Appendix B
Air Quality, Greenhouse Gas, and Energy Impact Assessment

Air Quality, Greenhouse Gas, and Energy Impact Assessment

City of Seal Beach Housing Element and Zoning Code Updates Project

February 28, 2025

Prepared for:

City of Seal Beach
Community Development Department
211 Eighth Street
Seal Beach, CA 90740

Prepared by:

Stantec Consulting Services, Inc.
555 Capitol Mall Suite 650
Sacramento CA 95814

Table of Contents

LIST OF TABLES

LIST OF APPENDICES

ABBREVIATIONS

$\mu g/m^3$	Micrograms Per Cubic Meter
AB	Assembly Bill
ACBMs	Asbestos-Containing Building Materials
AQMP	Air Quality Management Plan
BTU	British Thermal Unit
C. immitis	Coccidiodes immitis
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
City	City of Seal Beach
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CPUC	California Public Utilities Commission
DPM	Diesel Particulate Matter
DRRP	Diesel Risk Reduction Plan
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act
EO	Executive Order
EPCA	Energy Policy and Conservation Act
FCAA	Federal Clean Air Act
GHG	Greenhouse Gases
GWh	gigawatt-hours
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
HCD	California Department of Housing and Community Development
HFCs	Hydrofluorocarbons
HRA	Health Risk Assessment
IRA	Inflation Reduction Act
kBTU	1,000 British Thermal Units
kWh	kilowatt-hour
LCFS	Low Carbon Fuel Standard
LEV	Low-Emission Vehicle
LSTs	Localized Significance Thresholds
MC/RHD	Mixed Commercial/Residential High Density
MMT	Million Metric Tons
$MMTCO_2e$	Million Metric Tons of Carbon Dioxide Equivalents
MSSP	Main Street Specific Plan

$MTCO_2e$	Metric Tons of Carbon Dioxide Equivalents
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHTSA	National Highway Traffic Safety Administration
NOA	Naturally Occurring Asbestos
NF_3	Nitrogen Trifluoride
NO_X	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
O_3	Ozone
Pb	Lead
PFCs	Perfluorocarbons
PM	Particulate Matter
$PM_{2.5}$	Fine particulate matter; particulate matter 2.5 microns or smaller
PM_{10}	Particulate matter; particulate matter 10 microns or smaller
ppb	parts per billion
ppm	parts per million
Project	City of Seal Beach Housing Element and Zoning Code Updates Project
RFS	Renewable Fuel Standard
RHNA	Regional Housing Needs Allocation
ROG	Reactive Organic Gases
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RPS	Renewable Portfolio Standard
SAFE	Safer Affordable Fuel-Efficient
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SF_6	Sulfur Hexafluoride
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SoCalGas	Southern California Gas Company
TAC	Toxic Air Contaminant
USEPA	United States Environmental Protection Agency
USC	United States Code
VMT	Vehicle Miles Traveled
ZEV	Zero Emission Vehicle

1.0 EXECUTIVE SUMMARY

1.1 PROJECT UNDERSTANDING

The City of Seal Beach Housing Element and Zoning Code Updates Project (Project) would involve implementing the City's Housing Element Update, which is intended to provide the City of Seal Beach (City) with a comprehensive strategy for promoting the production of safe, decent and affordable housing and affirmatively furthering fair housing during the housing cycle. The Housing Element Update identifies an inventory of Housing Opportunity Sites throughout the City that have the potential for providing additional housing to meet the City's Regional Housing Needs Allocation (RHNA). The City's latest RHNA calls for 1,243 new housing units, including 459 new units for residents in the low- and very low-income categories. Of the eight Housing Opportunity Sites included in the Project, six would require rezoning, and two are underutilized sites that do not require rezoning. The City's rezoning effort would also include the establishment of a new zoning designation, "Mixed Commercial/Residential High Density" (MC/RHD). In addition to the Housing Opportunity Sites, the Housing Element Update includes a modification to the existing Main Street Specific Plan (MSSP). This analysis provides a programmatic evaluation of future development of up to 1,606 new residential units facilitated by the Project.

1.2 SUMMARY OF ANALYSIS

Impact AIR-1: The Project would not conflict with or obstruct implementation of the applicable air quality plan. **Significant and Unavoidable Impact.**

Impact AIR-2: The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard. **Significant and Unavoidable Impact.**

Impact AIR-3: The Project would not expose sensitive receptors to substantial pollutant concentrations. **Significant and Unavoidable Impact.**

Impact AIR-4: The Project would not result in other emissions (such as those leading to odors) affecting a substantial number of people. **Less Than Significant Impact.**

Impact GHG-1: The Project would not generate direct and indirect greenhouse gas emissions that would result in a significant impact on the environment. **Significant and Unavoidable Impact.**

Impact GHG-2: The Project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases. **Less Than Significant Impact with Mitigation Incorporated.**

Impact ENR-1: The Project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. **Less Than Significant Impact.**

Impact ENR-2: The Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. **Less Than Significant Impact.**

1.3 MITIGATION MEASURES

MM AQ-1. **Quantify Construction Criteria Pollutant Emissions.** Prior to discretionary approval by the City for development projects subject to CEQA review, project applicants shall prepare and submit a technical air quality assessment estimating project construction-related criteria pollutant emissions to the City for review and approval. The evaluation shall be prepared in accordance with SCAQMD guidance. If construction-related criteria pollutant emissions are determined to have the potential to exceed the SCAQMD regional and localized thresholds of significance, emission reduction measures shall be incorporated into the project to the maximum extent feasible, subject to the discretion of the City. Acceptable options for reducing emissions may include:

- Using construction equipment rated by the United States Environmental Protection Agency as having Tier 4 emission limits for engines above 50 horsepower.
- Require all paints and architectural coatings to be super-compliant VOC content (0 grams/Liter [g/L] to 10 g/L). If VOC emissions still exceed thresholds, then the applicant may elect to prohibit architectural coating activities during summer months (June, July, and August) when ozone formation peaks.

Regardless of the results of the emissions modeling, the following best practices shall be implemented throughout the duration of all construction activity:

- All off-road equipment operating at the construction site must be maintained in proper working condition according to manufacturers' specifications.
- Idling shall be limited to 5 minutes or less in accordance with the Off-Road Diesel Fueled Fleet Regulation as required by CARB.
- Clear Signage regarding idling restrictions shall be placed at the entrances to the construction site.
- Portable equipment over 50 horsepower must have either a valid SCAQMD Permit to Operate (PTO) or a valid statewide Portable Equipment Registration Program (PERP) placard and sticker issued by CARB.
- Water all active construction areas at least three times daily, or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site.

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Pave, apply water three times daily or as often as necessary to control dust, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.

MM AQ-2. **Quantify Operational Criteria Pollutant Emissions.** Prior to discretionary approval by the City for development projects subject to CEQA review, project applicants shall prepare and submit a technical air quality assessment estimating project operational-related criteria pollutant emissions to the City for review and approval. The evaluation shall be prepared in accordance with SCAQMD guidance. If operational-related criteria pollutant emissions are determined to have the potential to exceed the SCAQMD thresholds of significance, emission reduction measures shall be incorporated into the project to the maximum extent feasible, subject to the discretion of the City. Acceptable options for reducing operational emissions may include, but are not limited to, the following:

- Prohibition of natural gas hearths.
- Installation of solar water heaters or tankless water heaters.
- Exceeding Title 24 energy standards.
- Constructing Level 2 EV charging stations for multi-family developments and pre-wiring to allow for Level 2 EV charging stations in single-family residential garages.
- Require all paints and architectural coatings to be super-compliant VOC content (0 to 10 g/L).

MM AQ-3. **Construction Health Risk Assessment.** Prior to future discretionary project approval for any component that would involve construction lasting more than 2 months and within 1,000 feet of sensitive receptors, the project applicant shall submit a construction health risk assessment (HRA) to the City for review and approval. The level of detail required for the HRA is described below:

A quantitative health risk assessment shall be prepared in accordance with SCAQMD and OEHHA guidance to identify the potential for increased cancer and non-cancer health risks. If the health risks do not exceed the applicable thresholds, further mitigation is not necessary. If the resultant health risks are determined to exceed SCAQMD thresholds of significance, the applicant shall implement measures to reduce DPM exhaust emissions and associated risks to below the applicable thresholds. Methods may include requiring the use of off-road equipment engines that meet or exceed CARB's Tier 4 Final engine emissions standards for off-road equipment exceeding 50 horsepower (hp).

Any emissions reduction measures identified in the HRA shall be incorporated into the site development plan as a component of the project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Community Development Department clearly show incorporation of all applicable mitigation measures.

MM GHG-1. **Implement GHG Reduction Measures.** In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the State CEQA Guidelines, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to GHG emissions. Such measures may include the following or other comparable measures identified by the City:

a) Integrate green building measures consistent with CALGreen (California Building Code Title 24), local building codes and other applicable laws, into project design including:
    - Use energy efficient materials in building design, construction, rehabilitation, and retrofit.
    - Install energy-efficient lighting, heating, and cooling systems (cogeneration); water heaters; appliances; equipment; and control systems.
    - Reduce lighting, heating, and cooling needs by taking advantage of light-colored roofs, trees for shade, and sunlight.
    - Incorporate passive environmental control systems that account for the characteristics of the natural environment.
    - Use high-efficiency lighting and cooking devices.
    - Incorporate passive solar design.
    - Use high-reflectivity building materials and multiple glazing.
    - Prohibit gas-powered landscape maintenance equipment.
    - Install electric vehicle charging stations.
    - Reduce wood burning stoves or fireplaces.
    - Provide bike lanes accessibility and parking at residential developments.
b) Include off-site measures to mitigate a project's emissions.
c) Measures that consider incorporation of Best Available Control Technology (BACT) during design, construction, and operation of projects to minimize GHG emissions, including but not limited to:
    - Use energy and fuel-efficient vehicles and equipment;
    - Deployment of zero- and/or near zero emission technologies;
    - Use lighting systems that are energy efficient, such as LED technology;
    - Use the minimum feasible amount of GHG-emitting construction materials;
    - Use cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production;

- Incorporate design measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse;
- Incorporate design measures to reduce energy consumption and increase use of renewable energy;
- Incorporate design measures to reduce water consumption;
- Use lighter-colored pavement where feasible;
- Recycle construction debris to maximum extent feasible;
- Plant shade trees in or near construction projects where feasible; and
- Solicit bids that include concepts listed above.

d) Measures that encourage transit use, carpooling, bike-share and car-share programs, active transportation, and parking strategies, including, but not limited to the following:
   - Promote transit-active transportation coordinated strategies;
   - Increase bicycle carrying capacity on transit and rail vehicles;
   - Improve or increase access to transit;
   - Increase access to common goods and services, such as groceries, schools, and day care;
   - Incorporate the neighborhood electric vehicle network;
   - Orient the project toward transit, bicycle and pedestrian facilities;
   - Improve pedestrian or bicycle networks, or transit service;
   - Provide traffic calming measures;
   - Provide bicycle parking;
   - Limit or eliminate park supply;
   - Unbundle parking costs;
   - Provide parking cash-out programs;
   - Implement or provide access to commute reduction program;
e) Incorporate bicycle and pedestrian facilities into project designs, maintaining these facilities, and providing amenities incentivizing their use; and planning for and building local bicycle projects that connect with the regional network;
f) Improving transit access to rail and bus routes by incentives for construction of transit facilities within developments, and/or providing dedicated shuttle service to transit stations; and
g) Designate a percentage of parking spaces for ride-sharing vehicles or high occupancy vehicles, and provide adequate passenger loading and unloading for those vehicles;
h) Land use siting and design measures that reduce GHG emissions, including:
   - Retaining on-site mature trees and vegetation, and planting new canopy trees;
   - Measures that increase vehicle efficiency, encourage use of zero and low emissions vehicles, or reduce the carbon content of fuels, including constructing or encouraging construction of electric vehicle charging

stations or neighborhood electric vehicle networks, or charging for electric bicycles; and

- Measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.

2.0 INTRODUCTION

2.1 PURPOSE OF ANALYSIS

The purpose of this Air Quality, Greenhouse Gas, and Energy Impact is to evaluate the existing conditions and potential impacts to air quality, greenhouse gas (GHG) emissions, and energy resource areas from construction and operations of the development facilitated by Project. This analysis is intended to support preparation of a California Environmental Quality Act (CEQA) program-level Environmental Impact Report (EIR). This evaluation relies on guidance and thresholds established by the United States Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and the South Coast Air Quality Management District (SCAQMD).

2.2 PROJECT DESCRIPTION

The Seal Beach City Council adopted the City of Seal Beach's Housing Element Update on February 7, 2022. In response to California Department of Housing and Community Development (HCD) comments, the City updated the Housing Element Update on August 24, 2023. The City is preparing the Housing Element Update to comply with the legal mandate requiring each local government to identify adequate sites for housing to meet the existing and projected housing needs for varying income-levels in the community. The Housing Element Update is intended to provide the City with a comprehensive strategy for promoting the production of safe, decent and affordable housing and affirmatively furthering fair housing during the housing cycle.

The City's latest RHNA allocation calls for 1,243 new housing units, including 459 new units for residents in the low- and very low-income categories. The City must demonstrate to HCD that the Housing Element Update has adequate land capacity and implementing policies to accommodate its RHNA allocation.

The Project would involve implementing the City's Housing Element Update. The Housing Element Update identifies an inventory of Housing Opportunity Sites throughout the City that have the potential for providing additional housing to meet the City's RHNA allocation. The sites are broken into two categories: (a) underutilized sites that do not require zoning code changes; and (b) sites where zoning modifications are proposed. The Housing Element Update originally included 13 Housing Opportunity Sites. However, in response to comments received from HCD during the CEQA process, the number of Housing Opportunity Sites identified has been reduced to eight. Of the eight Housing Opportunity Sites, six would require rezoning. The City's rezoning effort would also include the establishment of a new zoning designation, MC/RHD, which would apply to five of the eight Housing Opportunity Sites. The new MC/RHD mixed-use zoning designation is needed to facilitate a density equivalent to Residential High Density (RHD)-46 (up to 46 units per acre) but with a minimum density of 40 units per acre. This new zone district would facilitate housing for lower-income households as required by the state's RHNA allocation for the City and facilitate the inclusion of affordable units. In addition to the Housing Opportunity Sites, the Housing Element Update includes a proposal for the Main Street Program. The Housing Element Update's Main Street Program does not identify specific housing opportunity sites but would

modify the existing MSSP to allow for residential units to be developed at select properties located within the MSSP area. The analysis contained herein assumes the development under the Main Street Program at 70 precent of maximum buildout resulting in the potential for 115 new dwelling units to be developed within the MSSP area. Finally, this analysis also accounts for the residential component of the Old Ranch Country Club (ORCC). The Housing Element Update identified Old Ranch Country Club Pipeline Project as a pipeline project. As such, specific impact findings associated with the development of the Old Ranch Country Club Pipeline Project are being evaluated separately by the City in a standalone EIR. The Old Ranch Country Club Pipeline Project is a proposed 5.2-acre Specific Plan on the existing Old Ranch Country Club and would convert a portion of the existing golf course to a mixed-use development with 167 residential units. The 167 residential units of Old Ranch Country Club Pipeline Project (herein referred to as the residential component of the ORCC Specific Plan Project) are programmatically evaluated within this EIR as these 167 residential units are included within the City's site inventory to meet its RHNA requirements. The other portions of the ORCC Specific Plan are not included within RHNA requirements and therefore were not included within this analysis.

In total, the analysis contained herein assumed buildout under the Project to result in the potential for 1,773 new dwelling units (1,491 dwelling units from the eight Housing Opportunity Sites, 115 dwelling units from the Main Street Program, and the 167 units from the residential component of the ORCC Specific Plan Project) to be developed within the City.

Based on this, by implementing the Project, the City would be able to provide 1,606 additional housing units, thereby accommodating the 2021-2029 RHNA allocation (1,243 new housing units) and a substantive buffer to demonstrate capacity for all income levels. The buildout assumptions for development of the Project are shown in Table 1.

Table 1. Housing Element Update Buildout Assumptions

Site No.	Site Name	Developable Acres	Maximum Density (du/ac)	Total Units
Underutilized Sites				
1	1780 Pacific Coast Highway	0.25	21.8	5
2	Leisure World	5.5	32.2	177
Total Units from Underutilized Sites				*182*
Rezoned Sites				
3	Accurate Storage	1.8	46	83
4	The Shops at Rossmoor	12	46	552
5	Old Ranch Town Center	8.3	46	382
6	Seal Beach Plaza	1.5	46	69
7	Seal Beach Center	2.7	46	124
8	99 Marina Drive	3	33	99
Total Units from Proposed Rezoning				*1,309*

Site No.	Site Name	Developable Acres	Maximum Density (du/ac)	Total Units
Total Units including Underutilized Sites and Rezone		**35.05**	**--**	**1,491**
Other Sites				
Main Street Program*		--	--	115
Residential Component of the ORCC Specific Plan Project		5.2		167
Total Units under Buildout				**1,773**

* The Housing Element Update assumes under the Main Street Program, two residential units would be proposed and permitted within the Main Street Specific Plan area during the Housing Element Update's planning period. However, based on a 70 percent buildout scenario of the 163 total dwelling units identified in the Initial Study for the Main Street Specific Plan area, 115 dwelling units is the assumed buildout condition under the Main Street Program for the purposes of CEQA.

2.2.1 Surrounding Land Uses and Existing Conditions

The Project site is comprised of eight identified Housing Opportunity Sites dispersed throughout the City of Seal Beach, California and totaling approximately 83.45 acres. However, the majority of the Housing Opportunity Sites would only allow for development within portions of the overall Housing Opportunity Site due to existing development and, therefore, the total developable acres for the Housing Opportunity Sites would total 35.05 acres. Additionally, the Project site includes the Main Street Specific Plan area which provides an additional 9.2 acres of developable acres. Therefore, the Project includes 92.65 total acres of land within the City but would have a total developable acreage of 44.25 acres.

The City is located at the northwestern edge of Orange County, California. It borders the City of Long Beach and Los Angeles County to the northwest, the Orange County cities of Los Alamitos to the north, Westminster to the east, Huntington Beach to the southeast, and the Pacific Ocean to the southwest.

