Buena Park General Plan & Zoning Code Update

ENERGY ANALYSIS

CITY OF BUENA PARK

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NOVEMBER 6, 2022

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LIST OF ABBREVIATED TERMS

%	Percent
(1)	Reference
AQIA	*Buena Park General Plan & Zoning Code Update Air Quality Impact Analysis*
BACM	Best Available Control Measures
BTU	British Thermal Units
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
City	City of Buena Park
CPEP	Clean Power and Electrification Pathway
CPUC	California Public Utilities Commission
DMV	Department of Motor Vehicles
EIA	Energy Information Administration
EPA	Environmental Protection Agency
EMFAC	EMissions FACtor
FERC	Federal Energy Regulatory Commission
GHG	Greenhouse Gas
GWh	Gigawatt Hour
HHDT	Heavy-Heavy Duty Trucks
hp-hr-gal	Horsepower Hours Per Gallon
IEPR	Integrated Energy Policy Report
ISO	Independent Service Operator
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
kBTU	Thousand-British Thermal Units
kWh	Kilowatt Hour
LDA	Light Duty Auto
LDT1/LDT2	Light-Duty Trucks
LHDT1/LHDT2	Light-Heavy Duty Trucks
MARB/IPA	March Air Reserve Base/Inland Port Airport
MDV	Medium Duty Trucks
MHDT	Medium-Heavy Duty Trucks

MMcfd	Million Cubic Feet Per Day
mpg	Miles Per Gallon
MPO	Metropolitan Planning Organization
PG&E	Pacific Gas and Electric
Project	Buena Park General Plan & Zoning Code Update
PV	Photovoltaic
SCAB	South Coast Air Basin
SCE	Southern California Edison
SDAB	San Diego Air Basin
sf	Square Feet
SoCalGas	Southern California Gas
TEA-21	Transportation Equity Act for the 21st Century
U.S.	United States
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Buena Park General Plan & Zoning Code Update Energy Analysis* is summarized below based on the significance criteria in Section 5 of this report consistent with Appendix G of the 2020 California Environmental Quality Act (CEQA) Statute and Guidelines (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for potential energy impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Energy Impact #1: Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	5.0	*Less Than Significant*	*n/a*
Energy Impact #2: Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	5.0	*Less Than Significant*	*n/a*

ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the federal and state agencies that regulate energy use and consumption through various means and programs. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of energy usage include:

- Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)
- The Transportation Equity Act for the 21st Century (TEA-21
- Integrated Energy Policy Report (IEPR)
- State of California Energy Plan
- California Code Title 24, Part 6, Energy Efficiency Standards
- California Code Title 24, Part 11, California Green Building Standards Code (CALGreen)
- AB 1493 Pavley Regulations and Fuel Efficiency Standards
- California's Renewable Portfolio Standard (RPS)
- Clean Energy and Pollution Reduction Act of 2015 (SB 350)

Consistency with the above regulations is discussed in detail in section 5 of this report.

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1 INTRODUCTION

This report presents the results of the energy analysis prepared by Urban Crossroads, Inc., for the proposed Buena Park General Plan & Zoning Code Update Project (Project). The purpose of this report is to ensure that energy implications are considered by the City of Buena Park (Lead Agency), as the lead agency; to quantify anticipated energy usage associated with construction and operation of the proposed Project; determine if the usage amounts are efficient, typical, or wasteful for the land use type; and to emphasize avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

1.1 PROJECT DESCRIPTION

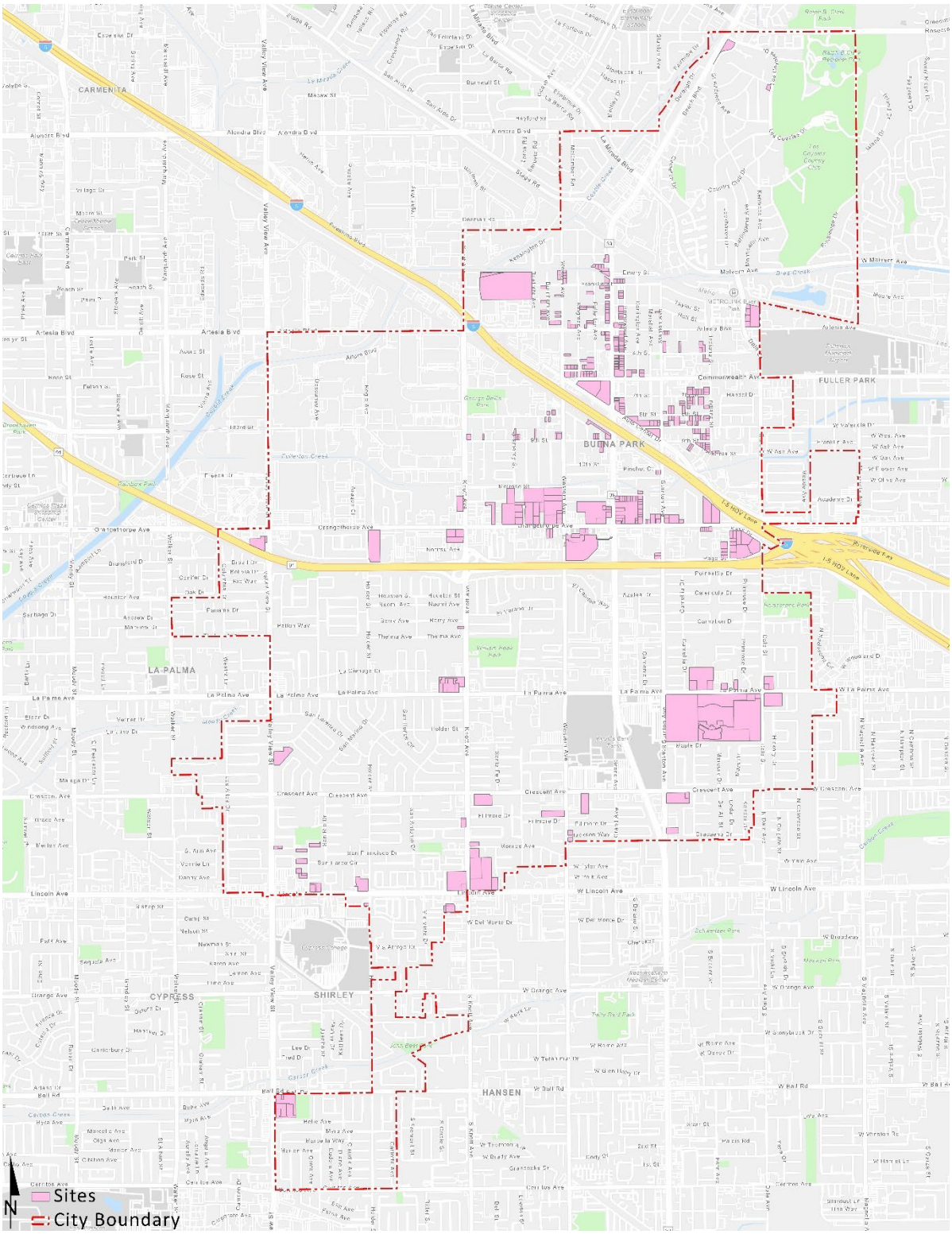
The 6th Cycle Housing Element Update indicates that the City can accommodate approximately 10,322 dwelling units (DU)[1] through pending projects, its inventory of vacant and underutilized land, ADUs, and rezoned and mixed-use overlay sites. The mixed-use overlay sites will permit commercial development with floor-to-area ratios of 1.0, 1.5, and 3.0, which will result in 438,333 square feet (SF) of commercial space at an estimated 60% lot coverage. Through consultation with the City of Buena Park it was determined that the mix of total commercial SF be separated to 80% (350,667 square feet) retail uses and 20% (87,667 square feet) office uses. The commercial intensities within the mixed-use overlays are in addition to the permitted residential densities.

In order to achieve the increased number of housing units, the City must update the Land Use Element, Single Family Residential Zones, and Multifamily Residential Zones to allow increased densities under the land use designations and provide development standards under the zoning ordinance that accommodates increased densities up to 100 dwelling units per acre (du/ac). Housing Element sites summarized on Appendix 4.1. There are a total of 410 parcels identified as part of the 2021-2029 Housing Element Update.

The Energy Analysis will evaluate the proposed development intensities expected for the 341 sites which was based on the number of APNs that would be increased to allow densities up to 100 dwelling units per acre and assess the potential impacts that result from the implementation of the rezoning and changes to land use. Exhibit 1-A identifies the locations of each of the Housing Element sites shown on Appendix 4.1.

[1] Housing units were calculated using the "Buena Park Adopted 6th Cycle HE_SITES INVENTORY".

EXHIBIT 1-A: HOUSING ELEMENT SITE LOCATION MAP



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2 EXISTING CONDITIONS

This section provides an overview of the existing energy conditions in the Project region.

2.1 OVERVIEW

The most recent data for California's estimated total energy consumption and natural gas consumption is from 2021, released by the United States (U.S.) Energy Information Administration's (EIA) California State Profile and Energy Estimates in 2021 and included (2):

- As of 2021, approximately 7,359 trillion British Thermal Unit (BTU) of energy was consumed
- As of 2021, approximately 605 million barrels of petroleum
- As of 2021, approximately 2,101 billion cubic feet of natural gas
- As of 2021, approximately 1 million short tons of coal

According to the EIA, in 2022 the U.S. petroleum consumption comprised about 90% of all transportation energy use, excluding fuel consumed for aviation and most marine vessels (3). In 2022, about 251,923 million gallons (or about 5.99 million barrels) of finished petroleum products were consumed in the U.S., an average of about 690 million gallons per day (or about 16.4 million barrels per day) (4). In 2021, California consumed approximately 12,157 million gallons in motor gasoline (33.31 million per day) and approximately 3,541 million gallons of diesel fuel (9.7 million per day) (5).

The most recent data provided by the EIA for energy use in California is reported from 2021 and provided by demand sectors as follows:

- Approximately 37.8% transportation sector
- Approximately 23.2% industrial sector
- Approximately 20.0% residential sector
- Approximately 19.0% commercial sector (6)

According to the EIA, California used approximately 247,250 gigawatt hours of electricity in 2021 (7). By sector in 2021, residential uses utilized 36.5% of the state's electricity, followed by 43.9% for commercial uses, 19.2% for industrial uses, and 0.3% for transportation. Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building (7).

According to the EIA, California used approximately 200,871 million therms of natural gas in 2021 (8). In 2021 (the most recent year for which data is available), by sector, industrial uses utilized 33% of the state's natural gas, followed by 30% used as fuel in the electric power sector, 21% from residential, 11% from commercial, 1% from transportation uses and the remaining 3% was utilized for the operations, processing and production of natural gas itself (8). While the supply of natural gas in the United States and production in the lower 48 states has increased greatly since 2008, California produces little, and imports 90% of its supply of natural gas (8).

In 2022, total system electric generation for California was 287,220 gigawatt hours (GWh). California's massive electricity in-state generation system generated approximately 203,257 GWh which accounted for approximately 71% of the electricity it uses; the rest was imported from the Pacific Northwest (12%) and the U.S. Southwest (17%) (9). Natural gas is the main source for electricity generation at 47.46% of the total in-state electric generation system power as shown in Table 2-1.

An updated summary of, and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below (10):

- In 2022, California was the seventh-largest producer of crude oil among the 50 states, and, as of January 2022, the state ranked third in crude oil refining capacity.
- California is the largest consumer of jet fuel and second-largest consumer of motor gasoline among the 50 states.
- In 2020, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all but three other states.
- In 2022, renewable resources, including hydroelectric power and small-scale, customer-sited solar power, accounted for 49% of California's in-state electricity generation. Natural gas fueled another 42%. Nuclear power supplied almost all the rest.
- In 2022, California was the fourth-largest electricity producer in the nation. The state was also the nation's third-largest electricity consumer, and additional needed electricity supplies came from out-of-state generators.

