MM BIG EN-2**, listed above.

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