As the existing land uses are comprised of a variety of land uses across the City, the surrounding land uses are similarly varied in character. Surrounding land uses generally consist of residential development, vacant land, commercial and retail uses, parking lots, mobile home parks, institutional and industrial uses, and military uses as well as other urban and suburban land uses throughout the City.

3.0 AIR QUALITY

3.1 ENVIRONMENTAL SETTING

The Project is located within the City of Seal Beach in Orange County, which is within the South Coast Air Basin (SCAB). SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and is under the jurisdiction of the SCAQMD. Regulatory oversight authority regarding air quality rests at the local, State, and federal levels with the SCAQMD, California Air Resources Board (CARB), and U.S. Environmental Protection Agency (USEPA), respectively.

The existing air quality setting is described further below.

3.1.1 Climate and Meteorology

The SCAB covers approximately 12,000 square miles, consisting of Orange County and the urbanized areas of San Bernardino, Riverside, and Los Angeles counties. The distinctive climate of the SCAB is determined by its terrain and geographic location. The SCAB is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the southwest and high mountains around the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. The SCAB is classified as a dry-hot desert climate (SCAQMD 1993).

3.1.2 Criteria Air Pollutants

Criteria air pollutants includes ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (measured both in units of smaller than 2.5 microns in diameter [$PM_{2.5}$] and in units of particulate matter smaller than 10 microns in diameter [PM_{10}]), and lead (Pb).

Ozone. Most ground-level ozone is formed as a result of complex photochemical reactions in the atmosphere between reactive organic gases (ROG), nitrogen oxides (NOx), and oxygen. ROG and NOx are considered precursors to the formation of ozone, a highly reactive gas that can damage lung tissue and affect respiratory function. While ozone in the lower atmosphere is considered a damaging air pollutant, ozone in the upper atmosphere is beneficial, as it protects the Earth from harmful ultraviolet radiation. However, atmospheric processes preclude ground-level ozone from reaching the upper atmosphere (USEPA 2023a).

Carbon Monoxide. CO is a colorless, odorless, poisonous gas produced by the incomplete combustion of fossil fuels. Elevated levels of CO can result in harmful health effects, especially for the young and elderly, and can also contribute to global climate change (USEPA 2023a).

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas primarily produced as a result of the burning of fossil fuels. NO_2 can also lead to the formation of ozone in the lower atmosphere. NO_2 can cause respiratory ailments, especially in the young and elderly, and can lead to degradations in the health of aquatic and terrestrial ecosystems (USEPA 2023a).

Sulfur Dioxide. SO_2 is primarily emitted from the combustion of coal and oil by steel mills, pulp and paper mills, and non-ferrous smelters. High concentrations of SO_2 can aggravate existing respiratory and cardiovascular diseases in asthmatics and others who suffer from emphysema or bronchitis. SO_2 also contributes to acid rain, which in turn, can lead to the acidification of lakes and streams (USEPA 2023a).

Particulate Matter. Airborne PM is not a single pollutant, but rather is a mixture of many chemical species. PM is a complex mixture of solids and aerosols composed of small droplets of liquid, dry solid fragments, and solid cores with liquid coatings. Particles vary widely in size, shape, and chemical composition, and may contain inorganic ions, metallic compounds, elemental carbon, organic compounds, and compounds from the earth's crust. Particles are defined by their diameter for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM_{10}) are inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$). Therefore, $PM_{2.5}$ compromises a portion of PM_{10}. Emissions from combustion of gasoline, oil, diesel fuel or wood produce much of the $PM_{2.5}$ pollution found in outdoor air, as well as significant proportion of PM_{10}. PM_{10} also includes dust from construction sites, landfills and agriculture, wildfires and brush/waste burning, industrial sources, wind-blown dust from open lands, pollen, and fragments of bacteria.

PM may be either directly emitted from sources (primarily particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as SO_2, NOx, and certain organic compounds (USEPA 2023a).

Lead. Sources of Pb include pipes, fuel, and paint, although the use of Pb in these materials has declined dramatically over the years. Historically, a main source of Pb was automobile emissions. Pb can be inhaled directly or ingested by consuming Pb-contaminated food, water, or dust. Fetuses and children are most susceptible to Pb poisoning, which can result in heart disease and nervous system damage (USEPA 2024a). Through regulations, USEPA has gradually reduced the Pb content of gasoline. This program has essentially eliminated violations of the Pb standard in urban areas except those areas with Pb point sources.

3.1.3 Attainment Status

The USEPA and CARB designate air basins where ambient air quality standards are exceeded as "non-attainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National non-attainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Attainment status is based on the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). Each standard has a different definition, or "form" of what constitutes attainment, based on specific air

quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring value exceeds the threshold per year. In contrast, the federal annual standard for $PM_{2.5}$ is met if the 3-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The Federal Clean Air Act (FCAA) identifies two types of NAAQS. Primary standards provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (USEPA 2023a). The CAAQS are equal to or more stringent than the NAAQS and include pollutants for which national standards do not exist. Table 2 presents the applicable CAAQS and NAAQS.

Table 2. California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
			Primary	Secondary
Ozone (O_3)	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	Same as Primary Standards
	1-hour	0.09 ppm (180 µg/m^3)	--	
Carbon monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	--
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	
Sulfur dioxide (SO_2)	Annual arithmetic mean	--	0.030 ppm (80 µg/m^3)	--
	24-hour	0.04 ppm (105 µg/m^3)	0.14 ppm (80 µg/m^3)	--
	3-hour	--	--	0.5 ppm (1300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	--	--
Respirable Particulate Matter Smaller than 10 Microns in Diameter (PM_{10})	Annual arithmetic mean	20 µg/m^3	--	Same as Primary Standards
	24-hour	50 µg/m^3	150 µg/m^3	
Respirable Particulate Matter Smaller than 2.5 Microns in Diameter ($PM_{2.5}$)[3]	Annual arithmetic mean	12 µg/m^3	9.0 µg/m^3	15 µg/m^3
	24-hour	No separate standard	35 µg/m^3	Same as Primary Standards
Sulfates	24-hour	25 µg/m^3	--	--

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
			Primary	Secondary
Lead (Pb)	30-day average	1.5 µg/m^3	--	--
	Calendar quarter	--	1.5 µg/m^3	Same as Primary Standard
	Rolling 3-month average	--	0.15 µg/m^3	
Hydrogen sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	--	--
Vinyl chloride (chloroethene)	24-hour	0.01 ppm (26 µg/m^3)	--	--
Visibility reducing particles	8-hour	In 1989, the Air Resources Board converted the general statewide 10-mile visibility standard to instrumental equivalents, which are extinction of 0.23 per kilometer.	--	--

Notes:
1. CO, SO_2 (1- and 24-hour), NO_2, O_3, PM_{10}, and visibility reducing particles standards are not to be exceeded.
2. Not to be exceeded more than once a year except for annual standards.
3. On February 7, 2024, the USEPA issued a pre-publication version of the Final Rule to lower the primary annual NAAQS for $PM_{2.5}$ from 12.0 µg/m^3 to 9.0 µg/m^3.
-- = no standard established
µg/m^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
ppm = parts per million
Source: CARB 2016.

Table 3 presents the federal and State attainment status for the SCAB, in which the Project is located. The Project is in an area designated non-attainment for both the federal and State standards for O_3 and $PM_{2.5}$, the State standard for PM_{10}, and the federal standard for lead (SCAQMD 2016a).

Table 3. Attainment Status of the South Coast Air Basin

Pollutant	Federal Designation	State Designation
Ozone (O_3) – 1-Hour and 8-Hour	Non-Attainment (Extreme)	Non-Attainment
Carbon Monoxide (CO) – 1-Hour and 8-Hour	Attainment/Maintenance	Attainment
Nitrogen Dioxide (NO_2) – 1-Hour and Annual	Attainment	Attainment
Sulfur Dioxide (SO_2) – Annual	Unclassifiable/Attainment	*
Particulate Matter (PM_{10}) – 24-Hour	Attainment/Maintenance	Non-Attainment
Particulate Matter ($PM_{2.5}$) – Annual	Non-Attainment (Serious)	Non-Attainment
Lead (Pb) – 3-Month Rolling	Non-Attainment	*

Pollutant	Federal Designation	State Designation
Hydrogen Sulfide (H_2S) – 1-Hour	*	Attainment
Sulfates – 24-Hour	*	Attainment
Vinyl Chloride – 24-Hour	*	Attainment

Note: * = Not Applicable/No Standards.

Source: SCAQMD 2016a.

3.1.4 Ambient Air Quality

The nearest air quality monitoring station to the Project sites is the Anaheim Monitoring Station located at 1630 West Pampas Lane. Table 4 includes a summary of the air quality monitoring data for the years 2021 through 2023. The table shows the number of times the station recorded pollutant concentrations above federal and State air quality standards and the highest annual reading for each pollutant.

Table 4. Anaheim Monitoring Station Data (2021-2023)

Pollutant	Air Pollutant, Averaging Time (Units)	2021	2022	2023
Ozone (ppm)	Maximum 1-hour measurement	0.089	0.102	0.089
	Number of days over National 1-hour standard	0	0	0
	Number of days over California 1-hour standard	0	1	0
	Maximum 8-hour measurement	0.068	0.076	0.076
	Number of days over National 8-hour standard	0	1	2
	Number of days over California 8-hour standard	0	1	2
Nitrogen Dioxide (ppb)	Maximum 1-hour measurement	67.1	53.0	50.9
	Annual average	12	11	10
	Number of days over National 1-hour standard	0	0	0
	Number of days over California 1-hour standard	0	0	0
$PM_{2.5}$ ($\mu g/m^3$)	Maximum 24-hour measurement	54.4	33.1	45.6
	Annual average	11.6	9.9	*
	Number of days over National 24-hour standard	10	0	1
PM_{10} ($\mu g/m^3$)	Maximum 24-hour measurement	63.6	67.0	97.8
	Annual average	23.4	20.9	20.6
	Number of days over National 24-hour standard	0	0	0
	Number of days over California 24-hour standard	1	1	1

Source: CARB 2024a.

Notes: ppm = parts per million; ppb = parts per billion; $\mu g/m^3$ = micrograms per liter; * means there was insufficient data to determine the value.

3.1.5 Odors

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e., irritation, anger, or anxiety) to the physiological (i.e., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and is subjective. Some individuals can smell very minute quantities of specific substances; others have varying sensitivities to odors; and people may have different reactions to the same odor (e.g., bakery, gasoline). It is important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience (e.g., a description of flowery or sweet). Intensity refers to the strength of the odor and depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases, the odor intensity weakens, and it eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant drops below a human's detection threshold.

3.1.6 Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air but, due to their high toxicity, they may pose a threat to public health even at very low concentrations. Because there is no threshold level below which adverse health impacts are not expected to occur, TACs differ from criteria pollutants for which acceptable levels of exposure can be determined and for which State and federal governments have set ambient air quality standards. TACs, therefore, are not considered "criteria pollutants" under either the FCAA or the California Clean Air Act (CCAA) and are not subject to NAAQS or CAAQS ambient air quality standards. Instead, USEPA and CARB regulate hazardous air pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with SCAQMD rules, these federal and State statutes and regulations establish the regulatory framework for TACs. At the national level, USEPA has established national emission standards for hazardous air pollutants (NESHAPs) in accordance with the requirements of the FCAA and subsequent amendments. These are technology-based, source-specific regulations that limit allowable emissions of HAPs.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. The following provides a summary of the primary TACs of concern within the State of California and related health effects.

Diesel Particulate Matter

Diesel particulate matter (DPM) was identified as a TAC by the CARB in August 1998. DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 42 percent of the statewide total, with an additional 55 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about three percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report DPM emissions also include heavy construction, manufacturers of asphalt paving materials and blocks, and diesel-fueled electrical generation facilities (CARB 2024b).

In October 2000, CARB issued a report entitled *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, which is commonly referred to as the Diesel Risk Reduction Plan (DRRP). The DRRP provides a mechanism for combating the DPM problem. The goal of the DRRP is to reduce concentrations of DPM. The key elements of the DRRP are to clean up existing engines through engine retrofit emission control devices, to adopt stringent standards for new diesel engines, and to lower the sulfur content of diesel fuel through advanced technology emission control devices on diesel engines. When fully implemented, the DRRP will significantly reduce emissions from both old and new diesel-fueled motor vehicles and from stationary sources that burn diesel fuel. In addition to these strategies, CARB continues to promote the use of alternative fuels and electrification. As a result of these actions, DPM concentrations and associated health risks in future years are projected to decline (CARB 2024b). In comparison to year 2010 inventory of statewide DPM emissions, CARB estimates that emissions of DPM in 2035 will be reduced by more than 50 percent.

DPM is typically composed of carbon particles (also called “soot” or “black carbon”) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and NOx. NOx emissions from diesel engines are important because they can undergo chemical reactions in the atmosphere leading to formation of $PM_{2.5}$ and O_3.

In California, diesel exhaust particles have been identified as a carcinogen accounting for an estimated 70 percent of the total known cancer risks in California. DPM is estimated to increase statewide cancer risk by 520 cancer occurrences per million residents exposed over an estimated 70-year lifetime. Non-cancer health effects associated with exposure to DPM include premature death, exacerbated chronic heart and lung disease, including asthma, and decreased lung function in children. Short-term exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks (CARB 2024b).

Individuals most vulnerable to non-cancer health effects of DPM are children whose lungs are still developing and the elderly who often have chronic health problems. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to DPM (CARB 2024b). In addition to its health effects, DPM significantly contributes to haze and reduced visibility.

Valley Fever

Valley fever is an infection caused by a fungus that lives in the soil. The fungus that causes Valley fever, Coccidiodes immitis (*C. immitis*), is found in the southwestern United States, parts of Mexico and Central America, and parts of South America. The fungus grows naturally and is endemic in many areas within California. People can get this infection by breathing in fungal spores from the air, especially when the wind blows the soil with the fungal spores into the air, or the dirt is moved by human activity. About 10,000 cases in the United States are reported each year, mostly from Arizona and California. Valley fever can be misdiagnosed because its symptoms are like those of other illnesses. For most people, the symptoms of Valley fever will go away within a few months without any treatment. Some people may develop a more severe infection, especially those with compromised immune systems (Centers for Disease Control and Prevention 2020).

In California, the number of reported Valley fever cases has greatly increased in recent years. Since 2000, the number of reported cases from increased from 1,000 to more than 9,000 cases reported in 2019 (California Department of Public Health 2021). In 2022, 297 cases of Valley fever were recorded within Orange County (California Department of Public Health 2024).

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals with useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings constructed prior to 1977 when it was banned for use in buildings. Exposure to naturally occurring asbestos can occur during soil disturbing activities in areas with deposits present (USEPA 2024b).

3.1.7 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiovascular diseases. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The Project sites contain and are located adjacent to various sensitive uses, primarily single- and multi-family residences.

3.2 REGULATORY SETTING

Air quality within the Project area is regulated by several jurisdictions, including the USEPA, CARB, and SCAQMD. Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although USEPA regulations may not be superseded, both State and local regulations may be more stringent.

3.2.1 Federal

U.S. Environmental Protection Agency

At the federal level, the USEPA has been charged with implementing national air quality programs. The USEPA's air quality mandates are drawn primarily from the FCAA, which was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990.

Federal Clean Air Act

The FCAA required the USEPA to establish NAAQS, and also set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. NAAQS are summarized in Table 2.

National Emission Standards for Hazardous Air Pollutants

Pursuant to the FCAA of 1970, the USEPA established the NESHAPs. These are technology-based source-specific regulations that limit allowable emissions of HAPs. Among these sources include asbestos-containing building materials (ACBMs). NESHAPs include requirements pertaining to the inspection, notification, handling, and disposal of ACBMs associated with the demolition and renovation of structures.

Non-Road Diesel Rule

The USEPA has established a series of increasingly strict emissions standards for new off-road diesel equipment, on-road diesel trucks, and locomotives. New construction equipment used for the Project, including heavy-duty trucks and off-road construction equipment, would be required to comply with the emissions standards.

3.2.2 State

California Air Resources Board

The CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the CCAA of 1988. Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts), establishing CAAQS, which in many cases are more stringent than the

NAAQS, and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel and engine used. The CAAQS are summarized in Table 2.

California Clean Air Act

The CCAA requires that all air districts in the State endeavor to achieve and maintain CAAQS for O_3, CO, SO_2, and NO_2 by the earliest practical date. The CCAA specifies that districts focus attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or (2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both State and federal planning requirements.

Assembly Bills 1807 & 2588 - Toxic Air Contaminants

Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB designates a substance as a TAC.

Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

Assembly Bill 617

In response to AB 617 (C. Garcia, Chapter 136, Statutes of 2017), the CARB established the Community Air Protection Program. The Community Air Protection Program includes community air monitoring and community emissions reduction program's focus is to reduce exposure in communities most impacted by air pollution. The Legislature has appropriated funding to support early actions to address localized air pollution through targeted incentive funding to deploy cleaner technologies in these communities, as well as grants to support community participation in the AB 617 process. AB 617 also includes new requirements for accelerated retrofit of pollution controls on industrial sources, increased penalty fees, and greater transparency and availability of air quality and emissions data, which will help advance air pollution control efforts throughout the State.

Regulatory Attainment Designations

Under the CCAA, CARB is required to designate areas of the State as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once,

excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The USEPA designates areas for O_3, CO, and NO_2 as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The USEPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, USEPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

As noted previously, the Project is in an area designated non-attainment for both the federal and State standards for O_3 and $PM_{2.5}$, the State standard for PM_{10}, and the federal standard for lead (SCAQMD 2016a).

Low-Emission Vehicle Program

The CARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan (SIP). In 2012, CARB adopted the LEV III amendments to California's LEV regulations. These amendments include more stringent emission standards for both criteria pollutants and greenhouse gases for new passenger vehicles.

On-Road Heavy-Duty Vehicle Program

The CARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures. CARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others.

In addition, the CARB's Truck and Bus regulation was established to meet federal attainment standards. This regulation requires heavy-duty diesel vehicles that operate in California to reduce TAC emissions

from their exhaust. Diesel exhaust is responsible for 70 percent of the cancer risk from airborne toxics. Therefore, as of January 1, 2023, nearly all trucks and buses were required to have 2010 or newer model year engines to reduce PM and NOx emissions. To help ensure that the benefits of this regulation are achieved, starting in 2020, only vehicles compliant with this regulation were registered by the California Department of Motor Vehicles.