As indicated below, California is one of the nation's leading energy-producing states, and California's per capita energy use is among the nation's most efficient. Given the nature of the Project, the remainder of this discussion will focus on the three sources of energy that are most relevant to the Project—namely, electricity, natural gas, and transportation fuel for vehicle trips associated with the uses planned for the Project.

TABLE 2-1: TOTAL ELECRICITY SYSTEM POWER (CALIFORNIA 2022)

Fuel Type	California In-State Generation (GWh)	% of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Total California Energy Mix (GWh)	Total California Power Mix
Coal	273	0.13%	181	5,716	5,897	6,170	2.15%
Natural Gas	96,457	47.46%	44	7,994	8,038	104,495	36.38%
Oil	65	0.03%	-	-	-	65	0.2%
Other (Waste Heat/Petroleum Coke)	315	0.15%	-	-	-	315	0.11%
Unspecified	-	0.0%	12,485	7,943	20,428	20,428	7.11%
Total Thermal and Unspecified	**97,110**	**47.78%**	**12,710**	**21,653**	**34,363**	**121,473**	**45.77%**
Nuclear	17,627	8.67%	397	8,342	8,739	26,366	9.18%
Large Hydro	14,607	7.19%	10,803	1,118	11,921	26,528	9.24%
Biomass	5,366	2.64%	771	25	797	6,162	2.15%
Geothermal	11,110	5.47%	253	2,048	2,301	13,412	4.67%
Small Hydro	3,005	1.48%	211	13	225	3,230	1.12%
Solar	40,494	19.92%	231	8,225	8,456	48,950	17.04%
Wind	13,938	6.86%	8,804	8,357	17,161	31,099	10.83%
Total Non-GHG and Renewables	**106,147**	**52.22%**	**21,471**	**28,129**	**49,599**	**155,747**	**54.23%**
SYSTEM TOTALS	***203,257***	***100.0%***	***34,180***	***49,782***	***83,962***	***287,220***	***100.0%***

Source: CECs 2022 Total System Electric Generation

2.2 ELECTRICITY

The Project's proposed electricity usage was calculated using the California Emissions Estimator Model (CalEEMod) Version 2022.1. The Southern California region's electricity reliability has been of concern for the past several years due to the planned retirement of aging facilities that depend upon once-through cooling technologies, as well as the June 2013 retirement of the San Onofre Nuclear Generating Station (San Onofre). While the once-through cooling phase-out has been ongoing since the May 2010 adoption of the State Water Resources Control Board's once-through cooling policy, the retirement of San Onofre complicated the situation. California ISO studies revealed the extent to which the South California Air Basin (SCAB) and the San Diego Air Basin (SDAB) region were vulnerable to low-voltage and post-transient voltage instability concerns. A preliminary plan to address these issues was detailed in the 2013 Integrative Energy Policy Report (IEPR) after a collaborative process with other energy agencies, utilities, and air districts (11). Similarly, the subsequent 2022 IEPR provides information and policy recommendations on advancing a clean, reliable, and affordable energy system.

California's electricity industry is an organization of traditional utilities, private generating companies, and state agencies, each with a variety of roles and responsibilities to ensure that electrical power is provided to consumers. The California Independent Service Operator (ISO) is a nonprofit public benefit corporation and is the impartial operator of the State's wholesale power grid and is charged with maintaining grid reliability, and to direct uninterrupted electrical energy supplies to California's homes and communities. While utilities still own transmission assets, the ISO routes electrical power along these assets, maximizing the use of the transmission system and its power generation resources. The ISO matches buyers and sellers of electricity to ensure that enough power is available to meet demand. To these ends, every five minutes the ISO forecasts electrical demands, accounts for operating reserves, and assigns the lowest cost power plant unit to meet demands while ensuring adequate system transmission capacities and capabilities (12).

Part of the ISO's charge is to plan and coordinate grid enhancements to ensure that electrical power is provided to California consumers. To this end, utilities file annual transmission expansion/modification plans to accommodate the State's growing electrical needs. The ISO reviews and either approves or denies the proposed additions. In addition, and perhaps most importantly, the ISO works with other areas in the western United States electrical grid to ensure that adequate power supplies are available to the State. In this manner, continuing reliable and affordable electrical power is assured to existing and new consumers throughout the State.

Electricity is currently provided to the Project by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons in 15 counties and in 180 incorporated cities, within a service area encompassing approximately 50,000 square miles. Based on SCE's 2018 Power Content Label Mix, SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers (13).

Table 2-2, SCE's specific proportional shares of electricity sources in 2022. As indicated in Table 2-2, the 2022 SCE Power Mix has renewable energy at 33.2% of the overall energy resources. Geothermal resources are at 5.7%, wind power is at 9.8%, large hydroelectric sources are at 3.4%, solar energy is at 17.0%, and coal is at 0% (14).

TABLE 2-2: SCE 2022 POWER CONTENT MIX

Energy Resources	2022 SCE Power Mix
Eligible Renewable	**33.2%**
Biomass & Waste	0.1%
Geothermal	5.7%
Eligible Hydroelectric	0.5%
Solar	17.0%
Wind	9.8%
Coal	**0.0%**
Large Hydroelectric	**3.4%**
Natural Gas	**24.7%**
Nuclear	**8.3%**
Other	**0.1%**
Unspecified Sources of power*	30.3%
Total	**100%**

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources

2.3 NATURAL GAS

The following summary of natural gas customers and volumes, supplies, delivery of supplies, storage, service options, and operations is excerpted from information provided by the California Public Utilities Commission (CPUC).

> *"The CPUC regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller natural gas utilities. The CPUC also regulates independent storage operators: Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.*
>
> *California's natural gas utilities provide service to over 11 million gas meters. SoCalGas and PG&E provide service to about 5.9 million and 4.3 million customers, respectively, while SDG&E provides service to over 800, 000 customers. In 2018, California gas utilities forecasted that they would deliver about 4740 million cubic feet per day (MMcfd) of gas to their customers, on average, under normal weather conditions.*
>
> *The overwhelming majority of natural gas utility customers in California are residential and small commercials customers, referred to as "core" customers. Larger volume gas*

customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.

A significant amount of gas (about 19%, or 1131 MMcfd, of the total forecasted California consumption in 2018) is also directly delivered to some California large volume consumers, without being transported over the regulated utility pipeline system. Those customers, referred to as "bypass" customers, take service directly from interstate pipelines or directly from California producers.

SDG&E and Southwest Gas' southern division are wholesale customers of SoCalGas, i.e., they receive deliveries of gas from SoCalGas and in turn deliver that gas to their own customers. (Southwest Gas also provides natural gas distribution service in the Lake Tahoe area.) Similarly, West Coast Gas, a small gas utility, is a wholesale customer of PG&E. Some other wholesale customers are municipalities like the cities of Palo Alto, Long Beach, and Vernon, which are not regulated by the CPUC.

Natural gas from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California gas utilities are Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Mojave Pipeline, and Tuscarora. Another pipeline, the North Baja - Baja Norte Pipeline takes gas off the El Paso Pipeline at the California/Arizona border and delivers that gas through California into Mexico. While the Federal Energy Regulatory Commission (FERC) regulates the transportation of natural gas on the interstate pipelines, and authorizes rates for that service, the California Public Utilities Commission may participate in FERC regulatory proceedings to represent the interests of California natural gas consumers.

The gas transported to California gas utilities via the interstate pipelines, as well as some of the California-produced gas, is delivered into the PG&E and SoCalGas intrastate natural gas transmission pipelines systems (commonly referred to as California's "backbone" pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered to the local transmission and distribution pipeline systems, or to natural gas storage fields. Some large volume noncore customers take natural gas delivery directly off the high-pressure backbone and local transmission pipeline systems, while core customers and other noncore customers take delivery off the utilities' distribution pipeline systems. The state's natural gas utilities operate over 100,000 miles of transmission and distribution pipelines, and thousands more miles of service lines.

Bypass customers take most of their deliveries directly off the Kern/Mojave pipeline system, but they also take a significant amount of gas from California production.

PG&E and SoCalGas own and operate several natural gas storage fields that are located within their service territories in northern and southern California, respectively. These storage fields, and four independently owned storage utilities - Lodi Gas Storage, Wild

Goose Storage, Central Valley Storage, and Gill Ranch Storage - help meet peak seasonal and daily natural gas demand and allow California natural gas customers to secure natural gas supplies more efficiently. PG&E is a 25% owner of the Gill Ranch Storage field. These storage fields provide a significant amount of infrastructure capacity to help meet California's natural gas requirements, and without these storage fields, California would need much more pipeline capacity in order to meet peak gas requirements.

Prior to the late 1980s, California regulated utilities provided virtually all natural gas services to all their customers. Since then, the Commission has gradually restructured the California gas industry in order to give customers more options while assuring regulatory protections for those customers that wish to, or are required to, continue receiving utility-provided services.

The option to purchase natural gas from independent suppliers is one of the results of this restructuring process. Although the regulated utilities procure natural gas supplies for most core customers, core customers have the option to purchase natural gas from independent natural gas marketers, called "core transport agents" (CTA). Contact information for core transport agents can be found on the utilities' web sites. Noncore customers, on the other hand, make natural gas supply arrangements directly with producers or with marketers.

Another option resulting from the restructuring process occurred in 1993, when the Commission removed the utilities' storage service responsibility for noncore customers, along with the cost of this service from noncore customers' transportation rates. The Commission also encouraged the development of independent storage fields, and in subsequent years, all the independent storage fields in California were established. Noncore customers and marketers may now take storage service from the utility or from an independent storage provider (if available), and pay for that service, or may opt to take no storage service at all. For core customers, the Commission assures that the utility has adequate storage capacity set aside to meet core requirements, and core customers pay for that service.

In a 1997 decision, the Commission adopted PG&E's "Gas Accord", which unbundled PG&E's backbone transmission costs from noncore transportation rates. This decision gave customers and marketers the opportunity to obtain pipeline capacity rights on PG&E's backbone transmission pipeline system, if desired, and pay for that service at rates authorized by the Commission. The Gas Accord also required PG&E to set aside a certain amount of backbone transmission capacity in order to deliver gas to its core customers. Subsequent Commission decisions modified and extended the initial terms of the Gas Accord. The "Gas Accord" framework is still in place today for PG&E's backbone and storage rates and services and is now simply referred to as PG&E Gas Transmission and Storage (GT&S).

In a 2006 decision, the Commission adopted a similar gas transmission framework for Southern California, called the "firm access rights" system. SoCalGas and SDG&E implemented the firm access rights (FAR) system in 2008, and it is now referred to as the

backbone transmission system (BTS) framework. As under the PG&E backbone transmission system, SoCalGas backbone transmission costs are unbundled from noncore transportation rates. Noncore customers and marketers may obtain, and pay for, firm backbone transmission capacity at various receipt points on the SoCalGas system. A certain amount of backbone transmission capacity is obtained for core customers to assure meeting their requirements.

Many if not most noncore customers now use a marketer to provide for several of the services formerly provided by the utility. That is, a noncore customer may simply arrange for a marketer to procure its supplies, and obtain any needed storage and backbone transmission capacity, in order to assure that it will receive its needed deliveries of natural gas supplies. Core customers still mainly rely on the utilities for procurement service, but they have the option to take procurement service from a CTA. Backbone transmission and storage capacity is either set aside or obtained for core customers in amounts to assure very high levels of service.

In order properly operate their natural gas transmission pipeline and storage systems, PG&E and SoCalGas must balance the amount of gas received into the pipeline system and delivered to customers or to storage fields. Some of these utilities' storage capacity is dedicated to this service, and under most circumstances, customers do not need to precisely match their deliveries with their consumption. However, when too much or too little gas is expected to be delivered into the utilities' systems, relative to the amount being consumed, the utilities require customers to more precisely match up their deliveries with their consumption. And, if customers do not meet certain delivery requirements, they could face financial penalties. The utilities do not profit from these financial penalties - the amounts are then returned to customers as a whole. If the utilities find that they are unable to deliver all the gas that is expected to be consumed, they may even call for a curtailment of some gas deliveries. These curtailments are typically required for just the largest, noncore customers. It has been many years since there has been a significant curtailment of core customers in California." (15)

As indicated in the preceding discussions, natural gas is available from a variety of in-state and out-of-state sources and is provided throughout the state in response to market supply and demand. Complementing available natural gas resources, biogas may soon be available via existing delivery systems, thereby increasing the availability and reliability of resources in total. The CPUC oversees utility purchases and transmission of natural gas to ensure reliable and affordable natural gas deliveries to existing and new consumers throughout the State.