3.2.3 Regional

SCAG Regional Transportation Plan/Sustainable Communities Strategy

The Southern California Association of Governments (SCAG) is the designated Metropolitan Planning Organization for the following six counties: Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The SCAG develops long-range regional transportation plans, including sustainable communities strategies pursuant to SB 375, growth forecast components, regional transportation improvement programs, regional housing needs allocations, and a portion of the SCAQMD air quality plans (SCAG 2023). In April 2024, the SCAG Regional Council approved the 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which is entitled Connect SoCal. Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies to increase mobility options and achieve a more sustainable growth pattern (SCAG 2024). The 2024 RTP/SCS supersedes the previous RTP/SCS that was adopted in 2020.

South Coast Air Quality Management District

The SCAQMD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded, and the air quality conditions are maintained in the SCAB. Responsibilities of SCAQMD include, but not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the FCAA and the CCAA.

SCAQMD 2022 Air Quality Management Plan

SCAB is designated as non-attainment for both federal and State standards for O_3 and $PM_{2.5}$, the State standard for PM_{10}, and the federal standard for lead. Because the SCAB currently exceeds these NAAQS and CAAQS, the SCAQMD is required to implement strategies to reduce pollutant levels to recognized acceptable standards. The most recent air plan is the 2022 Air Quality Management Plan (AQMP), created in conjunction with the SCAG, CARB, and USEPA to meet federal ozone and $PM_{2.5}$ standards.

The 2022 AQMP accounts for projected population growth and predicted future emissions in energy and transportation demand, and determined control strategies for the eventual achievement of the NAAQS attainment designations. These control strategies are either organized into the SCAQMD rules and regulations, or otherwise set forth as formal SCAQMD recommendations to other agencies. The 2022 AQMP includes policies that are consistent with the SCAQMD and specify review according to the

recommendations of SCAQMD guidelines. Other policies are aimed at reducing transportation emissions and emissions from major stationary sources (SCAQMD 2022).

SCAQMD Rules and Regulations

The SCAQMD rules are regulations that may apply to the Project include, but are not limited to, the following:

- **Rule 201: Permit to Construct.** This rule requires that projects shall obtain a permit to construct from the SCAQMD prior to initiating construction activities.
- **Rule 401: Visible Emissions.** This rule prohibits discharges of visible air contaminants from any single source.
- **Rule 402: Nuisance.** This rule prohibits the discharge from any source such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public.
- **Rule 403: Fugitive Dust.** The purpose of this rule is to reduce the amount of particulate matter in the ambient air as a result of anthropogenic fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions.
- **Rule 1113: Architectural Coatings.** This rule is intended to limit the VOC content on architectural coatings used within the SCAQMD.
- **Rule 1403: Asbestos Emissions from Demolition/Renovation Activities:** This rule specifies work practices to limit asbestos emissions from building demolition and renovation activities.

3.2.4 Local

City of Seal Beach General Plan

The City of Seal Beach prepared their General Plan in September 2003 in order to plan for the City's development. The 2013-2021 Housing Element as well as the updated Housing Element include the following goals to promote energy efficiency which would in turn reduce air quality emissions (City of Seal Beach 2003).

- Goal 6: Encourage more efficient energy use in residential developments.
    - Policy 6a: Promote energy conservation through "green building" techniques that reduce water consumption, improve energy efficiency and lessen a building's overall environmental impact.

4.0 GREENHOUSE GAS

4.1 ENVIRONMENTAL SETTING

To fully understand global climate change, it is important to recognize the naturally occurring "greenhouse effect" and to define the GHGs that contribute to this phenomenon. Various gases in the earth's atmosphere, classified as atmospheric GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space and a portion of the radiation is absorbed by the earth's surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect.

4.1.1 Greenhouse Gases

Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF_3), and sulfur hexafluoride (SF_6). Primary GHGs attributed to global climate change are discussed in the following subsections.

Carbon Dioxide. CO_2 is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere (USEPA 2023b).

Methane. CH_4 is a colorless, odorless gas, and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. CH_4 is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (enteric fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of methane to the atmosphere. Natural sources of methane include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH_4 is about 12 years (USEPA 2023b).

Nitrous Oxide. N_2O is a clear, colorless gas with a slightly sweet odor. N_2O is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological

sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years (USEPA 2023b).

Hydrofluorocarbons. HFCs are man-made chemicals, many of which have been developed as alternatives to ozone-depleting substances for industrial, commercial, and consumer products. The only significant emissions of HFCs before 1990 were of the chemical HFC-23, which is generated as a byproduct of the production of HCFC-22 (or Freon 22, used in air conditioning applications). The atmospheric lifetime for HFCs varies from just over a year for HFC-152a to 260 years for HFC-23. Most of the commercially used HFCs have atmospheric lifetimes of less than 15 years (e.g., HFC-134a, which is used in automobile air conditioning and refrigeration, has an atmospheric life of 14 years) (USEPA 2023b).

Perfluorocarbons. PFCs are colorless, highly dense, chemically inert, and nontoxic. There are seven PFC gases: perfluoromethane (CF_4), perfluoroethane (C_2F_6), perfluoropropane (C_3F_8), perfluorobutane (C_4F_{10}), perfluorocyclobutane (C_4F_8), perfluoropentane (C_5F_{12}), and perfluorohexane (C_6F_{14}). Natural geological emissions have been responsible for the PFCs that have accumulated in the atmosphere in the past; however, the largest current source is aluminum production, which releases CF_4 and C_2F_6 as byproducts. The estimated atmospheric lifetimes for CF_4 and C_2F_6 are 50,000 and 10,000 years, respectively (USEPA 2023b).

Nitrogen Trifluoride. NF_3 is an inorganic, colorless, odorless, toxic, nonflammable gas used as an etchant in microelectronics. NF_3 is predominantly employed in the cleaning of the plasma-enhanced chemical vapor deposition chambers in the production of liquid crystal displays and silicon-based thin film solar cells. In 2009, NF_3 was listed by California as a potential GHG to be listed and regulated under AB 32 (Section 38505 Health and Safety Code).

Sulfur Hexafluoride. SF_6 is an inorganic compound that is colorless, odorless, nontoxic, and generally nonflammable. SF_6 is primarily used as an electrical insulator in high voltage equipment. The electric power industry uses roughly 80percent of all SF_6 produced worldwide. Leaks of SF_6 occur from aging equipment and during equipment maintenance and servicing. SF_6 has an atmospheric life of 3,200 years (USEPA 2023c).

Black Carbon. Black carbon is the most strongly light-absorbing component of PM emitted from burning fuels such as coal, diesel, and biomass. Black carbon contributes to climate change both directly by absorbing sunlight and indirectly by depositing on snow and by interacting with clouds and affecting cloud formation. Black carbon is considered a short-lived species, which can vary spatially and, consequently, it is very difficult to quantify associated global-warming potentials. The main sources of black carbon in California are wildfires, off-road vehicles (locomotives, marine vessels, tractors, excavators, dozers, etc.), on-road vehicles (cars, trucks, and buses), fireplaces, agricultural waste burning, and prescribed burning (planned burns of forest or wildlands). California has been an international leader in reducing emissions of black carbon, including programs that target reducing PM from diesel engines and burning activities (CARB 2013).

4.1.2 Global Warming Potential

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential (GWP).

Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted. Based on a 100-year time horizon, Methane traps over 25 times more heat per molecule than CO_2, and N_2O absorbs roughly 298 times more heat per molecule than CO_2. Additional GHGs with high GWP include NF_3, SF_6, PFCs, and black carbon.

4.1.3 Sources of Greenhouse Gas Emissions

On a global scale, GHG emissions are predominantly associated with activities related to energy production; changes in land use, such as deforestation and land clearing; industrial sources; agricultural activities; transportation; waste and wastewater generation; and commercial and residential land uses. World-wide, energy production including the burning of coal, natural gas, and oil for electricity and heat is the largest single source of global GHG emissions.

United States of America

In 2022, net GHG emissions in the United States totaled 5,489 $MMTCO_2e$, an increase of one percent when compared to 2021 emissions. Within the United States, the largest contributor to GHG emissions is the transportation sector (28 percent). The next largest contributors are from electricity production (25 percent) and industry (23 percent), followed by the commercial and residential sector (13 percent) and the agricultural sector (10 percent). Transportation emissions primarily come from burning fossil fuels for cars, trucks, ships, trains, and planes. Over 90 percent of the fuel used for transportation is petroleum-based, which includes primarily gasoline and diesel. The bulk of emissions generated from energy production come from burning fossil fuels, mostly coal and natural gas. Industry emissions are also primarily generated from fossil fuels burned for heat, the use of certain products that contain GHGs, and the handling of waste. Similar to industry sector emissions, commercial and residential uses arise primarily from fossil fuels for heat, the use of certain products that contain GHGs, and the handling of waste. Agricultural emissions come from livestock such as cows, agricultural soil, and rice production. The land use and forestry sector within the U.S. serves as a carbon sink. Carbon sinks absorb CO_2 from the atmosphere. Land areas across the U.S. absorbed approximately 12 percent of the 2021 GHG emissions (USEPA 2024d).

California

In 2022, GHG emissions within California totaled 371.1 $MMTCO_2e$. Similar to national emissions, in California, the transportation sector is the largest contributor. Transportation emissions account for approximately 39 percent of the total statewide GHG emissions. The majority of transportation emissions are derived from passenger vehicles and heavy-duty trucks. Emissions associated with industrial uses are

the second largest contributor, totaling roughly 23 percent. Industrial emissions are driven by fuel combustion from sources that include refineries, oil and gas extraction, cement plants, and the portion of cogeneration emissions attribution to thermal energy output. Electricity generation (in-state and imports) totaled roughly 16 percent. Other GHG sources include agriculture (8 percent), residential (8 percent), and commercial (6 percent) (CARB 2024e).

4.1.4 Effects of Global Climate Change

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, increased air pollution episodes, and the consequence of these effects on the economy.

Within California, climate changes would likely alter the ecological characteristics of many ecosystems throughout the State. Such alterations would likely include increases in surface temperatures and changes in the form, timing, and intensity of precipitation. For instance, historical records are depicting an increasing trend toward earlier snowmelt in the Sierra Nevada. This snowpack is a principal supply of water for the State, providing roughly 50 percent of State's annual runoff. If this trend continues, some areas of the State may experience an increased danger of floods during the winter months and possible exhaustion of the snowpack during spring and summer months. An earlier snowmelt would also impact the State's energy resources. An early exhaustion of the Sierra snowpack may force electricity producers to switch to more costly or non-renewable forms of electricity generation during spring and summer months. A changing climate may also impact agricultural crop yields, coastal structures, and biodiversity. As a result, resultant changes in climate will likely have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry.

4.2 REGULATORY SETTING

There are considerable regulatory actions regarding GHGs and climate change at the State and local level. The following includes the key State and regional regulations applicable to the Project.

4.2.1 State

Assembly Bill 32 and Senate Bill 32

AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. GHGs, as defined under AB 32, include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. Since AB 32 was enacted, a seventh chemical, NF_3, has also been added to the list of GHGs. CARB is the State agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> *Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming*

> *include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

CARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007. Therefore, to meet the State's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. In order to set a framework for the State to meet this target, CARB was tasked with creating a Scoping Plan (as described below). California announced in July 2018 that the State emitted 427 $MMTCO_2e$ in 2016 and achieved AB 32 goals (CARB 2018).

SB 32 was signed into law on September 8, 2016. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit no later than December 31, 2030."

Assembly Bill 1279: The California Climate Crisis

AB 1279 was signed into law in 2022 and establishes the policy of the State to achieve carbon neutrality as soon as possible, but no later than 2045, and maintain net negative GHG emissions thereafter. AB 1279 would also ensure that by 2045 the statewide anthropogenic GHG emissions are reduced by at least 85percent below 1990 levels. The bill would require CARB to ensure that an updated Scoping Plan identifies and recommends measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable carbon dioxide removal and carbon capture, utilization, and storage technologies to complement AB 1279's emissions reduction requirements.

2022 Climate Change Scoping Plan

The 2022 Scoping Plan was approved in December 2022 and assesses progress toward achieving the SB 32 2030 target and laying out a path to achieve carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities (CARB 2022).

Cap-and-Trade Program

CARB administers the State's cap-and-trade program, which covers GHG sources that emit more than 25,000 metric tons of carbon dioxide equivalent per year ($MTCO_2e$/year), such as refineries, power plants, and industrial facilities. This market-based approach to reducing GHG emissions provides economic incentives for achieving GHG emission reductions.

Senate Bill 375: The Sustainable Communities and Climate Protection Act of 2008

SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits more than 40 percent of the total GHG emissions in California. SB 375 states, “Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32.” SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

CARB has prepared a Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets in 2018 which set updated GHG reduction targets for metropolitan planning organizations for 2020 and 2035. Pursuant to SB 375, the SCAG reduction targets for per capita vehicular emissions were 8 percent by 2020 and are 13 to 19 percent by 2035 (CARB 2024c).

Assembly Bill 1493: Pavley Regulations and Fuel Efficiency Standards

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations and fuel efficiency standards that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by USEPA’s denial of an implementation waiver. USEPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011.

The standards were phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards resulted in an approximately 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards resulted in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation, rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for AB 1493 was incorporated into Amendments to the Low-Emission Vehicle Program, referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Cars program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation would reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The rules would reduce pollutants from gasoline and diesel-powered cars and would deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulations would also provide adequate fueling infrastructure for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

Senate Bill 1368: Emission Performance Standards

Enacted in 2006, SB 1368 directs the California Public Utilities Commission (CPUC) to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than five years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant.

Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The CPUC adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 pounds of CO_2 per megawatt-hour.

Senate Bill 1078: Renewable Electricity Standards

SB 1078 (September 12, 2002) required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, the governor signed Executive Order (EO) S-14-08, which established the Renewable Portfolio Standard (RPS) target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. EO S-21-09 directed CARB to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010, by Resolution 10-23. In 2011, the State legislature adopted this higher standard in SB X1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

SB 350 (October 7, 2015) reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies toward a regional electricity grid, and improved infrastructure for electric vehicle charging stations.

Senate Bill 100: California Renewables Portfolio Standard Program

SB 100 (September 10, 2018) revised the RPS goals to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030. The bill also establishes a State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of

electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order S-01-07: Low Carbon Fuel Standard

EO S-01-07 was signed on January 18, 2007. The EO mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the EO established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in an implementation plan for the State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007, and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the LCFS on April 23, 2009.

The LCFS was subject to legal challenge in 2011. Ultimately, CARB was required to bring a new LCFS regulation for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS and new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The Office of Administrative Law approved the regulation on November 16, 2015. The regulation was last amended in 2019, and approved on May 27, 2020. The 2019 amendments provide clarification related to the Clean Fuel Reward program costs, credit transactions, fuels transactions and compliance reporting. Additional amendments have been proposed and are going to approval hearings in March 2024 (CARB 2024d).

Executive Order S-13-08: Climate Adaptation Strategy

EO S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in this EO, the 2009 California Climate Adaptation Strategy was adopted, which is the "… first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-48-18: Zero-Emission Vehicles

In January 2018, Governor Brown signed EO B-48-18 requiring all State entities to work with the private sector to have at least 5 million zero emission vehicles (ZEVs) on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle charging stations by 2025. It specifies that 10,000 of the electric vehicle charging stations should be direct current fast chargers. This order also requires all State entities to continue to partner with local and regional governments to streamline the installation of

ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Design Guidebook and update the 2015 Hydrogen Station Permitting Guidebook to aid in these efforts. All State entities are required to participate in updating the 2016 Zero-Emissions Vehicle Action Plan to help expand private investment in ZEV infrastructure with a focus on serving low-income and disadvantaged communities. Additionally, all state entities are to support and recommend policies and actions to expand ZEV infrastructure at residential land uses, through the LCFS Program and recommend how to ensure affordability and accessibility for all drivers.

Executive Order N-79-20

In September 2020, Governor Newsom signed EO N-79-20, which sets the following goals for the State: 100 percent of in-State sales of new passenger cars and trucks shall be zero-emission by 2035; 100 percent of medium- and heavy-duty vehicles in the State shall be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks; and 100 percent of off-road vehicles and equipment in the State shall be zero-emission by 2035, where feasible.

4.2.2 Regional

SCAG Regional Transportation Plan/Sustainable Communities Strategy

The SCAG is the designated Metropolitan Planning Organization for the following six counties: Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The SCAG develops long-range regional transportation plans, including sustainable communities strategies pursuant to SB 375, growth forecast components, regional transportation improvement programs, regional housing needs allocations, and a portion of the SCAQMD air quality plans (SCAG 2023).

In April 2024, the SCAG Regional Council approved the 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which is entitled Connect SoCal. Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies to increase mobility options and achieve a more sustainable growth pattern (SCAG 2024). The 2024 RTP/SCS supersedes the previous RTP/SCS that was adopted in 2020.

4.2.3 Local

City of Seal Beach General Plan

The City of Seal Beach prepared their General Plan in September 2003 in order to plan for the City's development. The 2013-2021 Housing Element as well as the updated Housing Element include the following goals to promote energy efficiency which would in turn reduce GHG emissions (City of Seal Beach 2003).

- Goal 6: Encourage more efficient energy use in residential developments.

- Policy 6a: Promote energy conservation through “green building” techniques that reduce water consumption, improve energy efficiency and lessen a building’s overall environmental impact.

5.0 ENERGY

5.1 ENVIRONMENTAL SETTING

Within Orange County, energy is provided in the form of petroleum fuel (gasoline and diesel), electricity, and natural gas. In 2022, approximately 13.6 billion gallons of gasoline and approximately 3.1 billion gallons of diesel fuel for motor vehicles was purchased within California (CDTFA 2024).

Southern California Edison (SCE) is the utility company that provides electricity to the City of Seal Beach. In 2022, for their standard power mix, approximately 33.2 percent of SCE's electricity came from renewable resources including solar, wind, geothermal, biomass and small hydroelectric sources. Additionally, approximately 45 percent of SCE's total electric power mix is from GHG-free sources, which includes nuclear and large hydroelectric sources of energy (SCE 2024). In 2022, Orange County consumed approximately 20,244 gigawatt hours (GWh) of electricity, 39 percent of which is attributed to residential land uses (CEC 2016a).

Natural gas is used for cooking, space heating, generating electricity, and as an alternative transportation fuel. Natural gas service is provided to the City by the Southern California Gas Company (SoCalGas). In 2022, Orange County consumed approximately 572 million therms of natural gas, 61 percent of which is attributed to residential land uses (CEC 2016b).

5.2 REGULATORY SETTING

The following includes the key federal, State, and local regulations related to energy resources that are applicable to the Project.

5.2.1 Federal

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. The Federal Energy Regulatory Commission also reviews proposals to build liquefied natural gas terminals and interstate natural gas pipelines as well as licensing hydropower projects. Licensing of hydroelectric facilities under the authority of the Federal Energy Regulatory Commission includes input from State and federal energy and power generation, environmental protection, fish and wildlife, and water quality agencies.

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (42 U.S. Code [USC] Section 8201 et seq.) serves as the underlying authority for federal energy management goals and requirements and is the foundation of most federal energy requirements. The National Energy Conservation Policy Act also established fuel economy standards for on-road motor vehicles in the United States. The National Highway Traffic Safety

Administration (NHTSA) is responsible for establishing additional vehicle standards and for revising existing standards. NHTSA and the USEPA are taking coordinated steps to enable the production of clean energy vehicles with improved fuel efficiency. NHTSA sets the Corporate Average Fuel Economy (CAFE) levels, which are rapidly increasing over the next several years to improve energy security and reduce fuel consumption. In March 2022, the NHTSA finalized CAFE standards for model years 2024 to 2026. The standards require an industry-wide fleet average of approximately 49 miles per gallon for passenger cars and light trucks by model year 2026. The NHTSA projects that the foregoing standards will avoid the consumption of approximately 234 billion gallons of gasoline between model years 2030 to 2050 (NHTSA 2022).

Energy Independence and Security Act of 2007

The Energy Independence and Security Act (EISA) aimed to increase U.S. energy security, increased CAFE standards for motor vehicles, and included provisions related to energy efficiency, such as renewable fuel standards (RFS), appliance and lighting efficiency standards; and building energy efficiency standards. The EISA required increasing levels of renewable fuels to replace petroleum. The USEPA is responsible for developing and implementing regulations to ensure transportation fuel sold into the U.S. contains a minimum volume of renewable fuel.

The RFS programs regulations were developed in collaboration with refiners, renewable fuel products, and other stakeholders and were created under the Energy Policy Act of 2005. The RFS program established the first renewable fuel volume mandate in the U.S. As required under the EISA, the original RFS program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. The RFS program was expanded in several ways that laid the foundation for achieving significant reductions of GHG emissions through the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of the nation's renewable fuels sector. The updated program is referred to as RFS2, and includes the following:

- EISA expanded the RFS program to include diesel, in addition to gasoline;
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- EISA established new categories of renewable fuel and set separate volume requirements for each one; and
- EISA required by the USEPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternate energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Federal Vehicle Standards

The Energy Policy and Conservation Act of 1975 (EPCA) mandated that the NHTSA establish and implement a regulatory program for motor vehicle fuel economy, known as the CAFE program, to reduce

national energy consumption. As codified in Chapter 329 of Title 49 of the USC, as amended by the EISA, EPCA sets forth specific requirements concerning the establishment of average fuel economy standards for passenger cars and light trucks. The EISA, discussed above, amended the EPCA CAFE program requirements by providing the Department of Transportation additional rulemaking authority and responsibilities.

Consistent with its statutory authority in rulemaking to establish CAFE standards for model year 2017 and beyond, NHTSA developed two phases of standards. The first phase included final standards for model years 2017–2021. The second phase, covering model years 2022–2025, included standards that were not final, due to the statutory requirement that NHTSA set average fuel economy standards not more than five model years at a time. Rather, NHTSA wrote that those standards were augural, meaning that they represented its best estimate, based on the information available at that time, of what levels of stringency might be maximum feasible in those model years. In 2012, the agencies jointly adopted more stringent Phase 2 standards for light duty cars and trucks, which would cover model years 2017 through 2025. In August of 2016, the agencies adopted more stringent Phase 2 standards for medium- and heavy-duty vehicles, which would cover model years 2018 through 2027 for certain trailers and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks.

On March 31, 2020, NHTSA and the USEPA released a new rule, the final Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, setting CAFE and carbon dioxide emissions standards for model years 2021 through 2026 passenger cars and light trucks. The rule rolls back the 2012 standards for model years 2021 through 2026 for passenger cars and light trucks, which had required an average fleetwide fuel economy equivalent of 54.5 miles per gallon in model year 2025 with a 5 percent annual increase to an average fuel economy of about 40 miles per gallon in model year 2025 with annual increases of 1.5 percent starting in 2021. As a part of issuing the new SAFE rule, NHTSA issued a Final Environmental Impact Statement which found that the relaxed standards would result in increased petroleum consumption which in turn would result in increases to GHG and criteria pollutant emissions known to contribute to adverse health impacts (NHTSA 2020). The estimated increases from the roll back of the 2012 standards are expected to result in more than a billion metric tons additional climate pollution through 2040 as determined by calculating the difference from the reduction of 2 billion metric tons the 2012 rule was expected to accomplish compared to the standards of the 2020 rule (NHTSA 2020). On January 20, 2021, an EO was issued on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of the Part One Rule by April 2021 and review of the Part Two Rule by July 2021. In response to the Part One Rule, in December 2021, the Department of Transportation withdrew its portions of the SAFE rule. As a result, states are now allowed to issue their own GHG emissions standards and zero-emissions vehicle mandates. In addition, the Part Two Rule was adopted to revise the existing national GHG emission standards for passenger cars and light trucks through model year 2026. These standards are the strongest vehicle emissions standards ever established for the light-duty vehicle sector and will result in avoiding more than three billion tons of GHG emissions through 2050.

Inflation Reduction Act of 2022

The Inflation Reduction Act (IRA) of 2022 is considered the most ambitious climate law in U.S. history, and is intended to reduce GHG emissions, help build a clean economy, reduce energy costs for Americans, and advance environmental justice. With funding from the IRA, the USEPA has launched a network of clean energy financing and provided grant funding for climate pollution reduction programs (USEPA 2024c).

5.2.2 State

California Public Utilities Commission

The CPUC is a State agency created by a constitutional amendment to regulate privately-owned utilities providing telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation services and in-State moving companies. The CPUC is responsible for ensuring that California utility customers have safe, reliable utility services at reasonable rates, while protecting utility customers from fraud. The CPUC regulates the planning and approval for the physical construction of electric generation, transmission, or distribution facilities, and local distribution pipelines of natural gas.

California Energy Code

Compliance with the California Energy Code (CCR Title 24, Part 6, California's Energy Efficiency Standards) and Title 20, Public Utilities and Energy, standards must occur for all new buildings constructed in California. These efficiency standards apply to new construction of both residential and nonresidential (i.e., maintenance buildings and pump station buildings associated with the Program) buildings, and they regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit processes, and local government agencies may adopt and enforce energy standards for new buildings provided that these standards meet or exceed those provided in the Title 24 guidelines.

Warren-Alquist Energy Resources Conservation and Development Act

Initially passed in 1974 and amended since, the Warren-Alquist Energy Resources Conservation and Development Act (Warren-Alquist Act) created the California Energy Commission (CEC), California's primary energy and planning agency. The seven responsibilities of the CEC are forecasting future energy needs, promoting energy efficiency and conservation through setting standards, supporting energy-related research, developing renewable energy resources, advancing alternative and renewable transportation fuels and technologies, certifying thermal power plants 50 megawatts or larger, and planning for and directing State response to energy emergencies. The CEC regulates energy resources by encouraging and coordinating research into energy supply and demand problems to reduce the rate of growth of energy consumption. Additionally, the Warren-Alquist Act acknowledges the need for renewable energy resources and encourages the CEC to explore renewable energy options that would be in line with environmental and public safety goals (Warren-Alquist Act Public Resources Code (PRC) section 25000 et seq.)

California Integrated Energy Policy

SB 1389 requires the CEC to "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the State's economy, and protect public health and safety." (PRC Section 25301(a)). The CEC adopts an Integrated Energy Policy Report every two years and an update every other year. The most recent version is the 2022 Integrated Energy Policy Report Update (CEC 2022).

California Renewables Portfolio Standard

California's RPS was initially established in 2002 by SB 1078, with the initial requirement that 20 percent of electricity retail sales be served by renewable resources by 2017. The program was accelerated in 2006 under SB 107, which required that the 20 percent mandate be met by 2010. In April 2011, SB 2 was signed into law, requiring electricity retailers in the State to procure 33 percent of their energy sources from renewable energy sources by the end of 2020 (CPUC 2021). In addition, SB 350, passed in 2015, directs California utilities to further increase the amount of renewable energy delivered to customers to 50 percent by 2030.

CPUC implements and administers RPS compliance rules for California's retail sellers of electricity, which include large and small investor-owned utilities, publicly owned utilities, electric service providers, and community choice aggregators. The CEC is responsible for the certification of electrical generation facilities as eligible renewable energy resources and adopting regulations for the enforcement of RPS procurement requirements of public owned utilities.

5.2.1 Local

City of Seal Beach General Plan

The City of Seal Beach prepared their General Plan in September 2003 in order to plan for the City's development. The 2013-2021 Housing Element as well as the updated Housing Element include the following goals to promote energy efficiency (City of Seal Beach 2003).

- Goal 6: Encourage more efficient energy use in residential developments.
    - Policy 6a: Promote energy conservation through "green building" techniques that reduce water consumption, improve energy efficiency and lessen a building's overall environmental impact.

6.0 METHODOLOGY AND MODELING PARAMETERS

The following discussion explains the methodology and modeling parameters that will be used to estimate air quality and GHG emissions, potential health risks, and energy demand associated with implementation of the Project.

6.1 CRITERIA POLLUTANT AND GHG EMISSION METHODS

The California Emissions Estimator Model (CalEEMod) is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects. CalEEMod quantifies direct GHG emissions, such as construction and operational activities and vehicle use, and indirect emissions, such as energy use, solid waste disposal, vegetation planting and/or removal, and water use. Further, CalEEMod identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user.

CalEEMod was developed for the California Air Pollution Control Officers Association in collaboration with the California Air Districts. Default data (e.g., emission factors, trip lengths, meteorology, source inventory) have been provided by the various California Air Districts to account for local requirements and conditions. CalEEMod is a comprehensive tool for quantifying air quality impacts from land use projects located throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable, such as preparing CEQA or National Environmental Policy Act documents, conducting pre-project planning, and, verifying compliance with local air quality rules and regulations, etc.

CalEEMod Version 2022.1.1.28 was used to estimate construction and operational impacts of the Project.

6.1.1 Modeling Assumptions

Impacts resulting from implementation of the Project are assessed at a programmatic level because specific information for buildout of each Housing Opportunity Site is not available at this time. In the absence of specific thresholds of significance for programmatic analyses, this analysis broadly evaluates Project consistency with the applicable air quality plan (2022 AQMP) and GHG reduction plans (SCAG's RTP/SCS and CARB's 2022 Scoping Plan). In addition, short-term construction emissions of criteria pollutants and GHGs are estimated based on a reasonably foreseeable subcomponent of the Project, and long-term operational emissions are estimated assuming full buildout of the Project.

Construction at Housing Opportunity Site 4

Construction emissions were estimated for the most emissions-intensive Project component, which is expected to be buildout of Housing Opportunity Site 4 as this site could accommodate the most housing

units (see Table 1). At maximum buildout, Housing Opportunity Site 4 can accommodate 552 high-density residential units at a density of 46 dwelling units per acre.

Construction was assumed to begin in early 2025. The construction schedule, off-road equipment types and usage, and worker vehicle trips were left as model default values. Additional haul truck trips were added (10 one-way trips per day during demolition and 15 one-way trips per day during site preparation) to account for the potential off-hauling of demolished building materials and/or soil import or export. It was assumed that 100 percent of off-site worker, vendor, and haul truck trips would occur on paved roadways consistent with defaults for Orange County. The CalEEMod results are included in Appendix A. Daily emissions were quantified for the construction of Housing Opportunity Site 4 and assessed in comparison to the SCAQMD significance thresholds. In addition, a qualitative assessment of construction of all Project components is included in the analysis.

Operation of Full Project Buildout

Buildout of the Project would generate air pollutant and GHG emissions from on-road vehicle travel (mobile sources), consumer products and landscaping (area sources), and natural gas combustion (energy sources). Operational emissions associated with the Project were estimated for the year 2029, estimated buildout of the Project, using CalEEMod and compared to the SCAQMD thresholds of significance. The trip generation rate for each land use was updated to be consistent with the Project-specific VMT Assessment prepared by Stantec Consulting Inc, and the trip lengths and purposes were left as CalEEMod defaults. The CalEEMod results are included in Appendix A.

6.2 ENERGY CALCULATION METHODS

Project energy demand during construction and operations was determined based on the modeling that was conducted for the Project using CalEEMod and using vehicle and equipment emission factors from the CARB's EMFAC2021 (v1.0.2) and EMFAC OFFROAD2021 (v1.0.5). The energy calculations are included as Appendix B.

Construction energy use was calculated for the most energy-intensive future development under the Project, which is expected to be buildout of Housing Opportunity Site 4 as this site could accommodate the most housing units. At maximum buildout, Housing Opportunity Site 4 can accommodate 552 high-density residential units at a density of 46 dwelling units per acre. For operation, energy-use was calculated for 1,773 residential units.

7.0 AIR QUALITY IMPACT ANALYSIS

7.1 CEQA GUIDELINES

According to the CEQA Guidelines' Appendix G Environmental Checklist, the following questions are analyzed and evaluated to determine whether impacts related to air quality are considered to be significant environmental effects.

Where available, the significance criteria established by the applicable air quality management or air pollution district may be relied upon to make the following determinations.

Would the Project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?

c) Expose sensitive receptors to substantial pollutant concentrations?

d) Result in other emissions (such as those leading to odors) affecting a substantial number of people?

7.1.1 Thresholds of Significance

Pursuant to Section 15064(b) of the CEQA Guidelines, the final determination of whether a project is significant is within the purview of the Lead Agency. The SCAQMD has adopted mass daily thresholds of significance for NOx, VOC, PM_{10}, $PM_{2.5}$, SOx, CO, and Pb to determine the significance of a project's potential air quality impacts. Table 5, below, presents the mass daily thresholds applied to the Project and used for purposes of this analysis.

Table 5. SCAQMD Air Quality Significance Thresholds

Mass Emissions Thresholds	Emissions (lbs/day)						
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	Pb
Construction	75	100	550	150	150	55	3
Operation	55	55	550	150	150	55	3

Notes: N/A = not applicable
Source: SCAQMD 1993.

The SCAQMD has also developed Localized Significance Thresholds (LSTs) for NOx, PM_{10}, $PM_{2.5}$, and CO. The LSTs are intended to represent the maximum emissions from a project that would not cause or contribute to an exceedance of the CAAQS or NAAQS, and were developed based on the ambient

concentrations of each criteria pollutant at specific source receptor areas. It is noted that the use of LSTs is a voluntary approach to analysis and may implemented at the discretion of local agencies (SCAQMD 2008a). SCAQMD only recommends the use of LSTs for projects under 5 acres in size. Accordingly, the LSTs are not applicable for the Project, which includes approximately 44.25 acres of development space.

According to SCAQMD, a significant health impact would occur if a project would result in an incremental cancer risk that exceeds 10 persons in one million, or the chronic and acute risks exceed a calculated Hazard Index value of 1.0.

7.2 AIR IMPACT ANALYSIS

Impact AIR-1 Conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

Air districts are required to prepared air quality plans to identify strategies to bring regional emissions into compliance with federal and State air quality standards. As noted previously, the SCAB is designated as a non-attainment area for both the federal and State standards for O_3 and $PM_{2.5}$, the State standard for PM_{10}, and the federal standard for lead (SCAQMD 2016a). Accordingly, SCAQMD, in collaboration with CARB and SCAG, has prepared air quality plans, including the 2022 AQMP, to achieve attainment of the applicable ozone and PM standards. The SCAG's RTP/SCS is also considered an applicable air quality plan. Project consistency with the SCAG RTP/SCS is evaluated in Table 12.

The 2022 AQMP was adopted in December 2022 and represents the most updated regional blueprint for achieving the federal air quality standards and minimizing public health concerns related to air quality. The 2022 AQMP particularly focuses on attainment of the 2015 8-hour ozone NAAQS. The Project would be considered to conflict with the 2022 AQMP if it would:

1. Contribute to exceedances and/or delay attainment of the ozone standards;
2. Result in an exceedance of the planned growth within the project area; or
3. Interfere with implementation of the ozone reduction measures established in the AQMP.

With regard to Item 1, air districts establish emissions thresholds to demonstrate the point at which a project would be considered to increase the regional air quality violations. As described in further detail under Impact AIR-2, construction and operations of the residential development facilitated by the Project is anticipated to exceed the threshold of significance established by the SCAQMD for VOC emissions even with implementation of Mitigation Measures AQ-1 and AQ-2. VOC is an ozone precursor and, by exceeding the VOC threshold of significance, cumulative buildout of the Project may delay attainment of the ozone AAQS.

With regard to Item 2, the population projections in the SCAQMD's 2022 AQMP are based on the regional growth projections included in the SCAG's 2020 RTP/SCS (SCAQMD 2022). According to the Demographics and Growth Forecast Technical Report prepared for the 2020 RTP/SCS, the City of Seal Beach housing stock is projected to grow from 13,100 households in 2016 to 13,300 households in 2045 (SCAG 2020). The City's household growth projected in the 2020 RTP/SCS, and therefore in the 2022 AQMP, is less than what is planned in the Housing Element, which considers up to 1,773 new residential units by 2029. Implementation of the Project would result in household and population growth that exceeds the projections in the 2022 AQMP and, as a result, the Project is expected to result in emissions that are higher than what was planned for the City in the 2022 AQMP.