2.4 TRANSPORTATION ENERGY RESOURCES

The Project would generate additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. The Department of Motor Vehicles (DMV) identified 36.2 million registered vehicles in California (16), and those vehicles consume an estimated 17.2 billion gallons of fuel each year[2]. Gasoline (and other vehicle fuels) are

[2] Fuel consumptions estimated utilizing information from EMFAC2021.

commercially provided commodities and would be available to the Project patrons and employees via commercial outlets.

California's on-road transportation system includes 396,616 lane miles, more than 26.6 million passenger vehicles and light trucks, and almost 9.0 million medium- and heavy-duty vehicles (16). While gasoline consumption has been declining since 2008 it is still by far the dominant fuel. California is the second-largest consumer of petroleum products, after Texas, and accounts for 10% of the nation's total consumption. The state is the largest U.S. consumer of motor gasoline and jet fuel, and 85% of the petroleum consumed in California is used in the transportation sector (17).

California accounts for less than 1% of total U.S. natural gas reserves and production. As with crude oil, California's natural gas production has experienced a gradual decline since 1985. In 2021, about 33% of the natural gas delivered to consumers went to the State's industrial sector, and about 31% was delivered to the electric power sector. Natural gas fueled more than two-fifths of the State's utility-scale electricity generation in 2021. The residential sector, where three-fifths of California households use natural gas for home heating, accounted for 22% of natural gas deliveries. The commercial sector received 12% of the deliveries to end users and the transportation sector consumed the remaining 1% (17).

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3 REGULATORY BACKGROUND

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency (EPA) are three federal agencies with substantial influence over energy policies and programs. On the state level, the CPUC and the CEC are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below.

3.1 FEDERAL REGULATIONS

3.1.1 INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT OF 1991 (ISTEA)

The ISTEA promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

3.1.2 THE TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21)

The TEA-21 was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

3.2 CALIFORNIA REGULATIONS

3.2.1 INTEGRATED ENERGY POLICY REPORT (IEPR)

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code § 25301[a]). The CEC prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The 2022 IEPR was adopted February 2023, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2022 IEPR introduces a new

framework for embedding equity and environmental justice at the CEC and the California Energy Planning Library which allows for easier access to energy data and analytics for a wide range of users. Additionally, energy reliability, western electricity integration, gasoline cost factors and price spikes, the role of hydrogen in California's clean energy future, fossil gas transition and distributed energy resources are topics discussed within the 2022 IEPR (18).

3.2.2 STATE OF CALIFORNIA ENERGY PLAN

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

3.2.3 CALIFORNIA CODE TITLE 24, PART 6, ENERGY EFFICIENCY STANDARDS

California Code of Regulations (CCR) Title 24 Part 6: The California Energy Code 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. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2009, and is administered by the California Building Standards Commission. CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2022 California Green Building Code Standards that will be effective on January 1, 2023.

Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction waste and demolition ordinances and defers to them as the ruling guidance provided, they establish a minimum 65% diversion requirement.

The code also provides exemptions for areas not served by construction waste and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official.

Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas (GHG) emissions. The 2022 version of Title 24 was adopted by the CEC and will be effective on January 1, 2023.

The 2022 Title 24 standards would result in less energy use, thereby reducing air pollutant emissions associated with energy consumption in the SCAB and across the State of California. For example, the 2022 Title 24 standards require solar photovoltaic systems for new homes, encourage the use of heat pumps for space and water heating, and require homes to be electric-

ready to ease the adoption of cleaner electric heating, cooking, and EV charging. The CEC anticipates that the 2022 energy code will provide $1.5 billion in consumer benefits and reduce GHG emissions by 10 million metric tons (19). The Project would be required to comply with the applicable standards in place at the time building permit document submittals are made. These require, among other items (20):

RESIDENTIAL MANDATORY MEASURES

- Electric vehicle (EV) charging stations. New construction shall comply with Section 4.106.4.1, 4.106.4.2, 4.106.4.3, to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the *California Electrical Code*, Article 625. (4.106.4).
    - New one- and two-family dwellings and town-houses with attached private garages. For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere 208/240-volt minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.
    - New hotels and motels. All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces. The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1.
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with Sections 4.303.1.1, 4.303.1.2, 4.303.1.3, and 4.303.1.4.
- Outdoor potable water use in landscape areas. Residential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resource ' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.
- Operation and maintenance manual. At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which includes all of the following shall be placed in the building:
    - Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
    - Operations and maintenance instructions for the following:
        - Equipment and appliances, including water-saving devices and systems, HVAC systems, photovoltaic systems, EV chargers, water-heating systems and other major appliances and equipment.
        - Roof and yard drainage, including gutter and downspouts.
        - Space conditioning systems, including condensers and air filters.
        - Landscape irrigation systems.

        - Water reuse systems.
    - Information from local utility, water and waste recovery providers on methods to future reduce resource consumption, including recycle programs and locations.
    - Public transportation and/or carpool options available in the area.
    - Educational material on the positive impacts of an interior relative humidity between 30-60% and what methods an occupants may use to maintain the relative humidity level in that range.
    - Information about water-conserving landscape and irrigation design and controllers which conserve water.
    - Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.
    - Information about state solar energy and incentive programs available.
    - A copy of all special inspection verifications required by the enforcing agency of this code.
    - Information from CALFIRE on maintenance of defensible space around residential structures.
- Any installed gas fireplace shall be direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances.
- Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the CARB Architectural Suggested Control Measure, as shown in Table 4.504.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.504.3 shall be determined by classifying the coating as a Flat, Nonflat, or Nonflat-high Gloss coating, based on its glass, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 CARB, Suggested Control Measure, and the corresponding Flat, Nonflat, Nonflat-high Gloss VOC limit in Table 4.504.3 shall apply.

NONRESIDENTIAL MANDATORY MEASURES

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).

- EV charging stations. New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106. 5.3.3 (5.106.5.3). Additionally, Table 5.106.5.4.1 specifies requirements for the installation of raceway conduit and panel power requirements for medium- and heavy-duty electric vehicle supply equipment for warehouses, grocery stores, and retail stores.
- Outdoor light pollution reduction. Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reuse or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor- mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
    - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
    - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor potable water uses in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).

- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (GPD) (5.303.1.1 and 5.303.1.2).
- Outdoor water uses in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

3.2.4 AB 1493 PAVLEY REGULATIONS AND FUEL EFFICIENCY STANDARDS

California 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. Under this legislation, CARB adopted regulations to reduce GHG emissions from non-commercial passenger vehicles (cars and light-duty trucks). Although aimed at reducing GHG emissions, specifically, a co-benefit of the Pavley standards is an improvement in fuel efficiency and consequently a reduction in fuel consumption.

3.2.5 CALIFORNIA'S RENEWABLE PORTFOLIO STANDARD (RPS)

First established in 2002 under Senate Bill (SB) 1078, California's Renewable Portfolio Standards (RPS) requires retail sellers of electric services to increase procurement from eligible renewable resources to 33% of total retail sales by 2020 (21).

3.2.6 CLEAN ENERGY AND POLLUTION REDUCTION ACT OF 2015 (SB 350)

In October 2015, the legislature approved, and the Governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

3.2.7 100 PERCENT CLEAN ENERGY ACT OF 2018 (SB 100)

In September 2018, the legislature approved, and the Governor signed SB 100, which builds on the targets established in SB 1078 and SB 350. Most notably, SB 100 sets a goal of powering all retail electricity sold in California with renewable and zero-carbon resources. Additionally, SB 100 updates the interim renewables target from 50% to 60% by 2030.

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4 PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

4.1 EVALUATION CRITERIA

Per Appendix F of the *State CEQA Guidelines* (22), states that the means of achieving the goal of energy conservation includes the following:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas, and oil; and
- Increasing reliance on renewable energy sources.

In compliance with Appendix G of the *State CEQA Guidelines* (23), this report analyzes the project's anticipated energy use during construction and operations to determine if the Project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

4.2 METHODOLOGY

Information from the CalEEMod Version 2022.1 outputs for the *Buena Park General Plan & Zoning Code Update Air Quality Impact Analysis* (AQIA) (24) were utilized in this analysis, detailing Project related transportation energy demands, and facility energy demands.

In May 2022 California Air Pollution Control Officers Association (CAPCOA) in conjunction with other California air districts, including SCAQMD, released the latest version of the CalEEMod Version 2022.1. The purpose of this model is to calculate construction-source and operational-source criteria pollutants and GHG emissions from direct and indirect sources as well as energy usage. (25). Accordingly, the latest version of CalEEMod has been used to determine the proposed Project's anticipated transportation and facility energy demands. Outputs from the annual model run is provided in Appendix 4.2.

4.3 CONSTRUCTION ENERGY DEMANDS

Future development within the Project would be required to comply with best management practices for construction activity and would incur additional CEQA review that may identify additional mitigation measures that would reduce construction energy demand.

4.4 OPERATIONAL ENERGY DEMANDS

Energy consumption in support of or related to Project operations would include transportation energy demands (energy consumed by passenger car and truck vehicles accessing the Project site) and facilities energy demands (energy consumed by building operations and site maintenance activities).

4.4.1 TRANSPORTATION ENERGY DEMANDS

Energy that would be consumed by Project-generated traffic is a function of total VMT and estimated vehicle fuel economies of vehicles accessing the Project site. The VMT per vehicle class can be determined by the vehicle fleet mix and the total VMT.

As with worker and vendors trips, operational vehicle fuel efficiencies were estimated using information generated within EMFAC2021 developed by CARB (26). EMFAC2021 was run for the Orange South Coast sub-area for the 2023 calendar years. Data from EMFAC2021 is shown in Appendix 4.3.

As summarized on Table 4-1 the Project will result in 445,342,786 annual VMT and an estimated annual fuel consumption of 18,698,931 gallons of fuel.

TABLE 4-1: TOTAL PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION

Vehicle Type	Annual Miles Traveled[1]	Average Vehicle Fuel Economy (mpg)	Estimated Annual Fuel Consumption (gallons)
LDA	211,530,984	31.43	6,729,807
LDT1	14,787,844	24.79	596,532
LDT2	110,620,182	24.07	4,595,627
MDV	66,391,381	19.70	3,370,537
LHD1	13,873,738	15.46	897,186
LHD2	3,944,651	14.64	269,372
MHD	7,746,352	7.48	1,035,203
HHD	3,450,188	5.92	582,840
OBUS	247,375	6.10	40,586
UBUS	206,877	3.73	55,455
MCY	10,937,546	41.99	260,493
SBUS	384,126	6.55	58,673
MH	1,221,540	5.91	206,618
TOTAL (ALL VEHICLES)	***445,342,786***		***18,698,931***

[1] Total VMT may not match CalEEMod output due to rounding.

4.4.2 FACILITY ENERGY DEMANDS

Project building operations activities would result in the consumption of natural gas and electricity. Natural gas would be supplied to the Project by SoCalGas; electricity would be supplied to the Project by SCE. As previously stated, the analysis herein assumes compliance with the 2022 Title 24 and CALGreen standards. Annual natural gas and electricity demands of the Project are summarized in Table 4-2 and provided in Appendix 4.2.