With regard to Item 3, the 2022 AQMP notes that attaining the 2015 8-hour ozone standard by 2037 will require both continuation and acceleration of existing ozone reduction strategies, as well as deployment of new strategies. Proposed measures to reduce ozone include stationary and mobile source NOx reduction strategies, supplemented by strategic VOC emission reductions. The following ozone reduction measures identified in the 2022 AQMP are relevant to residential land uses:

- R-CMB-01: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Water Heating
- R-CMB-02: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Space Heating
- R-CMB-03: Emissions Reductions from Residential Cooking Devices
- R-CMB-04: Emission Reductions from Replacement with Zero Emission or Low NOx Appliances – Residential Other Combustion Sources
- CTS-01: Further Emission Reductions from Coatings, Solvents, Adhesives, and Lubricants

Each of the foregoing measures are intended for implementation at the local or regional government level, rather than the project level. For example, the 2022 AQMP notes that each measure shall be implemented by (1) adopting a new rule to require compliance and (2) offering incentive funds to facilitate adoption of low-emissions technologies. Because the measures are not directly applicable to the Project, development facilitated under the Project would not interfere with implementation of the air quality improvement strategies established in the AQMP.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. The residential components of the ORCC Specific Plan would increase the total residential units to 1,773 and would further increase the Project's household and population growth that exceeds the projections in the 2022 AQMP. Additionally, the impacts from construction of a larger residential development were evaluated within Table 3.2-5 below. Additionally, operational impacts from the total 1,773 units were evaluated within Table 3.2-6 and 3.2-7. Emissions were found to exceed thresholds and therefore, the 167 residential units proposed under the ORCC

Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

Because the Project could contribute to a delay in attainment of the ozone AAQS and would result in an exceedance of the planned growth within the City, the Project could conflict with or obstruct implementation of the applicable air quality plan. Even with the implementation of mitigation, the impact remains significant and unavoidable.

Level of Significance Before Mitigation

Significant Impact.

Mitigation Measures

MM AQ-1. **Quantify Construction Criteria Pollutant Emissions.** Prior to discretionary approval by the City for development projects subject to CEQA review, project applicants shall prepare and submit a technical air quality assessment estimating project construction-related criteria pollutant emissions to the City for review and approval. The evaluation shall be prepared in accordance with SCAQMD guidance. If construction-related criteria pollutant emissions are determined to have the potential to exceed the SCAQMD regional and localized thresholds of significance, emission reduction measures shall be incorporated into the project to the maximum extent feasible, subject to the discretion of the City. Acceptable options for reducing emissions may include:

- Using construction equipment rated by the United States Environmental Protection Agency as having Tier 4 emission limits for engines above 50 horsepower.
- Require all paints and architectural coatings to be super-compliant VOC content (0 grams/Liter [g/L] to 10 g/L). If VOC emissions still exceed thresholds, then the applicant may elect to prohibit architectural coating activities during summer months (June, July, and August) when ozone formation peaks.

Regardless of the results of the emissions modeling, the following best practices shall be implemented throughout the duration of all construction activity:

- All off-road equipment operating at the construction site must be maintained in proper working condition according to manufacturers' specifications.
- Idling shall be limited to 5 minutes or less in accordance with the Off-Road Diesel Fueled Fleet Regulation as required by CARB.
- Clear Signage regarding idling restrictions shall be placed at the entrances to the construction site.

- Portable equipment over 50 horsepower must have either a valid SCAQMD Permit to Operate (PTO) or a valid statewide Portable Equipment Registration Program (PERP) placard and sticker issued by CARB.
- Water all active construction areas at least three times daily, or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Pave, apply water three times daily or as often as necessary to control dust, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.

MM AQ-2. **Quantify Operational Criteria Pollutant Emissions.** Prior to discretionary approval by the City for development projects subject to CEQA review, project applicants shall prepare and submit a technical air quality assessment estimating project operational-related criteria pollutant emissions to the City for review and approval. The evaluation shall be prepared in accordance with SCAQMD guidance. If operational-related criteria pollutant emissions are determined to have the potential to exceed the SCAQMD thresholds of significance, emission reduction measures shall be incorporated into the project to the maximum extent feasible, subject to the discretion of the City. Acceptable options for reducing operational emissions may include, but are not limited to, the following:

- Prohibition of natural gas hearths.
- Installation of solar water heaters or tankless water heaters.
- Exceeding Title 24 energy standards.
- Constructing Level 2 EV charging stations for multi-family developments and pre-wiring to allow for Level 2 EV charging stations in single-family residential garages.
- Require all paints and architectural coatings to be super-compliant VOC content (0 to 10 g/L).

Level of Significance After Mitigation

Significant and Unavoidable Impact.

Impact AIR-2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard?

Impact Analysis

In developing thresholds of significance for air pollutants, the SCAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If an individual project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. As noted previously, the Project does not propose any individual development projects at this time but, rather, would facilitate the future development of up to 1,773 residential units as identified in the Housing Element.

Construction Emissions

Construction activities facilitated by the Project would result in emissions of criteria pollutants due to the use of off-road equipment, heavy-duty haul trucks, and employee commutes to and from the construction sites. In addition, fugitive dust would be generated from earth-moving activities. Emissions from construction-related activities are generally short-term in duration but may still cause adverse air quality impacts.

Specific buildout details of each Project component are not available at this time; accordingly, this analysis presents estimated construction emissions associated with the most emissions-intensive component of the Project, which entails buildout of Housing Opportunity Site 4. Housing Opportunity Site 4 totals 27 acres, 12 acres of which can be developed, and was modeled to accommodate 552 multi-family units, based on the maximum allowable buildout. The estimated criteria pollutant emissions associated with construction of Housing Opportunity Site 4 are presented in Table 6.

Table 6. Construction of Housing Opportunity Site 4 – Criteria Pollutant Emissions

	Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Construction of Housing Opportunity Site 4	166.23	13.78	36.26	0.04	6.14	1.77
SCAQMD Threshold of Significance	**75**	**100**	**550**	**150**	**150**	**55**
Exceed Threshold?	***Yes***	***No***	***No***	***No***	***No***	***No***

Source: Appendix A.

As shown above, buildout of Housing Opportunity Site 4, which is expected to be the most emissions-intensive component of the Project, may generate construction emissions that exceed SCAQMD mass daily thresholds for VOC. These emission calculations are based on CalEEMod default factors based on land use type and size which are generally more conservative than project-specific inputs. However,

performing more specific emissions calculations for any of the Housing Opportunity Areas or the MSSP to determine significance on a project site by project site basis would be speculative.

Future housing development facilitated by the Project would be subject to discretionary permits and future CEQA review. However, since the largest Housing Opportunity site exceeds SCAQMD thresholds, other sites may result in potentially significant emissions due to a more intensive construction timeline, additional demolition and grading, or additional construction trips. Under Mitigation Measure AQ-1, each component facilitated by the Project would be required to quantify construction emissions and, if emissions exceed the applicable thresholds, the component would reduce emissions to the maximum extent feasible, including through the use of super-compliant VOC coatings. While Mitigation Measure AQ-1 would reduce construction exhaust emissions, potential future development projects accommodated under the Project, both individually and cumulatively, could still exceed the SCAQMD significance thresholds for construction. As a result, the cumulative impact from construction of the Project remains significant and unavoidable.

Operational Emissions

Implementation of the Project and the residential components of the ORCC Specific Plan Project would result in future development of up to 1,773 new residential units. Emissions during operation of the Project would be generated primarily from resident vehicle trips to and from the sites (mobile sources). In addition, the buildout facilitated by the Project would generate emissions from area sources, which include the use of fireplaces, consumer products, landscaping equipment, and others. Estimated operational emissions from cumulative Project buildout are presented in Table 7. As shown in the table, full buildout of the residential units facilitated by the Project would result in VOC emissions that exceed the applicable SCAQMD threshold. Therefore, Mitigation Measure AQ-2 is required.

As required by Mitigation Measure AQ-2, each component facilitated by the Project would be required to quantify their individual operational emissions and, if emissions exceed the applicable thresholds, the component would reduce emissions to the maximum extent feasible. For this example, architectural coatings were limited to those with a VOC content less than 10 grams per liter. The emissions that would occur from operations with the implementation of mitigation are presented in Table 8.

Table 7. Project Operations – Criteria Pollutant Emissions (Unmitigated)

Source	Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Mobile	28.4	22.3	253	0.70	71.0	18.3
Area	50.0	0.00	101	<0.005	0.05	0.04
Energy	0.36	6.08	2.59	0.04	0.49	0.49
Total[1]	*79.0*	*28.3*	*356*	*0.75*	*71.5*	*18.8*
SCAQMD Threshold of Significance	**55**	**55**	**550**	**150**	**150**	**55**
Exceed Threshold?	***Yes***	***No***	***No***	***No***	***No***	***No***

Source: Appendix A.

Source	Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**

[1] Totals may not appear to sum due to rounding.

Table 8. Project Operations – Criteria Pollutant Emissions (Mitigated)

Source	Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Mobile	28.6	22.3	253	0.70	71.0	18.3
Area	40.7	0.00	0.00	0.00	0.00	0.00
Energy	0.33	5.61	2.39	0.04	0.45	0.45
Total	*69.6*	*27.9*	*255*	*0.74*	*71.45*	*18.7*
SCAQMD Threshold of Significance	**55**	**55**	**550**	**150**	**150**	**55**
Exceed Threshold?	***Yes***	***No***	***No***	***No***	***No***	***No***

Source: Appendix A.

As shown above, even with mitigation, operational emissions of VOC would exceed the threshold of significance. While Mitigation Measure AQ-2 would reduce operational emissions, cumulative future development projects accommodated under the Project could still exceed the SCAQMD significance thresholds. As a result, the cumulative impact from operations of the Project remains significant and unavoidable.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. The impacts from construction of a larger residential development were evaluated within Table 3.2-5. Additionally, operational impacts from the total 1,773 units were evaluated within Tables 3.2-6 and 3.2-7. Therefore, the 167 residential units proposed under the ORCC Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

As shown in Table 6, construction emissions of the most intensive Project component would exceed the applicable threshold of significance for VOC emissions. Even with implementation of Mitigation Measure AQ-1, a significant impact may occur. Additionally, as presented in Table 8, even with implementation of Mitigation Measure AQ-2, operational criteria pollutant emissions could exceed the applicable thresholds of significance. Therefore, the Project could result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or State ambient air quality standard, and the impact would be significant and unavoidable.

Level of Significance Before Mitigation

Significant Impact.

Mitigation Measures

Mitigation Measure AQ-1 and AQ-2 are required.

Level of Significance After Mitigation

Significant and Unavoidable Impact.

Impact AIR-3 Expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

As discussed above, the Project itself does not propose any development; however, the Project would facilitate future development of up to 1,773 residential units throughout the City. The candidate housing sites were evaluated at a programmatic level, and no air modeling was conducted for this analysis.

This discussion qualitatively addresses whether implementation of the Project would expose sensitive receptors to construction-generated fugitive dust (PM_{10}), Valley fever spores, naturally occurring asbestos (NOA), construction-generated DPM, or operational related TACs.

According to CARB, some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. As noted previously, the identified Housing Opportunity Sites, Main Street Program, and the residential component of the ORCC Specific Plan Project contain and are located adjacent to various sensitive uses, primarily single- and multi-family residences.

Construction Emissions

During construction associated with the Project, the potential exists for emissions of fugitive dust, Valley fever, NOA, and DPM to be released. Each TAC is discussed separately below.

Fugitive Dust and Valley Fever

Fugitive dust would be generated during construction facilitated by the Project. As noted previously, Valley fever is an infection caused by inhalation of the spores of a fungus, *C. immitis*, that lives in soil. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

Most of the fugitive dust generated during construction activities would remain localized and would be deposited near each construction site. Additionally, SCAQMD Rule 403, Fugitive Dust, limits the discharge of PM emissions and establishes Best Available Control Measures that are applicable to all construction activities (SCAQMD 2005). Consistent with the SCAQMD Best Available Control Measures, construction of each component facilitated by the Project would be required to use water trucks to stabilize soils. In addition, the City of Seal Beach is generally built out; therefore, much of the development facilitated by the Project would occur in urban areas where conditions are generally not dry, dusty, or windy. Furthermore, as required by Mitigation Measure AQ-2, development of each component subject to discretionary approval shall evaluate their individual construction emissions. If the component is determined to result in PM emissions that exceed the SCAQMD thresholds, then minimization measures would be incorporated to reduce PM emissions to the maximum extent feasible. Overall, construction activities associated with future development facilitated by the Project would not result in sensitive receptor exposure to substantial concentrations of fugitive dust, including dust that may contain *C. immitis* spores.

Asbestos

Construction in areas of rock formations that contain NOA could release asbestos to the air and pose a health hazard. A review of the map with areas more likely to have rock formations containing NOA in California indicates that there is no known asbestos in the City of Seal Beach (USGS 2011). Therefore, construction of the Project would not expose sensitive receptors to NOA.

Many of the components of the Project would entail demolition of existing structures in order to accommodate new housing. For buildings constructed prior to 1980, the Code of Federal Regulations (29 CFR 1926.1101) states that all thermal system insulation and surface materials must be designated as “presumed asbestos containing material” unless proven otherwise. ACBMs could include, but are not limited to, plaster, ceiling tiles, thermal systems insulation, floor tiles, vinyl sheet flooring, adhesives, and roofing materials. Compliance with SCAQMD Rule 1403, Asbestos Emissions from Demolition/Renovation Activities, would ensure that any ACBMs encountered during construction activities are handled appropriately, and risks to existing sensitive receptors would not occur.

Localized Significance Thresholds

SCAQMD has established localized significance thresholds for NOx, CO, PM_{10}, and $PM_{2.5}$ to determine the risk of elevated levels of ozone precursors and particulate matter at nearby receptors. Thresholds were established based on an individual project’s size, location, and distance to receptors. However, SCAQMD established in the PEIR for the 2016 AQMP that the LST screening methodology is not applicable to regional projects such as local general plans, specific plans, or air quality plans since the individual project plans are typically not known at plan adoption (SCAQMD 2016b). Therefore, since the analysis is evaluating the buildout of the Housing Element, a localized construction analysis would be speculative for individual projects. However, with implementation of Mitigation Measure AQ-1, the Project would be required to quantify the individual construction emissions and reduce as feasible below SCAQMD thresholds.

Diesel Particulate Matter

Exposure to DPM from diesel vehicles and off-road construction equipment can result in health risks to nearby sensitive receptors. Pollutant concentrations are typically highest near sources of emissions and dissipate with distance. Thus, the sensitive receptors in and adjacent to each of the Housing Opportunity Sites would be the most susceptible to adverse health effects resulting from construction-related DPM emissions. The actual level of risk would depend on a variety of factors that can only be determined once the specifics of a project are known. Since the details regarding future construction activities are not known at this time, including phasing of future individual projects, construction duration and phasing, and preliminary construction equipment, preparation of a meaningful HRA is not possible at the plan level. Rather, Mitigation Measure AQ-3 is required to assess the potential impact associated with exposing sensitive receptors to substantial concentration of DPM. Since health risks are a factor of duration of exposure, source emission rates, and distance of the receptor, an individual's health risks during construction may still be significant and unavoidable.

Operational Emissions

The greatest potential for exposure to TACs during long-term operations is from the use of heavy-duty diesel trucks and stationary generators that use diesel fuel. The Project would facilitate development of up to 1773 residential units throughout the City. The majority of vehicle trips associated with the Project would be from residents and, as a result, future development associated with the Project would result in very few diesel truck trips. Additionally, the residential units developed under the Project are not expected to include any stationary generators. Should a generator be proposed as part of a future development under the Project, the project would be required by SCAQMD to evaluate the impacts of the generator as part of obtaining a Permit to Operate. For these reasons, once operational, the Project would not be expected to expose nearby sensitive receptors to substantial amounts of TACs.

During operations, dust emissions would be negligible because most of the Project area would be occupied by buildings, pavement, and landscaped areas. This would preclude the possibility of Project operations resulting in exposure to fugitive dust emissions and *C. immitis* spores that may result in Valley fever infection.

As noted above, SCAQMD has established localized significance thresholds for NOx, CO, PM_{10}, and $PM_{2.5}$ to determine the risk of elevated levels of ozone precursors and particulate matter at nearby receptors. A localized operational analysis would be speculative for individual projects. However, with implementation of Mitigation Measure AQ-2, the Project would be required to quantify the individual operational emissions and reduce as feasible below SCAQMD thresholds.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. The impacts from construction and operation of the residential component of the ORCC Specific Plan may result in impacts to health risks. Construction of the residential component of the ORCC Specific Plan Project would still be required to comply with all SCAQMD applicable rules and regulations pertaining to dust control and permitting and therefore, the 167

residential units proposed under the ORCC Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

Based on the analysis above, during construction, the Project could expose sensitive receptors to substantial pollutant concentrations. With implementation of Mitigation Measure AQ-3, the impact would be reduced to the maximum extent feasible. However, the impact may remain significant and unavoidable.

Level of Significance Before Mitigation

Significant Impact.

Mitigation Measures

Mitigation Measures AQ-1 and AQ-2 are required.

MM AQ-3. **Construction Health Risk Assessment.** Prior to future discretionary project approval for any component that would involve construction lasting more than 2 months and within 1,000 feet of sensitive receptors, the project applicant shall submit a construction health risk assessment (HRA) to the City for review and approval. The level of detail required for the HRA is described below:

A quantitative health risk assessment shall be prepared in accordance with SCAQMD and OEHHA guidance to identify the potential for increased cancer and non-cancer health risks. If the health risks do not exceed the applicable thresholds, further mitigation is not necessary. If the resultant health risks are determined to exceed SCAQMD thresholds of significance, the applicant shall implement measures to reduce DPM exhaust emissions and associated risks to below the applicable thresholds. Methods may include requiring the use of off-road equipment engines that meet or exceed CARB's Tier 4 Final engine emissions standards for off-road equipment exceeding 50 horsepower (hp).

Any emissions reduction measures identified in the HRA shall be incorporated into the site development plan as a component of the project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Community Development Department clearly show incorporation of all applicable mitigation measures.

Level of Significance After Mitigation

Significant and Unavoidable Impact.

Impact AIR-4 Result in other emissions (such as those leading to odors) affecting a substantial number of people?

Impact Analysis

While offensive odors rarely cause any physical harm, they can still be unpleasant, leading to distress among the public and often generating citizen complaints. The occurrence and severity of odor impacts depends on numerous factors, including nature, frequency, and intensity of the source, the wind speed and direction, and the sensitivity of the receptor.

Construction activities facilitated by the Project could result in short-term odorous emissions from diesel exhaust associated with diesel-fueled equipment. However, these emissions would be intermittent and would dissipate rapidly from the source. Construction of all components facilitated by the Project would also be required to comply with all applicable SCAQMD rules and regulations, particularly associated with permitting of air pollutant sources. Compliance with the aforementioned regulations would help to minimize emissions, including emissions leading to odors.

The SCAQMD has identified land uses commonly subject to odor complaints. These land uses include agriculture (farming and livestock), wastewater treatment, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). The Project entails development of residential uses and would not involve any of the land uses identified to result in odor complaints nor involve any components with the potential to create objectionable odors affecting a substantial number of people.

Finally, SCAQMD regulates objectionable odors through Rule 402, Nuisance (SCAQMD 1976). Thus, although not anticipated, if odor complaints are made during implementation of the Project, the SCAQMD would ensure that such odors are addressed, and any potential odor effects are minimized or eliminated.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. Residential developments are not land uses commonly subject to odor complaints and all developments within SCAQMD would be subject to rules and regulations pertaining to odor. Therefore, the 167 residential units proposed under the ORCC Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

The Project would not result in other emissions, such as those leading to odors, affecting a substantial number of people. Therefore, the impact would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Air Quality Impact Analysis

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

8.0 GREENHOUSE GAS IMPACT ANALYSIS

8.1 CEQA GUIDELINES

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the project must be evaluated.

The following GHG significance thresholds are contained in Appendix G of the CEQA Guidelines:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

8.1.1 Thresholds of Significance

After the adoption of AB 32, the SCAQMD established a GHG working group to develop thresholds of significance for the analysis of GHG emissions. In December 2008, the SCAQMD Board adopted the Interim CEQA Greenhouse Gas Significance Threshold, which established a screening threshold of 10,000 $MTCO_2e$/year for industrial projects and 3,000 $MTCO_2e$/year for residential and commercial projects (SCAQMD 2008b). Additionally, the SCAQMD working group recommended that instead of an individual construction GHG threshold, construction emissions should be amortized over the life of the project (30 years) and evaluated with a project's annual, operational GHG emissions.

8.2 GHG IMPACT ANALYSIS

Impact GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Analysis

The Project does not propose any individual development projects at this time but, rather, would facilitate the future development of up to 1,606 residential units as identified in the Housing Element. Buildout of the future components facilitated by the Project would generate GHG emissions during construction and operations, as discussed in further detail below.

Construction Emission Inventory

GHG emissions would be generated during construction from off-road equipment and on-road vehicle exhaust from worker vehicle trips and hauling truck trips. Table 8, below, presents a summary of the estimated GHG emissions that would result from construction of Housing Opportunity Site 4, which is

expected to be the most emissions-intensive component of the Project. The table also includes an estimate of the total GHG emissions associated with cumulative buildout of the entire Project, assuming that construction of every Project unit released the same volume of GHG. To be consistent with SCAQMD's GHG emissions policy, the table also presents construction emissions amortized over a 30-year Project lifetime.

Table 9. Estimated Annual Construction GHG Emissions

Construction Year	Emissions ($MTCO_2e$ per year)
2025	863.92
2026	405.74
Total for Housing Opportunity Site 4	*1,269.70*
Total for Full Project Buildout[1]	4,078
Amortized Construction Emissions from Full Project Buildout	135.94

1. To estimate GHG emissions from Full Project Buildout, the emissions from construction of 552 units at Housing Opportunity Site 4 were scaled up on a unit-wise basis to 1773 units.

Source: Appendix A.

The amortized construction emissions are added to the annual operational emissions and compared to the SCAQMD threshold of significance below.

Operational Emission Inventory

Operational, or long-term, emissions occur over the life of the Project. Operational activities of the residential components facilitated by the Project would generate GHG emissions primarily from mobile sources. Operational GHG emissions from cumulative Project buildout, as well as amortized construction emissions, are shown in Table 10.

Table 10. Project Operations – Greenhouse Gas Emissions (Unmitigated)

Source	Emissions ($MTCO_2e$ per year)
Mobile	11,722
Area	30.6
Energy	2,890
Water	583
Waste	309
Refrigerants	2.12
Operation Subtotal	*15,637*
Amortized Construction Emissions from Full Project Buildout	136

Source	Emissions ($MTCO_2e$ per year)
Project Total	**15,773**
SCAQMD Thresholds of Significance	**3,000**
Exceeds Threshold?	**Yes**

Source: Appendix A.

As shown in the table, full buildout of the residential units facilitated by the Project would result in GHG emissions that exceed the SCAQMD threshold of significance. Therefore, Mitigation Measure GHG-1, which provides a menu of GHG reduction measures, is required. Table 11 presents the Project's GHG emissions with application of the following GHG reduction measures:

- Provide electric vehicle charging infrastructure;
- Provide bicycle parking;
- Provide traffic-calming measures;
- Exceed Title 24 Building Energy Efficiency Standards by 10 percent;
- Require energy efficient appliances;
- Establish on-site solar energy systems sufficient to meet 50 percent of each structure's electricity demand;
- Install alternative water heater in place of gas storage tank water heater;
- Install electric space heater in place of natural gas heaters;
- Install electric ranges in place of gas ranges
- Require low-flow water fixtures;
- Replace gas-powered landscape equipment with zero-emission landscape equipment; and
- Prohibit the installation of fireplaces.

Table 11. Project Operations – Greenhouse Gas Emissions (Mitigated)

Source	Emissions ($MTCO_2e$ per year)
Mobile	11,722
Area	-
Energy	1,922
Water	554
Waste	409
Refrigerants	2.12
Operation Subtotal	*14,609*
Amortized Construction Emissions from Full Project Buildout	136
Project Total	**14,745**
SCAQMD Thresholds of Significance	**3,000**
Exceeds Threshold?	**Yes**

Source: Appendix A.

As presented above, while implementation of Mitigation Measure GHG-1 would reduce GHG emissions, the level of emissions would not be reduced to below the 3,000 $MTCO_2e$ per year threshold.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. The impacts from construction of a larger residential development were evaluated within Table 3.7-1. Additionally, operational impacts from the total 1,773 units were evaluated within Tables 3.7-2 and 3.7-3. Emissions were found to exceed GHG draft interim thresholds and therefore, the 167 residential units proposed under the ORCC Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

As demonstrated above, the Project could generate GHG emissions that may have a significant impact on the environment. While implementation of Mitigation Measure GHG-1 would reduce GHG impacts, the Project would still result in emissions that exceed the applicable threshold of significance. Future housing developments evaluated as part of the Project may be subject to discretionary permits and future CEQA review on a project-by-project basis. Regardless, the impact would be significant and unavoidable.

Level of Significance Before Mitigation

Significant Impact.

Mitigation Measures

MM GHG-1. **Implement GHG Reduction Measures.** In accordance with provisions of sections 15091(a)(2) and 15126.4(a)(1)(B) of the State CEQA Guidelines, a Lead Agency for a project can and should consider mitigation measures to reduce substantial adverse effects related to GHG emissions. Such measures may include the following or other comparable measures identified by the City:

a) Integrate green building measures consistent with CALGreen (California Building Code Title 24), local building codes and other applicable laws, into project design including:
   - Use energy efficient materials in building design, construction, rehabilitation, and retrofit.
   - Install energy-efficient lighting, heating, and cooling systems (cogeneration); water heaters; appliances; equipment; and control systems.
   - Reduce lighting, heating, and cooling needs by taking advantage of light-colored roofs, trees for shade, and sunlight.
   - Incorporate passive environmental control systems that account for the characteristics of the natural environment.

- Use high-efficiency lighting and cooking devices.
- Incorporate passive solar design.
- Use high-reflectivity building materials and multiple glazing.
- Prohibit gas-powered landscape maintenance equipment.
- Install electric vehicle charging stations.
- Reduce wood burning stoves or fireplaces.
- Provide bike lanes accessibility and parking at residential developments.

b) Include off-site measures to mitigate a project's emissions.

c) Measures that consider incorporation of Best Available Control Technology (BACT) during design, construction, and operation of projects to minimize GHG emissions, including but not limited to:
   - Use energy and fuel-efficient vehicles and equipment;
   - Deployment of zero- and/or near zero emission technologies;
   - Use lighting systems that are energy efficient, such as LED technology;
   - Use the minimum feasible amount of GHG-emitting construction materials;
   - Use cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production;
   - Incorporate design measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse;
   - Incorporate design measures to reduce energy consumption and increase use of renewable energy;
   - Incorporate design measures to reduce water consumption;
   - Use lighter-colored pavement where feasible;
   - Recycle construction debris to maximum extent feasible;
   - Plant shade trees in or near construction projects where feasible; and
   - Solicit bids that include concepts listed above.

d) Measures that encourage transit use, carpooling, bike-share and car-share programs, active transportation, and parking strategies, including, but not limited to the following:
   - Promote transit-active transportation coordinated strategies;
   - Increase bicycle carrying capacity on transit and rail vehicles;
   - Improve or increase access to transit;
   - Increase access to common goods and services, such as groceries, schools, and day care;
   - Incorporate the neighborhood electric vehicle network;
   - Orient the project toward transit, bicycle and pedestrian facilities;
   - Improve pedestrian or bicycle networks, or transit service;
   - Provide traffic calming measures;
   - Provide bicycle parking;
   - Limit or eliminate park supply;
   - Unbundle parking costs;

  - Provide parking cash-out programs;
  - Implement or provide access to commute reduction program;

e) Incorporate bicycle and pedestrian facilities into project designs, maintaining these facilities, and providing amenities incentivizing their use; and planning for and building local bicycle projects that connect with the regional network;
f) Improving transit access to rail and bus routes by incentives for construction of transit facilities within developments, and/or providing dedicated shuttle service to transit stations; and
g) Designate a percentage of parking spaces for ride-sharing vehicles or high occupancy vehicles, and provide adequate passenger loading and unloading for those vehicles;
h) Land use siting and design measures that reduce GHG emissions, including:
  - Retaining on-site mature trees and vegetation, and planting new canopy trees;
  - Measures that increase vehicle efficiency, encourage use of zero and low emissions vehicles, or reduce the carbon content of fuels, including constructing or encouraging construction of electric vehicle charging stations or neighborhood electric vehicle networks, or charging for electric bicycles; and
  - Measures to reduce GHG emissions from solid waste management through encouraging solid waste recycling and reuse.

Level of Significance After Mitigation

Significance and Unavoidable Impact.

Impact GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact Analysis

A project would have a significant impact with respect to GHG emissions and global climate change if it would substantially conflict with the provisions of Section 15064.4(b) of the CEQA Guidelines. Pursuant to Appendix G of the CEQA Guidelines, a significant GHG impact is identified if the project could conflict with applicable GHG reduction plans, policies, or regulations. The Project would be subject to complying with SB 32 and AB 1279. For this analysis, the applicable plans adopted for the purpose of reducing GHG emissions are the CARB's 2022 Scoping Plan and the SCAG RTP/SCS. Project consistency with the foregoing plans is evaluated below.

Consistency with the CARB's 2022 Scoping Plan

The 2022 Scoping Plan, approved in December 2022, builds upon previous iterations of State scoping plans to achieve carbon neutrality and reduce anthropogenic GHG emissions below 85 percent below

1990 no later than 2045, as directed by AB 1279 (CARB 2022). Table 12 identifies the Scoping Plan policies that may be applicable to the developments facilitated by the Project.

Table 12. Project Consistency with 2022 Scoping Plan Greenhouse Gas Reduction Strategies

Measure	Consistency Determination
Deploy ZEVs and reduce driving demand	**Consistent.** While the Project would not deploy ZEVs, consistent with the 2022 California Building Standards Code, or applicable code at the time of construction, all residential buildings facilitated by the Project would include EV-capable infrastructure to accommodate future installation of a Level 2 EV charger.
Coordinate supply of liquid fossil fuels with declining CA fuel demand	**Not Applicable.** This measure is aimed at petroleum refineries and fossil fuel extraction operations. The Project would not interfere with this goal.
Generate clean electricity	**Consistent.** Development facilitated by the Project would comply with all relevant provisions included in the California Building Standards Code applicable at the time of construction. Pursuant to the 2022 California Building Standards Code, new residential structures shall include rooftop solar panels to generate clean electricity.
Decarbonize Buildings	**Consistent.** Development facilitated by the Project would comply with all applicable provisions included in the California Building Standards Code applicable at the time of construction, which would help reduce GHG emissions associated with building operations. Further, implementation of Mitigation Measure GHG-1 would ensure that each future development facilitated by the Project would reduce GHG emissions.
Decarbonize Industrial Energy Supply	**Not Applicable.** The Project would facilitate development of residential land uses and would not affect the industrial sector.
Reduce non-combustion emissions (Methane)	**Consistent.** The Project would facilitate development of residential land uses and would not include any land uses that generate significant levels of methane, such as landfills or dairy farms.
Reduce non-combustion emissions (Hydrofluorocarbons [HFCs])	**Consistent.** Development facilitated under the Project would comply with all State regulations governing SLCPs, including HFCs.
Compensate for remaining emissions	**Not Applicable.** This measure is aimed at the State government to reduce statewide emissions to meet AB 1279 goals.

Source: CARB 2022.

This analysis finds that, with implementation of Mitigation Measure GHG-1, the Project would be consistent with the applicable strategies recommended in the 2022 Scoping Plan.

Consistency with the SCAG's Connect SoCal

In April 2024, the SCAG Regional Council approved the 2024-2050 Connect SoCal RTP/SCS. The primary goal of Connect SoCal is to achieve sustainable regional growth while reducing GHG emissions

through transportation and land use planning. Project consistency with the specific goals of Connect SoCal which are applicable to the Project are evaluated in Table 12.

Table 13. Project Consistency with Connect SoCal Greenhouse Gas Reduction Strategies

Goal	Consistency Determination
Goal 36: Encourage housing development in transit-supportive and walkable areas to create more interconnected and resilient communities	**Consistent.** Implementation of the Project would inherently support this goal. The Project would facilitate the development of up to 1,606 residential units throughout the City. The housing types consist of multi-family residences designated for varying income levels, including low-income and moderate-income units. Additionally, Orange County Transportation Authority and Long Beach Transit both provide public transit services throughout the City. Thus, future residents of components facilitated by the Project would have access to public transportation options.
Goal 37: Support local, regional, state and federal efforts to produce and preserve affordable housing while meeting additional housing needs across the region.	**Consistent.** See discussion above. Additionally, by implementing the Housing Element Update and demonstrating the City's ability to achieve provide housing at varying income levels, the Project would help encourage a diverse housing stock and contribute to more equitable communities.
Goal 51: Reduce hazardous air pollutants and greenhouse gas emissions and improve air quality throughout the region through planning and implementation efforts.	**Consistent.** Implementation of Mitigation Measures AQ-1, AQ-2, AQ-3, and GHG-1 would ensure that the Project reduces air and GHG emissions.

Source: SCAG 2024a.

The RTP/SCS generally encourages residential growth within identified priority growth areas, transit priority areas, and high-quality transit areas in order to facilitate the use of public transit and reduce per capita VMT. The City of Seal Beach does not include any priority growth areas, transit priority areas, and high-quality transit areas. However, multi-family housing is known to have a lower trip generation rate as compared to single-family residential units (Institute of Transportation Engineers 2021). Furthermore, infill development and densification also supports a reduced rate of single-passenger vehicle trips (Governor's Office of Land Use and Climate Innovation 2024).

Based on the above, with implementation of Mitigation Measures AQ-1, AQ-2, AQ-3, and GHG-1, the Project is considered consistent with the overarching goals of Connect SoCal 2024.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. Consistency with CARB's 2022 Scoping Plan and SCAQG's Connect SoCal 2024 were evaluated for the buildout of 1,773 residential units and therefore, the 167 residential units proposed under the ORCC Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

The Project could conflict with an applicable plan adopted for the purpose of reducing GHG emissions; therefore, impacts could be considered significant. However, with the implementation of mitigation, the Project would comply with all applicable measures in the 2022 Scoping Plan and the RTP/SCS, and the impact would be reduced to a less-than-significant level.

Level of Significance Before Mitigation

Significant Impact.

Mitigation Measures

Mitigation Measures AQ-1, AQ-2, AQ-3, and GHG-1 are required.

Level of Significance After Mitigation

Less Than Significant Impact with Mitigation.

10.0 ENERGY IMPACT ANALYSIS

10.1 CEQA GUIDELINES

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine whether a project would have a significant impact on energy the following must be evaluated.

Would the project:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

10.2 ENERGY IMPACT ANALYSIS

Impact ENR-1 Result in potential significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Impact Analysis

The energy requirements for buildout of the up to 1,773 residential units that would be facilitated under the Project were determined using the construction and operational estimates generated from the calculation worksheets for energy consumption (Appendix B). This impact addresses the energy consumption from both construction of an individual project and operational activities from the Project and the residential component of the ORCC Specific Plan Project, discussed separately below.

Construction Energy Demand

During construction activities facilitated by the Project, energy resources would be consumed in the form of diesel and gasoline fuel from the use of off-road equipment (i.e., tractors, excavators, cranes) and on-road vehicles (i.e., construction employee commutes, haul trucks). Construction is not anticipated to require natural gas. Temporary electricity may be required to provide as-necessary lighting and electric equipment; such electricity demand would be met by portable generator sets and, possibly, local distribution. Fuel demand associated with portable generators is incorporated in the off-road equipment estimate provided below. The amount of electricity used during construction would be minimal.

Specific buildout details of each future housing development facilitated by the Project are not available at this time; accordingly, this analysis presents estimated construction energy demand associated with buildout of Housing Opportunity Site 4, which would accommodate up to 552 multi-family units. All other Housing Opportunity Sites, the Main Street Program, and the residential component of the ORCC

Specific Plan Project are planned to involve development of fewer units and less ground disturbance and, thus, would likely result in less energy consumption during construction. Therefore, the developed of Housing Opportunity Site 4 is anticipated to be the most energy-intensive future development due to the size of the site.

Off-Road Equipment

Construction activities associated with buildout of Housing Opportunity Site 4, including site preparation, grading, paving, building construction, and architectural coating, was estimated to consume 46,170 gallons of diesel fuel from the use of off-road equipment. For comparison, in 2022, approximately 3.1 billion gallons of diesel fuel was purchased within California (CDTFA 2024). Thus, the diesel fuel required to power the off-road equipment during construction of Housing Opportunity Site 4 would represent approximately 0.002 percent of the State's annual diesel demand.