TABLE 4-2: PROJECT ANNUAL OPERATIONAL NATURAL GAS DEMAND SUMMARY

Land Use	Units	Natural Gas Demand (kBTU/year)	Electricity Demand (kWh/year)
Dwelling Units	10,322 DU	395,697,443	71,171,688
General Office Building	87,667 SF	2,222,049	1,562,251
Regional Shopping Center	350,667 SF	2,099,424	3,444,029
TOTAL PROJECT ENERGY DEMAND		***400,018,916***	***76,177,968***

kBTU – kilo-British Thermal Units; kWh - Kilo Watt Hours

4.4.3 OPERATIONAL ENERGY EFFICIENCY/CONSERVATION MEASURES

Energy efficiency/energy conservation attributes of the Project would be complemented by increasingly stringent state and federal regulatory actions addressing vehicle fuel economies and vehicle emissions standards; and enhanced building/utilities energy efficiencies mandated under California building codes (e.g., Title24, California Green Building Standards Code).

ENHANCED VEHICLE FUEL EFFICIENCIES

Project annual fuel consumption estimates presented previously in Table 4-1 represent likely potential maximums that would occur for the Project. Under subsequent future conditions, average fuel economies of vehicles accessing the Project site can be expected to improve as older, less fuel-efficient vehicles are removed from circulation, and in response to fuel economy and emissions standards imposed on newer vehicles entering the circulation system.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease future gasoline fuel demands per VMT. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands.

4.5 SUMMARY

4.5.1 OPERATIONAL ENERGY DEMANDS

TRANSPORTATION ENERGY DEMANDS

Annual vehicular trips and related VMT generated by the operation of the Project would result in a fuel demand of 18,698,931 gallons of fuel.

Fuel would be provided by current and future commercial vendors. Trip generation and VMT generated by the Project are consistent with other residential uses of similar scale and configuration, as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Ed., 2021); and CalEEMod. As such, Project operations would not result in excessive and wasteful vehicle trips and VMT, nor excess and wasteful vehicle energy consumption compared to similar uses.

It should be noted that the state strategy for the transportation sector for medium and heavy-duty trucks is focused on making trucks more efficient and expediting truck turnover rather than reducing VMT from trucks. This is in contrast to the passenger vehicle component of the transportation sector where both per-capita VMT reductions and an increase in vehicle efficiency are forecasted to be needed to achieve the overall state emissions reductions goals.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease future gasoline fuel demands per VMT. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands. The Project would implement sidewalks, facilitating and encouraging pedestrian access. Facilitating pedestrian and bicycle access would reduce VMT and associated energy consumption. As supported by the preceding discussions, Project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

FACILITY ENERGY DEMANDS

Project facility operational energy demands are estimated at 400,018,916 kBTU/year of natural gas and 76,177,968 kWh/year of electricity. Natural gas would be supplied to the Project by SoCalGas; electricity would be supplied by SCE. The Project proposes conventional residential and commercial uses reflecting contemporary energy efficient/energy conserving designs and operational programs. The Project does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other residential and commercial uses of similar scale and configuration.

Lastly, the Project will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Project energy demands would not be inefficient, wasteful, or otherwise unnecessary.

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5 CONCLUSIONS

5.1 ENERGY IMPACT 1

Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Impact Analysis

A significant impact would occur if the proposed Project would result in the inefficient, wasteful, or unnecessary use of energy.

Construction

Future development within the Project would be required to comply with best management practices for construction activity and would incur additional CEQA review that may identify additional mitigation measures that would reduce construction energy demand. Limitations on idling of vehicles and equipment and requirements that equipment be properly maintained would result in fuel savings. California Code of Regulations, Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel- powered equipment and are enforced by the ARB. Additionally, given the cost of fuel, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Due to the temporary nature of construction and the financial incentives for developers and contractors to use energy-consuming resources in an efficient manner, future developments within the Project would not result in wasteful, inefficient, and unnecessary consumption of energy. Therefore, the construction-related impacts related to electricity and fuel consumption would be less than significant.

Operation

Electricity and Natural Gas

Operation of the proposed project would consume energy as part of building operations and transportation activities. Building operations would involve energy consumption for multiple purposes including, but not limited to, building heating and cooling, refrigeration, lighting, and electronics. Based on CalEEMod energy use estimations, operations for the Project would result in approximately 400,018,916 kBTU/year of natural gas and 76,177,968 kWh/year of electricity annually.

Future development projects would be designed and constructed in accordance with the City's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely

regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Fuel

Operational energy would also be consumed during vehicle trips associated with future development projects envisioned under the proposed Project. Fuel consumption would be primarily related to vehicle use by residents, visitors, and employees associated with future development projects. Based on CalEEMod energy use estimations, project-related vehicle trips would result in approximately 400 million VMT and consume an estimated 76,177,968 gallons of fuel annually.

The Project is located on an infill site that is surrounded by existing urban uses, the existing transportation facilities and infrastructure would provide future residents, visitors, and employees associated with the Project access to a mix of land uses in close proximity to the Project, thus further reducing fuel consumption demand. Additionally, the Project is located within the Orange County Transportation Authority (OCTA) which provides fixed-route bus service along Beach Boulevard, Knott Avenue, La Palma Avenue, and various other arterial roads within Buena Park. The Project also takes advantage of the Buena Park Metrolink Station by facilitating jobs and housing opportunities in the immediate vicinity which reduces auto dependency. For these reasons, operational-related transportation fuel consumption would not result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the operational impact related to vehicle fuel consumption would be less than significant.

5.2 ENERGY IMPACT 2

Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Impact Analysis

A significant impact would occur if the proposed Project would conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Construction

As discussed in Section 5.1, above, the proposed project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by the ARB. The proposed project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore,

construction- related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation

California's Renewable Portfolio Standard (RPS) establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan greenhouse gas emissions reductions. As discussed in Section 5.1, above, the Project would result in approximately 400,018,916 kBTU/year of natural gas and 76,177,968 kWh/year of electricity annually.

Future development projects would be designed and constructed in accordance with the City's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Buena Park 2035 General Plan Conservation & Sustainability Element

The City of Buena Park has adopted the following policies that would integrate green building requirements, further reduce energy demand, promote energy conservation, support opportunities and programs that would improve traffic circulation and congestion and thus reduce fuel usage and other policies and goals that promote sustainability within the city.

Goals/Policies

- Policy CS-6.1: Consider incentives to encourage new nonresidential development and remodels to utilize the U.S. Green Building Council's LEED rating system
- Policy CS-7.1: Consider incentives such as expedited permitting process or reduced fees for new development or redevelopment projects that incorporate green building practices, Build it Green, and Leadership in Energy and Environmental Design (LEED) certified buildings
- Policy CS-8.1: Encourage green building efforts in single-family homes as well as in municipal, commercial, mixed-use, or multifamily residential projects
- Policy CS-8.2: Consider advertising and/or providing incentives for green building techniques in existing building retrofits as well as new buildings.
- Policy CS-13.1: Consider adopting renewable energy building standards. The standards would incorporate technically and financially feasible renewable energy requirements into development and building standards.
- Policy CS-13.3: Explore and, if appropriate, adopt energy efficiency standards for existing residential and commercial buildings upon substantial remodel. Consider requiring energy efficiency inspections, disclosure, and retrofits at change of ownership based on cost-effective and commercially available energy efficiency measures.

- Policy CS-13.4: Encourage new developments, redevelopments, and retrofit buildings to have solar energy panels, co-generation energy systems, and/or other energy efficient systems installed to reduce the unnecessary consumption of energy.
- Policy CS-13.5: Encourage the installation of energy efficient appliances in new development and redevelopment projects.
- Policy CS-13.6: Encourage new developments and redevelopments to layout or organize buildings to maximize the potential for passive solar panels.
- Policy CS-13.7: Encourage residents and business owner to upgrade insulation in older or energy inefficient homes to reduce the need to operate heating, ventilating, and air conditioning (HVAC) systems.
- Policy CS-13.8: Encourage the use of natural daylight instead of artificial lighting in the design of buildings to minimize electricity use.
- Policy CS-13.9: Encourage the use of roof materials that reflect sun light rather than absorb sun light in order to reduce the need for using mechanical air conditioning systems
- Policy CS-13.10: Encourage the use of shading devices and awnings on window fronts in order to reduce the need for mechanical air conditioning systems.
- Policy CS-13.11: Encourage the use of operable windows and skylights for commercial and retail uses in order to reduce the need for mechanical air conditioning systems.
- Policy CS-13.12: Encourage use of low or no Volatile Organic Compounds (VOC) paints in interior spaces of new development and redevelopment projects.
- Policy CS-16.1: Strive to relieve traffic congestion and improve the efficiency of the City's transportation and circulation network in an effort to improve air quality.
- Policy CS-16.2: Improve signal coordination at major intersections and deficient intersections to reduce emissions and traffic queuing.
- Policy CS-17.1: Continue to support programs which are designed to reduce air pollution within Buena Park and those sources of pollution located outside its planning boundaries which adversely affect the City.
- Policy CS-17.2: Coordinate with the California Department of Transportation (Caltrans) and consider adopting Transportation Control Measures (TCM) in compliance with SCAQMD goals.
- Policy CS-17.3: Encourage the development of transportation nodes in mixed-use commercial areas with stops in residential and outlying areas to encourage the use of public transportation.
- Policy CS-17.4: Encourage employers to implement the following programs to reduce trips and vehicle miles traveled:
    - Transit subsidies
    - Bicycle facilities
    - Alternative work schedules
    - Ridesharing
    - Telecommuting and work-at-home programs
    - Employee education
    - Preferential parking for carpools/vanpools

- Policy CS-18.1: Utilize public and private transit to encourage ridesharing in order to minimize the reliance on the private automobile and single-occupancy ridership.
- Policy CS-18.2: Collaborate with the local public transit authority to develop and implement a public transit program and encourage public usage. In order to implement the public transit program, the City should evaluate existing transit routes and stops, explore cost incentives for use of public transit, and survey the population to create a program to meet people's needs.
- Policy CS-18.3: Encourage public awareness programs to inform the public of existing and future public transit programs.
- Policy CS-18.4: Work with the Orange County Transportation Authority (OCTA) to minimize vehicle miles traveled and encourage the use of public transit, such as MetroLink or Bus Rapid Transit.
- Policy CS-18.5: Evaluate and improve existing transit hubs throughout the City. Potential improvements include additional parking for commuters, providing secure bicycle racks, increasing transit stops, and introducing new transit routes.
- Policy CS-19.2: Increase community awareness and participation in efforts to reduce trips within the high activity areas.
- Policy CS-19.3: Promote and adequately advertise shuttles from local transit stations to high activity areas.
- Policy CS-19.4: Encourage the use of alternative transportation within the high activity areas such as walking, bicycling, and using public transit.
- Policy CS-20.1: Reduce air emission contributions through the use of alternate vehicular travel and alternative fuels, whenever possible.
- Policy CS-20.2: Consider incentives and programs to encourage the use of alternative modes of transportation, alternative fuel sources and public awareness.
- Policy CS-20.3: Explore ways to incorporate alternative fuel stations throughout the City such as encouraging the installation of electric and hydrogen fuel stations.
- Policy CS-20.4: Expand and promote the use of bus, rail, and other forms of transit or telecommuting within the City to further reduce pollutants.
- Policy CS-20.5: Encourage the use of lowest emission technology buses in public transit fleets.
- Policy CS-20.6: Consider the adoption of a policy that provides a preference to contractors using reduced emission equipment for City construction projects as well as for City contracts for services (e.g., garbage collection).
- Policy CS-20.7: Encourage developments and street systems that support the use of Neighborhood Electric Vehicles (NEV).

Compliance with the aforementioned measures would ensure that future development projects would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

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6 REFERENCES

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7 CERTIFICATIONS

The contents of this energy analysis report represent an accurate depiction of the environmental impacts associated with the proposed Buena Park General Plan & Zoning Code Update. The information contained in this energy analysis report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at hqureshi@urbanxroads.com.