If the construction fuel demand for off-road equipment is scaled up to 1,773 units, then cumulative buildout of all developments facilitated by the Project would utilize approximately 0.005 percent of the State's annual diesel demand.

On-Road Vehicles

On-road vehicles for construction workers, vendors, and haulers would require fuel for travel to and from the site during construction. Table 13 provides an estimate of the total on-road vehicle fuel usage during construction of Housing Opportunity Site 4.

Table 14. Construction of Housing Opportunity Site 4 – On-Road Vehicle Fuel Consumption

Project Component	VMT	Gasoline Consumptions (gallons)	Diesel Consumption (gallons)	Electricity Consumption (kWh)
Worker Trips	1,885,331	65,515	258	34,352
Vendor Trips	150,472	4,436	7,819	977
Haul Trips	7,000	1	1,146	82
Totals	*2,042,804*	*69,952*	*9,224*	*35,411*

Notes:
Calculations use unrounded numbers; totals may not appear to sum exactly due to rounding.
VMT = vehicle miles traveled
Source: Appendix B.

As shown above, construction of Housing Opportunity Site 4 was estimated to consume 69,952 gallons of gasoline, 9,224 gallons of diesel, and 35,411 kWh of electricity associated with the use of on-road vehicles. For comparison, in 2022, approximately 13.6 billion gallons of gasoline and approximately 3.1 billion gallons of diesel fuel for motor vehicles was purchased within California (CDTFA 2024). Thus, the fuel required to power the on-road motor vehicles during construction of Housing Opportunity Site 4 would

represent approximately 0.0005 percent and 0.0003 percent of the State's annual gasoline and diesel demand, respectively.

If the construction fuel demand for on-road vehicles is scaled up to 1,773 units, then cumulative buildout of all developments facilitated by the Project would utilize approximately 0.0016 percent and 0.001 percent of the state's annual gasoline and diesel demand, respectively.

Construction Conclusion

Overall, construction activities associated with each component facilitated by the Project would result in the consumption of petroleum-based fuels and electricity from electric vehicles. However, there are no unusual Project characteristics that would necessitate the use of construction equipment or vehicles that would be less energy efficient than at comparable construction sites in other parts of the State. Therefore, it is expected that construction fuel consumption associated with each component of the Project and the Project as a whole would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region.

Operational Energy Demand

Implementation of the Project would result in future development of up to 1773 new residential units. During operations of the Project, energy would be required to power the residential buildings and to fuel the vehicles travelling to and from the sites.

Building Energy

The 1,733 new residential units facilitated by the Project would require energy for normal operations, such as lighting and temperature controls. Building energy usage was estimated for cumulative Project buildout. Over the course of a year, operational building energy consumption for all residential units accommodated by the Project would total approximately 6,642,169 kWh of electricity and 24,075,048 kBTU of natural gas.[1] It is noted that all future buildings would be constructed in compliance with the energy efficiency standards set forth in the California Building Standards Code that is applicable at the time of construction. As the California Building Standards Code will likely require more efficient design measures future, this represents a conservative estimate of the total electricity and natural gas Project buildout may require. Therefore, the Project's total energy consumption and would not result in the inefficient, wasteful, or unnecessary use of energy.

Transportation Energy

Future users of the 1,773 new residential units would travel to and from their residences during normal operations. Transportation energy usage was estimated for cumulative Project buildout and consistent with the VMT assessment prepared for the Project. These estimates were derived using the same assumptions used in the operational air quality and GHG analysis for the Project. Table 14 provides an

[1] These estimates do not account for the implementation of any mitigation.

estimate of the annual fuel consumed by vehicles traveling to and from the Project sites. As shown in the table, annual vehicular fuel consumption is estimated to be 1,137,357 gallons of gasoline, 133,422 gallons of diesel, and 895,624 kWh of electricity. In 2022, approximately 13.6 billion gallons of gasoline and approximately 3.1 billion gallons of diesel fuel for motor vehicles was purchased within California (CDTFA 2024). Therefore, full buildout of the Project would result in transportation fuel consumption that represents approximately 0.008 percent and 0.004 percent of the State's annual demand for gasoline and diesel, respectively. The Project would not result in vehicle use that is any more inefficient, wasteful, or unnecessary than other vehicle uses in the region.

Table 15. Project Operations – On-Road Vehicle Fuel Consumption

Vehicle Type	Proportion of Fleet	Gasoline Consumptions (gallons/yr)	Diesel Consumption (gallons/yr)	Electricity Consumption (kWh/yr)
Passenger Cars (LDA, LDT1, LDT2, MDV)	0.9236	1,069,206	3,881	786,447
Trucks (HHDT, MHDT, LHDT1, LHDT2)	0.0701	61,979	125,861	106,883
Motorcycles, Motor Homes, and Buses (MCY, MH, OBUS, SBUS, UBUS)	0.0063	6,171	3,679	2,294
Totals	*1.00*	*1,137,357*	*133,422*	*895,624*

Notes:
Calculations use unrounded numbers; totals may not appear to sum exactly due to rounding.
VMT = vehicle miles traveled
Source: Appendix B.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. The impacts from construction and operation from the total 1,773 units were evaluated in the analysis above. Therefore, the 167 residential units proposed under the ORCC Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

Based on the analysis above, both construction and operations of the individual Project components and the Project as a whole would not result in a potential significant environmental impact due to the wasteful, inefficient, or unnecessary consumption of energy resources; therefore, the impact would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact ENR-2 Would the project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Impact Analysis

All developments facilitated by the Project would comply with federal, State, and local regulations aimed at reducing energy consumption. Local regulations have been developed in accordance with federal and State energy regulations, such as the California Building Energy Efficiency Standards (California Code of Regulations Title 24, Part 6), the CALGreen Code (California Code of Regulations Title 24, Part 11), and SB 743, which are also aimed at reducing energy consumption.

This EIR includes a discussion of the residential component of the ORCC Specific Plan Project based on the site location and proposed buildout of the 167 residential units that are included within the City's site inventory to meet its RHNA requirements. The residential component of the ORCC Specific Plan Project would be required to comply with all federal, state, and local regulation aimed at reducing energy consumption. Therefore, the 167 residential units proposed under the ORCC Specific Plan Project were considered within the analysis of this Project. Specific impact findings associated with the development of the ORCC Specific Plan Project are being evaluated in a standalone project-specific EIR.

Conclusion

The Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency; therefore, the impact would be less than significant.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less Than Significant Impact.

11.0 REFERENCES

CARB. 2013. GHG Short-Lived Climate Pollutant Inventory. Website: https://ww2.arb.ca.gov/ghg-slcp-inventory. Accessed January 23, 2024.

_____. 2016. Ambient Air Quality Standards. Website: https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf. Accessed January 23, 2024.

_____. 2018. Climate Pollutants Fall Below 1990 Levels for the First Time. Website: https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time. Accessed January 23, 2024.

_____. 2022. 2022 Scoping Plan. Website: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed January 23, 2024.

_____. 2024a. iADAM: Air Quality Data Statistics. Website: https://www.arb.ca.gov/adam/index.html. Accessed October 23, 2024.

_____. 2024b. Overview: Diesel Exhaust & Health. Website: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed January 23, 2024.

_____. 2024c. SB 375 Regional Plan Climate Targets. Website: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets. Accessed January 23, 2024.

_____. 2024d. LCFS Regulation. Website: https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-regulation. Accessed January 23, 2024.

_____. 2024e. Current California GHG Emission Inventory Data. Website: https://ww2.arb.ca.gov/ghg-inventory-data. Accessed October 24, 2024.

California Department of Public Health. 2021. Valley Fever Fact Sheet. Website: https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/ValleyFeverFactSheet.pdf#:~:text=Valley%20fever%20%28also%20called%20coccidioidomycosis%20or%20%E2%80%9Ccocci%E2%80%9D%29%20is,areas%20of%20California%20and%20the%20southwestern%20United%20States. Accessed January 31, 2024.

———. 2024. Valley Fever in California Dashboard. Website: https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/ValleyFeverDashboard.aspx. Accessed January 31, 2024.

California Department of Tax and Fee Administration (CDTFA). 2024. Fuel Taxes Statistics & Reports. Website: https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm. Accessed January 31, 2024.

References

California Energy Commission (CEC). 2016a. Electricity Consumption by County. Website: http://ecdms.energy.ca.gov/elecbycounty.aspx. Accessed January 31, 2024.

_____. 2016b. Gas Consumption by County. Website: http://ecdms.energy.ca.gov/gasbycounty.aspx. Accessed January 31, 2024.

_____. 2022. 2022 Integrated Energy Policy Report Update. Website: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2022-integrated-energy-policy-report-update. Accessed January 23, 2024.

Centers for Disease Control and Prevention. 2020. Valley Fever (Coccidioidomycosis). Website: https://www.cdc.gov/fungal/diseases/coccidioidomycosis/index.html. Accessed January 31, 2024.

City of Seal Beach. 2003. City of Seal Beach General Plan. Website: https://www.sealbeachca.gov/Departments/Community-Development/Planning-Development/General-Plan. Accessed January 23, 2024.

CPUC. 2021. 60% RPS Procurement Rules. Website: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/rps/rps-compliance-rules-and-process/60-percent-rps-procurement-rules. Accessed January 23, 2024.

Governor's Office of Land Use and Climate Innovation. 2024. SB 743 Frequently Asked Questions. Website: https://lci.ca.gov/ceqa/sb-743/faq.html#housing-projects. Accessed October 24, 2024.

Institute of Transportation Engineers. 2021. Trip Generation Manual, 11th Edition.

NHTSA. 2020. Final Environmental Impact Statement for The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021-2026 Passenger Cars and Light Trucks. Website: https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/safe_vehicles_rule_feis.pdf. Accessed January 23, 2024.

_____. 2022. Corporate Average Fuel Economy. Available online at: https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy#40466. Accessed January 23, 2024.

South Coast Air Quality Management District (SCAQMD). 1976. Rule 402, Nuisance. Website: http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-402.pdf?sfvrsn=4. Accessed January 24, 2024.

_____. 1993. CEQA Air Quality Handbook. Website: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). Accessed January 18, 2024.

_____. 2005. Rule 403, Fugitive Dust. Website: http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4. Accessed January 24, 2024.

———. 2008a. Final Localized Significance Thresholds Methodology. Website: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2. Accessed January 24, 2024.

———. 2008b. Draft Guidance Document, Interim CEQA Greenhouse Gas (GHG) Significance Threshold. Website: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf?sfvrsn=2. Accessed January 24, 2024.

———. 2009. Appendix C – Mass Rate LST Look-up Tables. Website: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2. Accessed January 24, 2024.

———. 2016a. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin. Website: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=14. Accessed January 23, 2024.

———. 2016b. Final Program Environmental Impact Report 2016 Air Quality Management Plan. Website: https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf?sfvrsn=10. Accessed October 22, 2024.

———. 2022. 2022 Air Quality Management Plan. Website: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16. Accessed January 23, 2024.

Southern California Association of Governments (SCAG). 2020. Demographics and Growth Forecast Technical Report. Website: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf?1606001579. Accessed February 2, 2024.

_____. 2023. About Us. Website: https://scag.ca.gov/about-us. Accessed January 23, 2024.

_____. 2024. Connect SoCal 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy. Website: https://scag.ca.gov/sites/main/files/file-attachments/23-2987-connect-socal-2024-final-complete-040424.pdf?1714175547. Accessed October 23, 2024.

Southern California Edison (SCE). 2024. 2022 Power Content Label – Southern California Edison. Website: https://www.sce.com/sites/default/files/custom-files/PDF_Files/SCE_2022_Power_Content_Label_B%26W.pdf. January 24, 2024.

USEPA. 2023a. Criteria Air Pollutants. Website: https://www.epa.gov/criteria-air-pollutants?msclkid=402121eaa62811ec9f3a5e32e281714a. Accessed January 23, 2024.

_____. 2023b. Overview of Greenhouse Gases. Website: https://www.epa.gov/ghgemissions/overview-greenhouse-gases. Accessed January 23, 2024.

_____. 2023c. Sulfur Hexafluoride (SF6) Basics. Website: https://www.epa.gov/eps-partnership/sulfur-hexafluoride-sf6-basics. Accessed January 23, 2024.

_____. 2024a. Lead. Website: https://www.epa.gov/lead. Accessed January 23, 2024.

_____. 2024b. Asbestos. Website: https://www.epa.gov/asbestos. Accessed January 23, 2024.

_____. 2024c. Inflation Reduction Act. https://www.epa.gov/inflation-reduction-act. Accessed January 24, 2024.

_____. 2024d. Inventory of U.S. Greenhouse Gas Emissions and Sinks. Website: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks. Accessed October 23, 2024.

USGS. 2011. Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California. Website: https://pubs.usgs.gov/of/2011/1188/. Accessed January 31, 2024.

APPENDIX A

CALEEMOD MODELING RESULTS

Seal Beach HE Update - Construction Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Seal Beach HE Update - Construction
Construction Start Date	1/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.30
Precipitation (days)	18.4
Location	33.74633801824868, -118.10302812087545
County	Orange
City	Seal Beach
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5856
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.28

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
Apartments Mid Rise	552	Dwelling Unit	12.0	529,920	0.00	—	1,645	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction 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.	166	166	13.8	36.3	0.04	0.45	5.70	6.14	0.41	1.36	1.77	—	9,555	9,555	0.26	0.47	25.1	9,726
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.11	3.39	33.0	33.3	0.06	1.38	20.2	21.5	1.27	10.2	11.5	—	9,300	9,300	0.30	0.47	0.65	9,448
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.94	9.84	12.3	23.0	0.03	0.43	4.41	4.85	0.40	1.32	1.72	—	6,077	6,077	0.19	0.27	6.02	6,169
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.81	1.80	2.24	4.20	0.01	0.08	0.81	0.88	0.07	0.24	0.31	—	1,006	1,006	0.03	0.05	1.00	1,021

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.09	2.59	13.8	36.3	0.04	0.45	5.70	6.14	0.41	1.36	1.77	—	9,555	9,555	0.26	0.47	25.1	9,726

2026	166	166	12.9	34.9	0.04	0.39	5.70	6.09	0.36	1.36	1.72	—	9,423	9,423	0.25	0.47	22.8	9,592
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.11	3.39	33.0	33.3	0.06	1.38	20.2	21.5	1.27	10.2	11.5	—	9,300	9,300	0.30	0.47	0.65	9,448
2026	2.79	2.45	13.2	32.0	0.04	0.39	5.70	6.09	0.36	1.36	1.72	—	9,174	9,174	0.26	0.47	0.59	9,321
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	2.26	1.89	12.3	23.0	0.03	0.43	4.41	4.85	0.40	1.32	1.72	—	6,077	6,077	0.19	0.27	6.02	6,169
2026	9.94	9.84	4.15	10.0	0.01	0.13	1.64	1.77	0.12	0.39	0.51	—	2,741	2,741	0.08	0.13	2.85	2,786
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.41	0.35	2.24	4.20	0.01	0.08	0.81	0.88	0.07	0.24	0.31	—	1,006	1,006	0.03	0.05	1.00	1,021
2026	1.81	1.80	0.76	1.83	< 0.005	0.02	0.30	0.32	0.02	0.07	0.09	—	454	454	0.01	0.02	0.47	461

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	0.13	1.22	1.09	< 0.005	0.05	—	0.05	0.05	—	0.05	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.22	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.06	0.73	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	189	189	< 0.005	0.01	0.02	192
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.07	0.01	0.88	0.38	< 0.005	0.01	0.18	0.19	0.01	0.05	0.06	—	698	698	0.06	0.11	0.04	733
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.5	10.5	< 0.005	< 0.005	0.02	10.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	38.2	38.2	< 0.005	0.01	0.03	40.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.74	1.74	< 0.005	< 0.005	< 0.005	1.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.33	6.33	< 0.005	< 0.005	0.01	6.65

3.3. Site Preparation (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.87	0.83	< 0.005	0.04	—	0.04	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146

Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.28	0.28	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	—	0.10	0.10	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.85	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	221	221	< 0.005	0.01	0.02	224
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.10	0.02	1.32	0.57	0.01	0.01	0.27	0.28	0.01	0.08	0.09	—	1,046	1,046	0.08	0.17	0.06	1,099
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.14	6.14	< 0.005	< 0.005	0.01	6.22
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	28.7	28.7	< 0.005	< 0.005	0.03	30.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.02	1.02	< 0.005	< 0.005	< 0.005	1.03

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.75	4.75	< 0.005	< 0.005	< 0.005	4.99

3.5. Grading (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	0.26	2.44	2.33	0.01	0.10	—	0.10	0.09	—	0.09	—	542	542	0.02	< 0.005	—	544
Dust From Material Movement	—	—	—	—	—	—	0.76	0.76	—	0.30	0.30	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.45	0.42	< 0.005	0.02	—	0.02	0.02	—	0.02	—	89.8	89.8	< 0.005	< 0.005	—	90.1
Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	0.97	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	253	253	< 0.005	0.01	0.03	256
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	21.1	21.1	< 0.005	< 0.005	0.04	21.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.49	3.49	< 0.005	< 0.005	0.01	3.53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.73	0.61	5.68	7.09	0.01	0.23	—	0.23	0.22	—	0.22	—	1,304	1,304	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	1.04	1.29	< 0.005	0.04	—	0.04	0.04	—	0.04	—	216	216	0.01	< 0.005	—	217
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.60	1.41	1.38	22.2	0.00	0.00	5.19	5.19	0.00	1.22	1.22	—	5,276	5,276	0.06	0.19	20.0	5,354
Vendor	0.14	0.05	1.96	0.97	0.01	0.01	0.50	0.52	0.01	0.14	0.15	—	1,881	1,881	0.11	0.26	5.12	1,967
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.59	1.40	1.57	19.2	0.00	0.00	5.19	5.19	0.00	1.22	1.22	—	5,021	5,021	0.07	0.19	0.52	5,079
Vendor	0.14	0.05	2.03	1.00	0.01	0.01	0.50	0.52	0.01	0.14	0.15	—	1,882	1,882	0.11	0.26	0.13	1,963
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.86	0.75	0.85	10.9	0.00	0.00	2.79	2.79	0.00	0.65	0.65	—	2,769	2,769	0.04	0.10	4.69	2,805
Vendor	0.08	0.03	1.11	0.54	0.01	0.01	0.27	0.28	0.01	0.08	0.08	—	1,024	1,024	0.06	0.14	1.21	1,069
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.14	0.15	2.00	0.00	0.00	0.51	0.51	0.00	0.12	0.12	—	458	458	0.01	0.02	0.78	464
Vendor	0.01	0.01	0.20	0.10	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	169	169	0.01	0.02	0.20	177
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2026) - Unmitigated