Haseeb Qureshi
Principal
Urban Crossroads, Inc.
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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May 2010

Bachelor of Arts in Environmental Analysis and Design
University of California, Irvine • June 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Planned Communities and Urban Infill – Urban Land Institute • June 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August 2007
AB2588 Regulatory Standards – Trinity Consultants • November 2006
Air Dispersion Modeling – Lakes Environmental • June 2006

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APPENDIX 4.1:

HOUSING ELEMENT IMPLEMENTATION TABLE

ID	Address	APN	DU	Commercial SF
1	8641 LOS COYOTES DR	289-162-04	1	0
2	5891 STANTON AVE	066-184-26	1	0
3	7611 5TH ST	277-071-14	1	0
4	7601 5TH ST	277-071-15	1	0
5	7571 5TH ST	277-073-15	3	0
6	7561 5TH ST	277-073-16	3	0
7	7551 5TH ST	277-073-17	3	0
8	7541 5TH ST	277-073-18	2	0
9	7531 5TH ST	277-073-19	8	0
10	7651 E 5TH ST	277-071-13	10	0
11	6161 FULLERTON AVE	277-071-12	2	0
12	6152 KINGMAN AVE	277-071-19	2	0
13	6141 FULLERTON AVE	277-071-11	2	0
14	6122 WESTERN AVE	277-073-25	5	0
15	7611 ARTESIA BLVD	277-101-20	1	0
16	5951 FULLERTON AVE	277-101-17	2	0
17	5941 FULLERTON AVE	277-101-16	2	0
18	5941 WESTERN AVE	066-111-14	1	0
19	5952 BURNHAM AVE	066-111-18	3	0
20	5921 BURNHAM AVE	066-112-10	1	0
21	5911 WESTERN AVE	066-111-11	1	0
22	5901 BURNHAM AVE	066-112-33	5	0
23	5891 WESTERN AVE	066-111-32	1	0
24	5893 BURNHAM AVE	066-112-37	5	0
25	5883 BURNHAM AVE	066-112-38	5	0
26	5872 KINGMAN AVE	277-101-30	2	0
27	5861 FULLERTON AVE	277-101-10	2	0
28	5862 KINGMAN AVE	277-101-31	2	0
29	5831 BURNHAM AVE	066-112-31	1	0
30	5801 WESTERN AVE	066-111-04	1	0
31	5781 FULLERTON AVE	277-101-03	4	0
32	5741 BURNHAM AVE	066-112-01	10	0
33	5711 WESTERN AVE	066-122-05	6	0
34	5691 WESTERN AVE	066-122-04	6	0
35	6151 INDIANA AVE	066-260-09	7	0
36	8222 4TH ST	066-260-32	1	0
37	8201 4TH ST	066-230-31	8	0
38	8207 4TH ST	066-230-64	2	0
39	8091 E 4TH ST	066-230-29	9	0
40	6102 STANTON AVE	066-230-78	9	0
41	8022 ARTESIA BLVD	066-230-67	3	0
42	8012 ARTESIA BLVD	066-230-77	3	0
43	8002 ARTESIA BLVD	066-230-76	3	0
44	5961 KINGMAN AVE	277-102-16	1	0
44	7539 ARTESIA BLVD	277-102-17	10	0
44	7521 ARTESIA BLVD	277-102-18	11	0
45	8231 9TH ST	070-034-16	3	0
46	6321 INDIANA AVE	070-012-22	7	0
47	8141 7TH ST	070-012-28	3	0
48	6311 INDIANA AVE	070-012-21	7	0
49	8201 7TH ST	070-012-06	4	0
50	6292 LOS ROBLES AVE	070-012-16	4	0
51	8191 7TH ST	070-012-25	4	0
52	8185 7TH ST	070-012-24	4	0
53	8171 7TH ST	070-012-08	4	0
54	8161 7TH ST	070-012-10	4	0
55	6281 INDIANA AVE	070-012-30	4	0
56	8151 7TH ST	070-012-11	6	0

57	6282 LOS ROBLES AVE	070-012-37	5	0
58	6302 LOS ROBLES AVE	070-012-32	5	0
59	6531 INDIANA AVE	070-034-17	1	0
60	8203 9TH ST	070-034-18	5	0
61	8201 9TH ST	070-034-19	5	0
62	8191 9TH ST	070-034-14	5	0
63	8232 WHITAKER ST	070-034-01	3	0
64	8182 WHITAKER ST	070-034-05	1	0
65	8172 WHITAKER ST	070-034-06	1	0
66	8162 WHITAKER ST	070-034-07	1	0
67	8152 WHITAKER ST	070-034-08	1	0
68	8171 WHITAKER ST	070-024-10	1	0
69	8151 WHITAKER ST	070-024-12	1	0
70	8131 WHITAKER ST	070-024-15	3	0
71	8121 WHITAKER ST	070-024-14	8	0
72	6461 LOS ROBLES AVE	070-023-14	2	0
73	8027 WHITAKER ST	070-023-09	1	0
74	6441 INDIANA AVE	070-024-16	1	0
75	6431 INDIANA AVE	070-024-18	1	0
76	8212 8TH ST	070-024-17	2	0
77	8192 8TH ST	070-024-19	4	0
78	8182 8TH ST	070-024-20	4	0
79	8162 8TH ST	070-024-22	6	0
80	8142 8TH ST	070-024-03	1	0
81	8132 8TH ST	070-024-02	1	0
82	8042 8TH ST	070-023-03	1	0
83	8021 8TH ST	070-021-25	1	0
84	6391 INDIANA AVE	070-022-17	2	0
85	6382 LOS ROBLES AVE	070-022-14	1	0
86	8111 8TH ST	070-021-08	3	0
87	8051 8TH ST	070-021-12	4	0
88	8031 8TH ST	070-021-13	2	0
89	6371 LOS ROBLES AVE	070-021-07	1	0
90	6372 LOS ROBLES AVE	070-022-02	2	0
91	6361 LOS ROBLES AVE	070-021-06	2	0
92	362 LOS ROBLES AVE	070-022-16	2	0
93	8202 7TH ST	070-022-07	9	0
94	8154 E 7TH ST	070-022-04	2	0
95	8142 7TH ST	070-022-03	1	0
96	6342 LOS ROBLES AVE	070-022-15	1	0
97	7241 9TH ST	276-221-39	3	0
98	6511 WESTERN AVE	276-221-25	3	0
98	6551 WESTERN AVE	276-221-26	7	0
98	7451 9TH ST	276-221-27	1	0
99	7261 9TH ST	276-221-41	4	0
100	7251 9TH ST	276-221-40	4	0
101	7091 9TH ST	276-231-39	1	0
102	6498 GRAMERCY ST	276-221-38	2	0
103	7412 8TH ST	276-221-08	1	0
104	7392 8TH ST	276-221-06	1	0
105	7411 8TH ST	276-202-11	5	0
106	7441 8TH ST	276-202-14	4	0
107	7431 8TH ST	276-202-13	3	0
108	8273 CALIFORNIA ST	070-033-10	1	0
109	6632 INDIANA ST	070-033-09	1	0
110	6591 INDIANA AVE	070-035-04	4	0
111	6581 INDIANA AVE	070-035-03	4	0
112	8211 CALIFORNIA ST	070-035-06	4	0
113	6571 INDIANA AVE	070-035-02	4	0

114	8172 CALIFORNIA ST	070-046-02	4	0
115	8142 CALIFORNIA ST	070-046-03	6	0
116	6561 INDIANA AVE	070-035-01	4	0
117	8202 9TH ST	070-035-05	4	0
118	8192 9TH ST	070-035-07	4	0
119	8182 9TH ST	070-035-08	5	0
120	5682 WESTERN AVE	066-123-01	3	0
121	5702 WESTERN AVE	066-123-02	4	0
122	5712 WESTERN AVE	066-123-03	4	0
123	7501 FRANKLIN ST	066-123-04	9	0
124	7682 CRAIG AVE	066-132-09	1	0
124	7692 CRAIG AVE	066-132-15	1	0
124	7712 CRAIG AVE	066-132-16	1	0
124	7722 CRAIG AVE	066-132-17	1	0
125	7501 5TH ST	277-073-20	2	0
126	8032 8TH ST	070-023-02	1	0
127	8052 8TH ST	070-023-04	1	0
128	9051 HOLDER ST	134-031-02	2	0
129	8694 WESTERN AVE	135-132-11	12	0
130	8732 WESTERN AVE	135-133-05	9	0
131	8752 VALLEY VIEW ST	260-011-03	2	0
132	8752 VALLEY VIEW ST	260-011-04	3	0
134	7611 8TH ST	276-213-17	1	0
135	7861 MELROSE ST	276-322-16	1	0
136	BEACH BLVD/MELROSE ST	276-361-03	250	0
137	6161 KENTUCKY DR	260-021-01	4	0
138	8881 HOFFMAN ST	260-021-04	1	0
139	8901 HOFFMAN ST	260-021-05	4	0
140	6221 LINCOLN AVE	260-022-07	7	0
141	8761 HOFFMAN ST	260-031-02	5	0
142	8833 HOFFMAN ST	260-031-07	10	0
143	8742 HOFFMAN ST	260-032-01	7	0
144	8738 HOFFMAN ST	260-071-05	9	0
145	8246 VALLEY VIEW ST	069-283-25	66	0
146	7962 PINCHOT CT	276-312-22	2	0
147	7682 9TH ST	276-282-13	16	0
147	7692 9TH ST	276-282-14	2	0
148	7341 9TH ST	276-221-32	6	0
149	8601 WESTERN AVE	135-152-44	53	0
150	7871 COMMONWEALTH AVE	066-253-07	7	3,408
151	6212 DARLINGTON AVE	066-253-20	4	2,025
152	6211 DARLINGTON AVE	066-252-12	3	2,025
153	6202 DARLINGTON AVE	066-253-21	3	2,025
154	6201 DARLINGTON AVE	066-252-13	3	2,025
155	7811 COMMONWEALTH AVE	066-252-22	17	7,446
156	6550 KNOTT AVE	276-231-44	12	16,858
157	6186 BEACH BLVD	066-251-11	5	0
157	7791 COMMONWEALTH AVE	066-251-31	43	0
158	6181 HOMEWOOD AVE	066-251-18	9	0
159	6100 BEACH BLVD	066-251-28	2	0
159	6172 BEACH BLVD	066-251-29	2	0
160	6171 HOMEWOOD AVE	066-251-27	4	0
161	6100 BEACH BLVD	066-251-24	2	0
161	6100 BEACH BLVD	066-251-25	2	0
162	6161 HOMEWOOD AVE	066-251-26	4	0
163	6156 BEACH BLVD	066-251-08	2	0
164	6152 BEACH BLVD	066-251-07	2	0
165	6151 HOMEWOOD	066-251-20	2	0
166	6146 BEACH BLVD	066-251-06	2	0

167	6141 HOMEWOOD AVE	066-251-21	4	0
168	6136 BEACH BLVD	066-251-04	2	0
169	6132 BEACH BLVD	066-251-03	2	0
170	6131 HOMEWOOD AVE	066-251-22	4	0
171	6121 HOMEWOOD AVE	066-251-23	4	0
172	6122 BEACH BLVD	066-251-30	7	0
173	6111 HOMEWOOD AVE	066-241-12	4	0
174	6101 HOMEWOOD AVE	066-241-13	4	0
175	6102 BEACH BLVD	066-241-10	4	0
176	6091 HOMEWOOD AVE	066-241-14	3	0
177	BEACH BLVD/4TH ST	066-241-08	2	0
177	6086 BEACH BLVD	066-241-09	5	0
178	6081 HOMEWOOD AVE	066-241-15	4	0
179	6071 HOMEWOOD AVE	066-241-16	10	0
180	6061 HOMEWOOD AVE	066-241-25	5	0
181	6051 HOMEWOOD AVE	066-241-26	5	0
182	6042 BEACH BLVD	066-241-21	5	0
183	6032 BEACH BLVD	066-241-20	2	0
184	6026 BEACH BLVD	066-241-23	2	0
185	HOMEWOOD AVE/ARTESIA BLVD	066-241-18	11	0
185	7780 ARTESIA BLVD	066-241-19	10	0
186	7781 ARTESIA BLVD	066-181-09	3	0
187	7771 ARTESIA BLVD	066-181-08	4	0
188	5951 HOMEWOOD AVE	066-181-10	4	0
189	5921 HOMEWOOD AVE	066-181-13	4	0
190	5911 HOMEWOOD AVE	066-181-14	4	0
191	5901 HOMEWOOD AVE	066-181-15	4	0
192	588 HOMEWOOD AVE	066-181-21	17	0
193	5801 HOMEWOOD AVE	066-171-08	4	0
194	5791 HOMEWOOD AVE	066-171-09	4	0
195	5781 HOMEWOOD AVE	066-171-10	4	0
196	5771 HOMEWOOD AVE	066-171-11	5	0
197	BEACH BLVD/CRAIG AVE	066-132-21	15	0
198	5681 BEACH BLVD	066-132-22	18	0
199	5621 BEACH BLVD	066-133-15	19	0
200	5731 BEACH BLVD	066-134-08	17	0
201	7791 FRANKLIN ST	066-163-14	3	0
202	7781 FRANKLIN ST	066-163-15	3	0
203	7771 FRANKLIN ST	066-163-16	3	0
204	7761 FRANKLIN ST	066-163-17	4	0
205	5730 BEACH BLVD	066-163-18	9	0
206	5891 HOMEWOOD AVE	066-181-16	4	0
207	5972 BEACH BLVD	066-181-20	12	0
208	6056 BEACH BLVD	066-241-06	17	0
209	5900 DALE ST	066-391-17	12	10,535
210	5870 DALE ST	066-391-19	7	6,690
211	5940 DALE ST	066-391-24	14	12,062
212	5970 DALE ST	066-391-25	13	11,137
213	8350 LOS COYOTES DR	066-530-03	43	40,511
214	7642 5TH ST	277-072-01	3	0
215	7622 5TH ST	277-072-02	3	0
216	7602 5TH ST	277-072-03	3	0
217	7582 5TH ST	277-072-04	5	0
218	7581 COMMONWEALTH AVE	277-072-05	5	0
219	7601 COMMONWEALTH AVE	277-072-06	4	0
220	7621 COMMONWEALTH AVE	277-072-07	4	0
221	7631 COMMONWEALTH AVE	277-072-08	11	0
221	FULLERTON AVE/5TH ST	277-082-06	8	0
222	7571 COMMONWEALTH AVE	277-074-01	6	0

223	7551 COMMONWEALTH AVE	277-074-03	6	0
224	7542 5TH ST	277-074-04	6	0
225	7501 COMMONWEALTH AVE	277-074-05	22	0
226	6025 BEACH BLVD	277-081-03	5	0
227	6031 BEACH BLVD	277-081-04	5	0
228	6035 BEACH BLVD	277-081-05	5	0
229	6071 BEACH BLVD	277-081-07	15	0
230	6001 BEACH BLVD	277-081-34	9	0
230	7701 ARTESIA BLVD	277-081-35	7	0
231	5741 BEACH BLVD	277-091-01	3	0
232	5751 BEACH BLVD	277-091-02	3	0
233	5761 BEACH BLVD	277-091-03	4	0
234	5797 BEACH BLVD	277-091-06	5	0
235	5811 BEACH BLVD	277-091-07	4	0
236	5831 BEACH BLVD	277-091-09	7	0
237	5841 BEACH BLVD	277-091-10	4	0
238	5861 BEACH BLVD	277-091-11	5	0
239	5871 BEACH BLVD	277-091-12	4	0
240	5881 BEACH BLVD	277-091-13	4	0
241	5891 BEACH BLVD	277-091-14	5	0
242	5931 BEACH BLVD	277-091-15	19	0
243	5941 BEACH BLVD	277-091-16	7	0
244	7712 FRANKLIN ST	277-091-36	7	0
245	6472 STANTON AVE	070-023-10	5	6,214
245	6462 STANTON AVE	070-023-11	5	6,435
246	8192 ORANGETHORPE AVE	070-072-31	4	2,174
247	8202 ORANGETHORPE AVE	070-072-32	3	2,084
248	8212 ORANGETHORPE AVE	070-072-33	3	2,083
249	8222 ORANGETHORPE AVE	070-072-34	3	2,083
250	8232 ORANGETHORPE AVE	070-072-35	7	3,070
251	7141 THOMAS ST	070-080-25	9	0
252	8295 PAGE ST	070-080-45	3	0
253	8301 PAGE ST	070-080-46	5	0
254	8400 KASS DR	070-080-47	12	0
255	8410 KASS DR	070-080-32	12	0
256	7072 THOMAS ST	070-080-15	11	0
257	7082 THOMAS ST	070-080-14	11	0
258	7102 THOMAS ST	070-080-13	24	0
259	7142 THOMAS ST	070-080-12	19	0
260	8440 KASS DR	070-080-59	54	0
260	8420 KASS DR	070-080-60	32	0
261	8460 KASS DR	070-080-58	69	0
262	8401 PAGE ST	070-080-56	82	0
263	THOMAS ST/PAGE ST	070-080-64	3	0
263	THOMAS ST/PAGE ST	070-080-65	7	0
264	8511 LA PALMA AVE	070-302-22	13	13,800
265	7930 DALE ST	070-302-23	47	50,181
266	7151 STANTON AVE	070-721-10	7	-7,314
267	7161 STANTON AVE	070-721-11	9	-8,738
268	7402 ORANGETHORPE AVE	136-172-14	25	438,333
269	7412 ORANGETHORPE AVE	136-172-15	25	0
270	7051 VALLEY VIEW ST	263-081-08	74	78,320
270	ORANGETHORPE AVE/VALLEY VIEW ST	263-081-10	6	6,299
271	6600 ORANGETHORPE AVE	263-541-01	197	0
272	7017 KNOTT AVE	263-541-06	134	140,821
273	6805 KNOTT AVE	276-142-03	45	0
274	7651 9TH ST	276-213-27	5	2,831
275	7661 9TH ST	276-213-28	4	2,253
276	7671 9TH ST	276-213-29	4	2,255

277	6555 BEACH BLVD	276-213-32	11	5,227
277	6555 BEACH BLVD	276-213-39	26	11,631
278	8201 ORANGETHORPE AVE	276-331-05	97	0
279	8251 ORANGETHORPE AVE	276-331-09	65	0
280	8101 ORANGETHORPE AVE	276-341-38	9	3,949
281	8031 ORANGETHORPE AVE	276-352-07	42	18,419
282	6940 STANTON AVE	276-352-08	8	3,907
283	8001 ORANGETHORPE AVE	276-352-11	11	4,998
284	BRENNER AVE/ORANGETHORPE AVE	276-362-09	3	1,445
285	7921 ORANGETHORPE AVE	276-362-12	24	10,589
285	7911 ORANGETHORPE AVE	276-362-17	5	2,481
286	7979 ORANGETHORPE AVE	276-362-13	10	4,571
287	6911 STANTON AVE	276-362-14	14	6,447
288	7681 ORANGETHORPE AVE	276-371-24	5	0
288	BEACH BLVD/MELROSE ST	276-371-26	13	0
288	7681 ORANGETHORPE AVE	276-371-28	24	0
288	7691 ORANGETHORPE AVE	276-371-29	212	0
288	BEACH BLVD/MELROSE ST	276-371-35	4	0
288	BEACH BLVD/MELROSE ST	276-371-36	4	0
289	7039 ORANGETHORPE AVE	276-381-09	98	0
290	6801 WESTERN AVE	276-382-08	75	0
291	6841 WESTERN AVE	276-382-09	44	0
292	6841 WESTERN AVE	276-382-10	114	120,039
292	6925 WESTERN AVE	276-382-12	7	8,103
293	WESTERN AVE/ORANGETHORPE AVE	276-382-13	14	15,239
293	7479 ORANGETHORPE AVE	276-382-14	15	15,925
293	7479 ORANGETHORPE AVE	276-382-15	56	59,671
294	7379 ORANGETHORPE AVE	276-382-18	23	24,171
294	6870 ORAN CIR	276-382-19	43	45,716
294	7321 ORANGETHORPE AVE	276-382-20	25	26,453
294	6860 ORAN CIR	276-382-21	87	91,928
294	ORAN CIR/ORANGETHORPE AVE	276-382-22	1	1,628
294	6863 ORAN CIR	276-382-23	13	13,777
294	6899 ORAN CIR	276-382-24	27	28,363
294	6951 ORAN CIR	276-382-25	22	23,189
294	7237 ORANGETHORPE CIR	276-382-26	26	28,246
294	7225 ORANGETHORPE AVE	276-382-27	133	58,504
294	7294 MELROSE ST	276-382-28	139	182,331
295	6281 BEACH BLVD	277-013-52	148	0
295	6281 BEACH BLVD	277-013-58	148	0
296	6332 BEACH BLVD	277-041-01	2	0
297	6342 BEACH BLVD	277-041-02	2	0
298	6344 BEACH BLVD	277-041-15	2	0
299	6346 BEACH BLVD	277-041-16	2	0
300	6348 BEACH BLVD	277-041-14	2	0
301	6392 BEACH BLVD	277-041-18	21	0
302	7772 7TH ST	277-041-13	4	0
303	6341 HOMEWOOD AVE	277-041-12	9	0
304	6361 HOMEWOOD AVE	277-041-11	4	0
305	6371 HOMEWOOD AVE	277-041-10	4	0
306	6381 HOMEWOOD AVE	277-041-09	4	0
307	6391 HOMEWOOD AVE	277-041-08	4	0
308	6412 AUTO CENTER DR	277-041-07	5	0
309	STANTON AVE/WHITAKER ST	277-052-17	3	1,815
310	7957 WHITAKER ST	277-052-18	5	2,697
311	7931 WHITAKER ST	277-052-21	11	5,922
312	6448 AUTO CENTER DR	277-052-25	26	13,936
313	7951 WHITAKER ST	277-052-26	14	7,318
314	7891 WHITAKER ST	277-052-27	37	18,295

315	6532 AUTO CENTER DR	277-061-04	45	22,591
316	8951 KNOTT AVE	069-130-63	164	172,717
316	8991 LINCOLN AVE	069-130-64	15	16,188
317	8633 KNOTT AVE	069-491-21	3	0
317	8651 KNOTT AVE	069-491-24	16	0
318	9021 KNOTT AVE	134-062-18	44	19,602
318	LINCOLN GLEN DR/LINCOLN AVE	134-062-24	5	2,483
318	9011 KNOTT AVE	134-062-27	32	14,375
319	10010 VALLEY VIEW ST	134-311-32	14	14,797
319	BALL RD/VALLEY VIEW ST	134-311-36	6	6,552
319	6020 BALL RD	134-311-38	48	50,956
319	6080 BALL RD BUENA PARK	134-311-43	86	90,389
319	6010 BALL RD	134-311-44	75	78,712
320	8750 KNOTT AVE	135-181-07	17	18,222
321	8858 KNOTT AVE	135-182-08	43	45,624
321	8888 KNOTT AVE	135-182-09	119	125,453
321	8998 KNOTT AVE	135-182-13	228	239,301
322	7101 LINCOLN AVE	135-192-50	54	42,189
323	6201 LINCOLN AVE	260-022-05	20	21,640
323	6201 LINCOLN AVE	260-022-06	10	11,086
324	6955 LA PALMA AVE	263-421-04	23	25,029
324	6931 LA PALMA AVE	263-421-05	51	53,880
324	6901 LA PALMA AVE	263-421-06	22	23,364
324	6865 LA PALMA AVE	263-421-07	26	27,518
324	7905 KNOTT AVE	263-421-08	59	62,143
325	7651 KNOTT AVE	263-431-23	7	7,841
326	7091 THOMAS ST	070-080-08	23	0
327	8112 CRESCENT AVE	070-141-01	11	0
327	8530 STANTON AVE	070-141-02	7	0
328	8700 STANTON AVE	070-141-07	27	34,813
329	8030 DALE ST	070-501-01	107	121,361
330	8226 ON THE MALL	070-511-01	1,174	-817,077
331	8361 LA PALMA AVE	070-101-03	23	-21,867
331	8381 LA PALMA AVE	070-101-05	22	-20,633
331	8231 LA PALMA AVE	070-111-03	31	-28,689
331	8191 LA PALMA	070-111-07	251	-229,654
331	8161 LA PALMA AVE	070-111-08	43	-40,171
332	8374 ON THE MALL	070-511-05	35	-32,699
332	8460 LA PALMA AVE	070-511-07	16	-14,855
332	8450 ON THE MALL	070-511-08	539	-493,028
332	8376 LA PALMA AVE	070-511-14	303	-277,054
332	8201 ON THE MALL	070-511-15	381	-348,418
332	8290 ON THE MALL	070-511-16	174	-159,179
332	LA PALMA AVE/DALE ST	070-511-18	294	-269,542
333	6701 STANTON AVE	276-312-23	3	0
334	5650 KNOTT AVE	066-020-23	24	19,524
334	5648 KNOTT AVE	066-020-25	9	7,292
334	7101 CATE DR	066-020-27	670	526,902
335	8475 ARTESIA BLVD	066-391-12	97	76,448
336	7540 ORANGETHORPE AVE	136-181-21	15	-13,591
336	7540 ORANGETHORPE AVE	136-181-23	26	-23,000
336	7530 ORANGETHORPE AVE	136-181-24	45	-39,727
337	6441 LINCOLN AVE	260-042-39	13	0
338	7600 CRESCENT AVE	135-131-19	13	0
339	7082 CRESCENT AVE	135-161-41	29	0
340	8071 WHITAKER AVE	070-023-05	23	0
341	7212 MELROSE AVE	276-382-02	53	0
Total			10,322	438,333

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APPENDIX 4.2:

CALEEMOD EMISSIONS MODEL OUTPUTS

14635-Buena Park General Plan & Zoning Code Update Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	14635-Buena Park General Plan & Zoning Code Update
Lead Agency	—
Land Use Scale	Plan/community
Analysis Level for Defaults	County
Windspeed (m/s)	1.80
Precipitation (days)	18.8
Location	Buena Park, CA, USA
County	Orange
City	Buena Park
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5711
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	10,322	Dwelling Unit	3,351	20,127,900	120,900,110	—	30,760	—
General Office Building	87.7	1000sqft	2.01	87,667	0.00	—	—	—

Regional Shopping Center	351	1000sqft	8.05	350,667	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	447	877	443	3,417	9.37	23.6	354	378	23.5	62.5	86.0	5,462	1,174,549	1,180,011	599	32.1	322	1,204,877
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	391	824	454	2,626	9.03	23.3	354	377	23.2	62.5	85.7	5,462	1,142,054	1,147,516	600	33.3	135	1,172,568
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	405	846	309	2,943	7.86	11.8	337	348	11.6	59.4	71.1	5,462	932,845	938,307	596	32.1	209	962,965
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	74.0	154	56.5	537	1.43	2.15	61.4	63.6	2.12	10.8	13.0	904	154,443	155,347	98.6	5.31	34.6	159,430

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	360	333	183	2,700	7.71	2.71	354	357	2.53	62.5	65.0	—	785,324	785,324	27.9	28.4	191	794,665
Area	75.1	538	160	673	1.01	12.7	—	12.7	12.8	—	12.8	0.00	197,249	197,249	3.75	0.52	—	197,497
Energy	11.8	5.91	101	43.5	0.64	8.17	—	8.17	8.17	—	8.17	—	182,628	182,628	18.2	1.08	—	183,405
Water	—	—	—	—	—	—	—	—	—	—	—	822	9,347	10,169	85.5	2.15	—	12,945
Waste	—	—	—	—	—	—	—	—	—	—	—	4,640	0.00	4,640	464	0.00	—	16,234
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	130	130
Total	447	877	443	3,417	9.37	23.6	354	378	23.5	62.5	86.0	5,462	1,174,549	1,180,011	599	32.1	322	1,204,877
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	361	334	199	2,517	7.41	2.71	354	357	2.53	62.5	65.0	—	754,473	754,473	28.9	29.7	4.96	764,046
Area	18.0	484	154	65.6	0.98	12.5	—	12.5	12.5	—	12.5	0.00	195,605	195,605	3.68	0.37	—	195,807
Energy	11.8	5.91	101	43.5	0.64	8.17	—	8.17	8.17	—	8.17	—	182,628	182,628	18.2	1.08	—	183,405
Water	—	—	—	—	—	—	—	—	—	—	—	822	9,347	10,169	85.5	2.15	—	12,945
Waste	—	—	—	—	—	—	—	—	—	—	—	4,640	0.00	4,640	464	0.00	—	16,234
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	130	130
Total	391	824	454	2,626	9.03	23.3	354	377	23.2	62.5	85.7	5,462	1,142,054	1,147,516	600	33.3	135	1,172,568
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	353	327	194	2,479	7.13	2.59	337	339	2.42	59.4	61.9	—	726,345	726,345	27.9	28.7	78.6	735,681
Area	40.3	513	14.4	421	0.09	1.01	—	1.01	1.06	—	1.06	0.00	14,524	14,524	0.30	0.13	—	14,569
Energy	11.8	5.91	101	43.5	0.64	8.17	—	8.17	8.17	—	8.17	—	182,628	182,628	18.2	1.08	—	183,405
Water	—	—	—	—	—	—	—	—	—	—	—	822	9,347	10,169	85.5	2.15	—	12,945
Waste	—	—	—	—	—	—	—	—	—	—	—	4,640	0.00	4,640	464	0.00	—	16,234

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	130	130
Total	405	846	309	2,943	7.86	11.8	337	348	11.6	59.4	71.1	5,462	932,845	938,307	596	32.1	209	962,965
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	64.5	59.7	35.4	452	1.30	0.47	61.4	61.9	0.44	10.8	11.3	—	120,255	120,255	4.63	4.75	13.0	121,800
Area	7.36	93.6	2.62	76.8	0.02	0.18	—	0.18	0.19	—	0.19	0.00	2,405	2,405	0.05	0.02	—	2,412
Energy	2.16	1.08	18.4	7.94	0.12	1.49	—	1.49	1.49	—	1.49	—	30,236	30,236	3.02	0.18	—	30,365
Water	—	—	—	—	—	—	—	—	—	—	—	136	1,548	1,684	14.1	0.36	—	2,143
Waste	—	—	—	—	—	—	—	—	—	—	—	768	0.00	768	76.8	0.00	—	2,688
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.6	21.6
Total	74.0	154	56.5	537	1.43	2.15	61.4	63.6	2.12	10.8	13.0	904	154,443	155,347	98.6	5.31	34.6	159,430

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	50,851	50,851	6.43	0.78	—	51,245

General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	1,116	1,116	0.14	0.02	—	1,125
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	2,461	2,461	0.31	0.04	—	2,480
Total	—	—	—	—	—	—	—	—	—	—	—	—	54,428	54,428	6.89	0.83	—	54,849
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	50,851	50,851	6.43	0.78	—	51,245
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	1,116	1,116	0.14	0.02	—	1,125
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	2,461	2,461	0.31	0.04	—	2,480
Total	—	—	—	—	—	—	—	—	—	—	—	—	54,428	54,428	6.89	0.83	—	54,849
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	8,419	8,419	1.07	0.13	—	8,484
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	185	185	0.02	< 0.005	—	186
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	407	407	0.05	0.01	—	411
Total	—	—	—	—	—	—	—	—	—	—	—	—	9,011	9,011	1.14	0.14	—	9,081

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	11.7	5.85	99.9	42.5	0.64	8.08	—	8.08	8.08	—	8.08	—	126,815	126,815	11.2	0.24	—	127,167
General Office Building	0.07	0.03	0.60	0.50	< 0.005	0.05	—	0.05	0.05	—	0.05	—	712	712	0.06	< 0.005	—	714
Regional Shopping Center	0.06	0.03	0.56	0.47	< 0.005	0.04	—	0.04	0.04	—	0.04	—	673	673	0.06	< 0.005	—	675
Total	11.8	5.91	101	43.5	0.64	8.17	—	8.17	8.17	—	8.17	—	128,200	128,200	11.3	0.24	—	128,556
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	11.7	5.85	99.9	42.5	0.64	8.08	—	8.08	8.08	—	8.08	—	126,815	126,815	11.2	0.24	—	127,167
General Office Building	0.07	0.03	0.60	0.50	< 0.005	0.05	—	0.05	0.05	—	0.05	—	712	712	0.06	< 0.005	—	714
Regional Shopping Center	0.06	0.03	0.56	0.47	< 0.005	0.04	—	0.04	0.04	—	0.04	—	673	673	0.06	< 0.005	—	675
Total	11.8	5.91	101	43.5	0.64	8.17	—	8.17	8.17	—	8.17	—	128,200	128,200	11.3	0.24	—	128,556
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	2.13	1.07	18.2	7.76	0.12	1.47	—	1.47	1.47	—	1.47	—	20,996	20,996	1.86	0.04	—	21,054
General Office Building	0.01	0.01	0.11	0.09	< 0.005	0.01	—	0.01	0.01	—	0.01	—	118	118	0.01	< 0.005	—	118

Regional Shopping Center	0.01	0.01	0.10	0.09	< 0.005	0.01	—	0.01	0.01	—	0.01	—	111	111	0.01	< 0.005	—	112
Total	2.16	1.08	18.4	7.94	0.12	1.49	—	1.49	1.49	—	1.49	—	21,225	21,225	1.88	0.04	—	21,284

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	18.0	9.02	154	65.6	0.98	12.5	—	12.5	12.5	—	12.5	0.00	195,605	195,605	3.68	0.37	—	195,807
Consumer Products	—	440	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	35.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	57.1	54.0	5.57	608	0.03	0.22	—	0.22	0.30	—	0.30	—	1,644	1,644	0.07	0.15	—	1,691
Total	75.1	538	160	673	1.01	12.7	—	12.7	12.8	—	12.8	0.00	197,249	197,249	3.75	0.52	—	197,497
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	18.0	9.02	154	65.6	0.98	12.5	—	12.5	12.5	—	12.5	0.00	195,605	195,605	3.68	0.37	—	195,807
Consumer Products	—	440	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	—	35.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	18.0	484	154	65.6	0.98	12.5	—	12.5	12.5	—	12.5	0.00	195,605	195,605	3.68	0.37	—	195,807
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.23	0.11	1.93	0.82	0.01	0.16	—	0.16	0.16	—	0.16	0.00	2,218	2,218	0.04	< 0.005	—	2,220
Consumer Products	—	80.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	6.40	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	7.14	6.75	0.70	76.0	< 0.005	0.03	—	0.03	0.04	—	0.04	—	186	186	0.01	0.02	—	192
Total	7.36	93.6	2.62	76.8	0.02	0.18	—	0.18	0.19	—	0.19	0.00	2,405	2,405	0.05	0.02	—	2,412

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	742	9,145	9,888	77.3	1.95	—	12,400
General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	75.8	106	3.07	0.07	—	204

Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	49.8	126	176	5.12	0.12	—	341
Total	—	—	—	—	—	—	—	—	—	—	—	822	9,347	10,169	85.5	2.15	—	12,945
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	742	9,145	9,888	77.3	1.95	—	12,400
General Office Building	—	—	—	—	—	—	—	—	—	—	—	29.9	75.8	106	3.07	0.07	—	204
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	49.8	126	176	5.12	0.12	—	341
Total	—	—	—	—	—	—	—	—	—	—	—	822	9,347	10,169	85.5	2.15	—	12,945
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	123	1,514	1,637	12.8	0.32	—	2,053
General Office Building	—	—	—	—	—	—	—	—	—	—	—	4.94	12.5	17.5	0.51	0.01	—	33.8
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	8.24	20.9	29.2	0.85	0.02	—	56.4
Total	—	—	—	—	—	—	—	—	—	—	—	136	1,548	1,684	14.1	0.36	—	2,143

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	4,398	0.00	4,398	440	0.00	—	15,386
General Office Building	—	—	—	—	—	—	—	—	—	—	—	43.9	0.00	43.9	4.39	0.00	—	154
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	198	0.00	198	19.8	0.00	—	694
Total	—	—	—	—	—	—	—	—	—	—	—	4,640	0.00	4,640	464	0.00	—	16,234
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	4,398	0.00	4,398	440	0.00	—	15,386
General Office Building	—	—	—	—	—	—	—	—	—	—	—	43.9	0.00	43.9	4.39	0.00	—	154
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	198	0.00	198	19.8	0.00	—	694
Total	—	—	—	—	—	—	—	—	—	—	—	4,640	0.00	4,640	464	0.00	—	16,234
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	728	0.00	728	72.8	0.00	—	2,547
General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.27	0.00	7.27	0.73	0.00	—	25.5

Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	32.9	0.00	32.9	3.28	0.00	—	115
Total	—	—	—	—	—	—	—	—	—	—	—	768	0.00	768	76.8	0.00	—	2,688

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	129	129
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.33	1.33
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	130	130
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	129	129
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.13

Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.33	1.33
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	130	130
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.3	21.3
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.22	0.22
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.6	21.6

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	171,227	162,666	162,666	62,497,963	1,283,409	1,220,117	1,220,117	445,342,783

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)

Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	9290
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	1032

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
40758997.5	13,586,333	657,501	219,167	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	71,171,688	261	0.0330	0.0040	395,697,443
General Office Building	1,562,251	261	0.0330	0.0040	2,222,049
Regional Shopping Center	3,444,029	261	0.0330	0.0040	2,099,424

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	387,339,759	1,915,112,778
General Office Building	15,581,384	0.00
Regional Shopping Center	25,974,789	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	2,738	0.00
General Office Building	81.5	0.00
Regional Shopping Center	368	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	User Defined	750	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	User Defined	750	< 0.005	4.00	4.00	18.0
Regional Shopping Center	Other commercial A/C and heat pumps	User Defined	750	< 0.005	4.00	4.00	18.0

Regional Shopping Center	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	9.66	annual days of extreme heat
Extreme Precipitation	4.40	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack	N/A	N/A	N/A	N/A

Air Quality	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	48.5
AQ-PM	80.9
AQ-DPM	91.5
Drinking Water	48.6
Lead Risk Housing	79.3
Pesticides	0.00
Toxic Releases	85.9
Traffic	87.4
Effect Indicators	—
CleanUp Sites	82.1
Groundwater	64.5
Haz Waste Facilities/Generators	64.6
Impaired Water Bodies	58.7
Solid Waste	75.7

Sensitive Population	—
Asthma	58.2
Cardio-vascular	47.8
Low Birth Weights	31.1
Socioeconomic Factor Indicators	—
Education	81.9
Housing	90.9
Linguistic	88.3
Poverty	77.2
Unemployment	81.7

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	41.46028487
Employed	19.02989863
Median HI	38.2137816
Education	—
Bachelor's or higher	45.52803798
High school enrollment	100
Preschool enrollment	21.73745669
Transportation	—
Auto Access	58.83485179
Active commuting	47.79930707
Social	—
2-parent households	65.35352239

Voting	1.93763634
Neighborhood	—
Alcohol availability	26.08751444
Park access	12.22892339
Retail density	87.29629154
Supermarket access	10.21429488
Tree canopy	19.47901963
Housing	—
Homeownership	7.943025792
Housing habitability	24.16271012
Low-inc homeowner severe housing cost burden	91.91582189
Low-inc renter severe housing cost burden	57.48748877
Uncrowded housing	9.277556782
Health Outcomes	—
Insured adults	26.25433081
Arthritis	91.8
Asthma ER Admissions	33.8
High Blood Pressure	83.5
Cancer (excluding skin)	89.7
Asthma	51.9
Coronary Heart Disease	87.2
Chronic Obstructive Pulmonary Disease	71.2
Diagnosed Diabetes	60.0
Life Expectancy at Birth	61.7
Cognitively Disabled	41.3
Physically Disabled	30.9
Heart Attack ER Admissions	45.5

Mental Health Not Good	39.8
Chronic Kidney Disease	73.0
Obesity	61.1
Pedestrian Injuries	39.8
Physical Health Not Good	46.9
Stroke	80.6
Health Risk Behaviors	—
Binge Drinking	40.3
Current Smoker	40.7
No Leisure Time for Physical Activity	33.6
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	6.4
Elderly	94.7
English Speaking	9.4
Foreign-born	75.6
Outdoor Workers	33.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	18.2
Traffic Density	88.4
Traffic Access	63.7
Other Indices	—
Hardship	72.4
Other Decision Support	—
2016 Voting	21.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	92.0
Healthy Places Index Score for Project Location (b)	26.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Operations: Hearths	Per SCAQMD Rule 445 no wood burning devices Wood fireplaces added to gas fireplaces
Operations: Refrigerants	Beginning 1 January 2025, all new air conditioning equipment may not use refrigerants with a GWP of 750 or greater.
Operations: Architectural Coatings	SCAQMD Rule 1113

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APPENDIX 4.3:

EMFAC2021

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Sub-Area
Region: Orange (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	Total VMT	Fuel Consu	Fuel_Consumption	Total Fuel	VMT	Total VMT	Miles per Gallon	Vehicle Class
Orange (SC	2023	HHDT	Aggregate	Aggregate	Gasoline	8.731453	606.5489	0.147682	147.6817343	224709.1768	606.548947	1330192.502	5.92	HHDT
Orange (SC	2023	HHDT	Aggregate	Aggregate	Diesel	10709.41	1247785	210.5347	210534.7038		1247785.033			
Orange (SC	2023	HHDT	Aggregate	Aggregate	Electricity	8.085226	483.1236	0	0		483.123601			
Orange (SC	2023	HHDT	Aggregate	Aggregate	Natural Ga	1254.706	81317.8	14.02679	14026.79128	1485789.303	81317.79699	46701259.8	31.43	LDA
Orange (SC	2023	LDA	Aggregate	Aggregate	Gasoline	1076182	42528217	1445.762	1445761.525		42528216.69			
Orange (SC	2023	LDA	Aggregate	Aggregate	Diesel	3514.161	107965.3	2.54352	2543.520315		107965.2638			
Orange (SC	2023	LDA	Aggregate	Aggregate	Electricity	59474.27	2727828	0	0	143053.3158	2727828.291	3546246.185	24.79	LDT1
Orange (SC	2023	LDA	Aggregate	Aggregate	Plug-in Hyb	28501.98	1337250	23.45747	23457.46615		1337249.552			
Orange (SC	2023	LDT1	Aggregate	Aggregate	Gasoline	99223.59	3533281	142.9517	142951.7238		3533281.003			
Orange (SC	2023	LDT1	Aggregate	Aggregate	Diesel	34.75929	542.0339	0.022729	22.72902472	885337.7545	542.0338996	21310742.66	24.07	LDT2
Orange (SC	2023	LDT1	Aggregate	Aggregate	Electricity	191.5906	7503.644	0	0		7503.643869			
Orange (SC	2023	LDT1	Aggregate	Aggregate	Plug-in Hyb	92.38651	4919.504	0.078863	78.86289274		4919.504479			
Orange (SC	2023	LDT2	Aggregate	Aggregate	Gasoline	516653.8	20968860	879.7269	879726.8895	163947.1899	20968860.09	2535215.83	15.46	LHDT1
Orange (SC	2023	LDT2	Aggregate	Aggregate	Diesel	2003.36	85234.51	2.698305	2698.305306		85234.509			
Orange (SC	2023	LDT2	Aggregate	Aggregate	Electricity	2218.113	82315.88	0	0	42696.9695	82315.88053	625248.0383	14.64	LHDT2
Orange (SC	2023	LDT2	Aggregate	Aggregate	Plug-in Hyb	3400.553	174332.2	2.91256	2912.55963		174332.1824			
Orange (SC	2023	LHDT1	Aggregate	Aggregate	Gasoline	41394.68	1651744	120.8832	120883.1513	7508.408221	1651744.117	315261.4897	41.99	MCY
Orange (SC	2023	LHDT1	Aggregate	Aggregate	Diesel	20789.39	883471.7	43.06404	43064.03864	654470.2298	883471.7136	12891471.75	19.70	MDV
Orange (SC	2023	LHDT2	Aggregate	Aggregate	Gasoline	6757.483	254111.7	21.16016	21160.16017		254111.7405			
Orange (SC	2023	LHDT2	Aggregate	Aggregate	Diesel	8706.571	371136.3	21.53681	21536.80933		371136.2979			
Orange (SC	2023	MCY	Aggregate	Aggregate	Gasoline	49410.96	315261.5	7.508408	7508.408221	15209.26808	315261.4897	89918.06589	5.91	MH
Orange (SC	2023	MDV	Aggregate	Aggregate	Gasoline	323460.6	12520790	644.9392	644939.2498		12520789.89			
Orange (SC	2023	MDV	Aggregate	Aggregate	Diesel	4630.544	185304.8	7.814915	7814.914508	210315.2706	185304.7669	1573775.154	7.48	MHDT
Orange (SC	2023	MDV	Aggregate	Aggregate	Electricity	2366.55	87987.32	0	0		87987.32368			
Orange (SC	2023	MDV	Aggregate	Aggregate	Plug-in Hyb	2109.808	97389.77	1.716065	1716.065464	12888.47555	97389.76861	78556.56335	6.10	OBUS
Orange (SC	2023	MH	Aggregate	Aggregate	Gasoline	6246.542	60121.11	12.27339	12273.38692		60121.11097			
Orange (SC	2023	MH	Aggregate	Aggregate	Diesel	2943.826	29796.95	2.935881	2935.881151	10013.24463	29796.95492	65555.21753	6.55	SBUS
Orange (SC	2023	MHDT	Aggregate	Aggregate	Gasoline	7581.401	413802.3	80.40932	80409.31741		413802.2854			
Orange (SC	2023	MHDT	Aggregate	Aggregate	Diesel	27021.41	1147552	128.4773	128477.3186	40960.73586	1147551.627	152805.8919	3.73	UBUS
Orange (SC	2023	MHDT	Aggregate	Aggregate	Electricity	18.71449	397.084	0	0		397.0840496			
Orange (SC	2023	MHDT	Aggregate	Aggregate	Natural Ga	246.4125	12024.16	1.428635	1428.634579		12024.15799			
Orange (SC	2023	OBUS	Aggregate	Aggregate	Gasoline	876.9028	37020.2	7.203304	7203.304301		37020.1996			
Orange (SC	2023	OBUS	Aggregate	Aggregate	Diesel	461.0898	36373.64	5.100719	5100.718524		36373.63737			
Orange (SC	2023	OBUS	Aggregate	Aggregate	Natural Ga	82.46988	5162.726	0.584453	584.4527211		5162.726383			
Orange (SC	2023	SBUS	Aggregate	Aggregate	Gasoline	661.9448	29787.08	3.359332	3359.332103		29787.08397			
Orange (SC	2023	SBUS	Aggregate	Aggregate	Diesel	854.0901	17539.35	2.386689	2386.688805		17539.34852			
Orange (SC	2023	SBUS	Aggregate	Aggregate	Electricity	0.774914	8.998995	0	0		8.998995356			
Orange (SC	2023	SBUS	Aggregate	Aggregate	Natural Ga	715.5663	18219.79	4.267224	4267.223725		18219.78605			
Orange (SC	2023	UBUS	Aggregate	Aggregate	Gasoline	255.1049	42087.53	3.656171	3656.17145		42087.53345			
Orange (SC	2023	UBUS	Aggregate	Aggregate	Electricity	4.037406	77.72006	0	0		77.72005682			
Orange (SC	2023	UBUS	Aggregate	Aggregate	Natural Ga	575.5609	110640.6	37.30456	37304.56442		110640.6384			