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

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

Off-Road	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	0.30	2.76	3.63	0.01	0.11	—	0.11	0.10	—	0.10	—	671	671	0.03	0.01	—	673
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.05	0.50	0.66	< 0.005	0.02	—	0.02	0.02	—	0.02	—	111	111	< 0.005	< 0.005	—	111
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.38	1.34	1.21	20.9	0.00	0.00	5.19	5.19	0.00	1.22	1.22	—	5,175	5,175	0.06	0.19	18.0	5,251
Vendor	0.14	0.04	1.88	0.94	0.01	0.01	0.50	0.52	0.01	0.14	0.15	—	1,851	1,851	0.09	0.26	4.78	1,936
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.37	1.34	1.39	18.1	0.00	0.00	5.19	5.19	0.00	1.22	1.22	—	4,925	4,925	0.07	0.19	0.47	4,984
Vendor	0.14	0.04	1.96	0.96	0.01	0.01	0.50	0.52	0.01	0.14	0.15	—	1,852	1,852	0.09	0.26	0.12	1,932
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.38	0.37	0.39	5.26	0.00	0.00	1.44	1.44	0.00	0.34	0.34	—	1,397	1,397	0.02	0.05	2.17	1,416
Vendor	0.04	0.01	0.55	0.27	< 0.005	< 0.005	0.14	0.14	< 0.005	0.04	0.04	—	518	518	0.03	0.07	0.58	541
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.07	0.96	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	231	231	< 0.005	0.01	0.36	234
Vendor	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	85.8	85.8	< 0.005	0.01	0.10	89.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2026) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.39	0.54	< 0.005	0.02	—	0.02	0.02	—	0.02	—	82.8	82.8	< 0.005	< 0.005	—	83.1
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.7	13.7	< 0.005	< 0.005	—	13.8
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.05	0.79	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	195	195	< 0.005	0.01	0.68	198
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.02	10.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.71	1.71	< 0.005	< 0.005	< 0.005	1.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2026) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	166	166	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	—	7.34

Architectural Coating	9.09	9.09	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	—	1.22
Architectural Coatings	1.66	1.66	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.28	0.27	0.24	4.19	0.00	0.00	1.04	1.04	0.00	0.24	0.24	—	1,035	1,035	0.01	0.04	3.60	1,050
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.02	0.21	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	54.7	54.7	< 0.005	< 0.005	0.09	55.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.06	9.06	< 0.005	< 0.005	0.01	9.18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

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

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/1/2025	1/29/2025	5.00	20.0	—
Site Preparation	Site Preparation	1/30/2025	2/13/2025	5.00	10.0	—
Grading	Grading	2/14/2025	3/28/2025	5.00	30.0	—
Building Construction	Building Construction	3/29/2025	5/23/2026	5.00	300	—
Paving	Paving	5/24/2026	6/21/2026	5.00	20.0	—
Architectural Coating	Architectural Coating	6/22/2026	7/20/2026	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38

Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	10.0	20.0	HHDT

Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	15.0	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	397	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	59.0	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	79.5	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	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)
Architectural Coating	1,073,088	357,696	0.00	0.00	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	—	—
Site Preparation	—	—	15.0	0.00	—
Grading	—	—	90.0	0.00	—
Paving	0.00	0.00	0.00	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	532	0.03	< 0.005

2026	0.00	532	0.03	< 0.005

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	7.28	annual days of extreme heat
Extreme Precipitation	3.65	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	4.74	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 (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A

Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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 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	24.9
AQ-PM	60.5
AQ-DPM	40.5
Drinking Water	9.13
Lead Risk Housing	59.7
Pesticides	36.1
Toxic Releases	95.0
Traffic	53.4
Effect Indicators	—
CleanUp Sites	90.0
Groundwater	88.5

Haz Waste Facilities/Generators	89.8
Impaired Water Bodies	91.9
Solid Waste	67.5
Sensitive Population	—
Asthma	8.70
Cardio-vascular	22.7
Low Birth Weights	7.95
Socioeconomic Factor Indicators	—
Education	21.7
Housing	58.8
Linguistic	5.64
Poverty	0.83
Unemployment	32.3

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	97.84421917
Employed	59.16848454
Median HI	93.10920056
Education	—
Bachelor's or higher	89.32375209
High school enrollment	12.79353266
Preschool enrollment	95.7141024
Transportation	—
Auto Access	93.63531374
Active commuting	53.95868087

Social	—
2-parent households	51.8285641
Voting	90.4016425
Neighborhood	—
Alcohol availability	51.59758758
Park access	81.35506224
Retail density	52.62414988
Supermarket access	74.83639163
Tree canopy	28.25612729
Housing	—
Homeownership	99.76902348
Housing habitability	85.98742461
Low-inc homeowner severe housing cost burden	37.05889901
Low-inc renter severe housing cost burden	54.20248941
Uncrowded housing	83.16437829
Health Outcomes	—
Insured adults	89.59322469
Arthritis	0.0
Asthma ER Admissions	89.7
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	87.6
Cognitively Disabled	60.3
Physically Disabled	86.7

Heart Attack ER Admissions	70.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	19.2
Children	95.4
Elderly	10.4
English Speaking	98.1
Foreign-born	4.6
Outdoor Workers	93.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	30.4
Traffic Density	43.9
Traffic Access	23.0
Other Indices	—
Hardship	11.8
Other Decision Support	—
2016 Voting	93.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	23.0
Healthy Places Index Score for Project Location (b)	92.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
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
Land Use	Acreage adjusted to match the estimated developable acres of Site No. 4.
Construction: Trips and VMT	Haul truck trips added into Demo and Site Prep phases to account for assumed material transport.

Seal Beach HE Update - Full Buildout Ops (Mitigated) v2 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Seal Beach HE Update - Full Buildout Ops (Mitigated) v2
Operational Year	2029
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.30
Precipitation (days)	18.4
Location	33.74633801824868, -118.10302812087545
County	Orange
City	Seal Beach
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5856
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.29

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
Apartments Mid Rise	396	Dwelling Unit	10.4	380,160	7,917,891	—	1,180	mid-rise units

Apartments Low Rise	843	Dwelling Unit	52.7	893,580	4,638,291	—	2,512	low-rise units
Apartments High Rise	534	Dwelling Unit	8.61	512,640	6,254,666	—	1,591	affordable units

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Transportation	T-14*	Provide Electric Vehicle Charging Infrastructure
Transportation	T-34*	Provide Bike Parking
Transportation	T-35*	Provide Tra c Calming Measures
Energy	E-1	Buildings Exceed 2019 Title 24 Building Envelope Energy Efficiency Standards
Energy	E-2	Require Energy Efficient Appliances
Energy	E-10-B	Establish Onsite Renewable Energy Systems: Solar Power
Energy	E-12-A	Install Alternative Type of Water Heater in Place of Gas Storage Tank Heater in Residences
Energy	E-12-B	Install Electric Space Heater in Place of Natural Gas Heaters in Residences
Energy	E-13	Install Electric Ranges in Place of Gas Ranges
Water	W-4	Require Low-Flow Water Fixtures
Area Sources	LL-1	Replace Gas Powered Landscape Equipment with Zero-Emission Landscape Equipment
Area Sources	AS-2	Use Low-VOC Paints

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

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.	82.8	79.0	27.5	356	0.75	0.92	70.6	71.5	0.88	17.9	18.8	834	92,462	93,296	88.1	3.06	194	96,606
Mit.	72.9	69.6	26.1	255	0.74	0.83	70.6	71.4	0.81	17.9	18.7	815	86,296	87,111	85.8	2.98	194	90,337
% Reduced	12%	12%	5%	28%	1%	9%	—	< 0.5%	8%	—	< 0.5%	2%	7%	7%	3%	3%	—	6%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	73.4	70.1	28.3	237	0.71	0.87	70.6	71.5	0.85	17.9	18.8	834	89,441	90,275	88.2	3.18	17.5	93,445
Mit.	72.7	69.4	27.9	237	0.71	0.83	70.6	71.4	0.81	17.9	18.7	815	83,473	84,289	85.9	3.09	17.5	87,375
% Reduced	1%	1%	2%	< 0.5%	< 0.5%	4%	—	< 0.5%	4%	—	< 0.5%	2%	7%	7%	3%	3%	—	6%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	79.5	75.8	29.2	312	0.73	0.90	69.7	70.6	0.87	17.7	18.6	834	90,367	91,201	88.2	3.19	91.1	94,447
Mit.	72.5	69.2	28.1	242	0.72	0.83	69.7	70.6	0.81	17.7	18.5	815	84,264	85,079	85.9	3.10	91.1	88,241
% Reduced	9%	9%	4%	22%	1%	8%	—	< 0.5%	7%	—	< 0.5%	2%	7%	7%	3%	3%	—	7%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	14.5	13.8	5.33	56.9	0.13	0.17	12.7	12.9	0.16	3.23	3.39	138	14,961	15,099	14.6	0.53	15.1	15,637
Mit.	13.2	12.6	5.13	44.2	0.13	0.15	12.7	12.9	0.15	3.23	3.38	135	13,951	14,086	14.2	0.51	15.1	14,609
% Reduced	9%	9%	4%	22%	1%	8%	—	< 0.5%	7%	—	< 0.5%	2%	7%	7%	3%	3%	—	7%

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	31.5	28.6	20.5	253	0.70	0.38	70.6	71.0	0.36	17.9	18.3	—	71,832	71,832	2.92	2.64	181	72,874
Area	50.5	50.0	0.95	101	< 0.005	0.05	—	0.05	0.04	—	0.04	0.00	269	269	0.01	< 0.005	—	270
Energy	0.71	0.36	6.08	2.59	0.04	0.49	—	0.49	0.49	—	0.49	—	17,397	17,397	1.28	0.09	—	17,455
Water	—	—	—	—	—	—	—	—	—	—	—	127	2,965	3,092	13.3	0.33	—	3,523
Waste	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Total	82.8	79.0	27.5	356	0.75	0.92	70.6	71.5	0.88	17.9	18.8	834	92,462	93,296	88.1	3.06	194	96,606
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	31.4	28.4	22.3	234	0.68	0.38	70.6	71.0	0.36	17.9	18.3	—	69,080	69,080	3.02	2.76	4.70	69,982
Area	41.3	41.3	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.71	0.36	6.08	2.59	0.04	0.49	—	0.49	0.49	—	0.49	—	17,397	17,397	1.28	0.09	—	17,455
Water	—	—	—	—	—	—	—	—	—	—	—	127	2,965	3,092	13.3	0.33	—	3,523
Waste	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Total	73.4	70.1	28.3	237	0.71	0.87	70.6	71.5	0.85	17.9	18.8	834	89,441	90,275	88.2	3.18	17.5	93,445
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	31.2	28.2	22.5	240	0.68	0.38	69.7	70.1	0.36	17.7	18.1	—	69,822	69,822	3.01	2.77	78.3	70,800
Area	47.6	47.3	0.65	69.1	< 0.005	0.03	—	0.03	0.02	—	0.02	0.00	184	184	0.01	< 0.005	—	185
Energy	0.71	0.36	6.08	2.59	0.04	0.49	—	0.49	0.49	—	0.49	—	17,397	17,397	1.28	0.09	—	17,455
Water	—	—	—	—	—	—	—	—	—	—	—	127	2,965	3,092	13.3	0.33	—	3,523
Waste	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Total	79.5	75.8	29.2	312	0.73	0.90	69.7	70.6	0.87	17.7	18.6	834	90,367	91,201	88.2	3.19	91.1	94,447
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	5.69	5.15	4.10	43.8	0.12	0.07	12.7	12.8	0.06	3.23	3.30	—	11,560	11,560	0.50	0.46	13.0	11,722
Area	8.69	8.63	0.12	12.6	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	0.00	30.5	30.5	< 0.005	< 0.005	—	30.6
Energy	0.13	0.06	1.11	0.47	0.01	0.09	—	0.09	0.09	—	0.09	—	2,880	2,880	0.21	0.01	—	2,890
Water	—	—	—	—	—	—	—	—	—	—	—	21.1	491	512	2.19	0.06	—	583
Waste	—	—	—	—	—	—	—	—	—	—	—	117	0.00	117	11.7	0.00	—	409
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.12	2.12
Total	14.5	13.8	5.33	56.9	0.13	0.17	12.7	12.9	0.16	3.23	3.39	138	14,961	15,099	14.6	0.53	15.1	15,637

2.6. Operations Emissions by Sector, Mitigated

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	31.5	28.6	20.5	253	0.70	0.38	70.6	71.0	0.36	17.9	18.3	—	71,832	71,832	2.92	2.64	181	72,874
Area	40.7	40.7	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.66	0.33	5.61	2.39	0.04	0.45	—	0.45	0.45	—	0.45	—	11,595	11,595	0.91	0.05	—	11,632
Water	—	—	—	—	—	—	—	—	—	—	—	109	2,869	2,978	11.3	0.29	—	3,347
Waste	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Total	72.9	69.6	26.1	255	0.74	0.83	70.6	71.4	0.81	17.9	18.7	815	86,296	87,111	85.8	2.98	194	90,337
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	31.4	28.4	22.3	234	0.68	0.38	70.6	71.0	0.36	17.9	18.3	—	69,080	69,080	3.02	2.76	4.70	69,982
Area	40.7	40.7	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.66	0.33	5.61	2.39	0.04	0.45	—	0.45	0.45	—	0.45	—	11,525	11,525	0.90	0.05	—	11,561
Water	—	—	—	—	—	—	—	—	—	—	—	109	2,869	2,978	11.3	0.29	—	3,347
Waste	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Total	72.7	69.4	27.9	237	0.71	0.83	70.6	71.4	0.81	17.9	18.7	815	83,473	84,289	85.9	3.09	17.5	87,375
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	31.2	28.2	22.5	240	0.68	0.38	69.7	70.1	0.36	17.7	18.1	—	69,822	69,822	3.01	2.77	78.3	70,800
Area	40.7	40.7	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.66	0.33	5.61	2.39	0.04	0.45	—	0.45	0.45	—	0.45	—	11,573	11,573	0.91	0.05	—	11,610
Water	—	—	—	—	—	—	—	—	—	—	—	109	2,869	2,978	11.3	0.29	—	3,347
Waste	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Total	72.5	69.2	28.1	242	0.72	0.83	69.7	70.6	0.81	17.7	18.5	815	84,264	85,079	85.9	3.10	91.1	88,241
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.69	5.15	4.10	43.8	0.12	0.07	12.7	12.8	0.06	3.23	3.30	—	11,560	11,560	0.50	0.46	13.0	11,722
Area	7.42	7.42	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Energy	0.12	0.06	1.02	0.44	0.01	0.08	—	0.08	0.08	—	0.08	—	1,916	1,916	0.15	0.01	—	1,922
Water	—	—	—	—	—	—	—	—	—	—	—	18.0	475	493	1.88	0.05	—	554
Waste	—	—	—	—	—	—	—	—	—	—	—	117	0.00	117	11.7	0.00	—	409
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.12	2.12
Total	13.2	12.6	5.13	44.2	0.13	0.15	12.7	12.9	0.15	3.23	3.38	135	13,951	14,086	14.2	0.51	15.1	14,609

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	5.64	5.12	3.67	45.2	0.13	0.07	12.6	12.7	0.06	3.21	3.27	—	12,852	12,852	0.52	0.47	32.5	13,039
Apartments Low Rise	17.8	16.2	11.6	143	0.40	0.22	39.9	40.1	0.20	10.1	10.3	—	40,618	40,618	1.65	1.49	103	41,207
Apartments High Rise	8.06	7.32	5.24	64.6	0.18	0.10	18.0	18.1	0.09	4.58	4.67	—	18,362	18,362	0.75	0.68	46.4	18,628
Total	31.5	28.6	20.5	253	0.70	0.38	70.6	71.0	0.36	17.9	18.3	—	71,832	71,832	2.92	2.64	181	72,874
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	5.61	5.08	3.98	41.9	0.12	0.07	12.6	12.7	0.06	3.21	3.27	—	12,360	12,360	0.54	0.49	0.84	12,521
Apartments Low Rise	17.7	16.1	12.6	132	0.38	0.22	39.9	40.1	0.20	10.1	10.3	—	39,062	39,062	1.71	1.56	2.66	39,572
Apartments High Rise	8.02	7.26	5.69	59.9	0.17	0.10	18.0	18.1	0.09	4.58	4.67	—	17,658	17,658	0.77	0.71	1.20	17,889
Total	31.4	28.4	22.3	234	0.68	0.38	70.6	71.0	0.36	17.9	18.3	—	69,080	69,080	3.02	2.76	4.70	69,982
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	1.02	0.92	0.73	7.84	0.02	0.01	2.28	2.29	0.01	0.58	0.59	—	2,068	2,068	0.09	0.08	2.32	2,097
Apartments Low Rise	3.21	2.91	2.32	24.8	0.07	0.04	7.20	7.24	0.04	1.83	1.86	—	6,537	6,537	0.28	0.26	7.33	6,628

Apartments High Rise	1.45	1.32	1.05	11.2	0.03	0.02	3.25	3.27	0.02	0.83	0.84	—	2,955	2,955	0.13	0.12	3.31	2,996
Total	5.69	5.15	4.10	43.8	0.12	0.07	12.7	12.8	0.06	3.23	3.30	—	11,560	11,560	0.50	0.46	13.0	11,722

4.1.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	5.64	5.12	3.67	45.2	0.13	0.07	12.6	12.7	0.06	3.21	3.27	—	12,852	12,852	0.52	0.47	32.5	13,039
Apartments Low Rise	17.8	16.2	11.6	143	0.40	0.22	39.9	40.1	0.20	10.1	10.3	—	40,618	40,618	1.65	1.49	103	41,207
Apartments High Rise	8.06	7.32	5.24	64.6	0.18	0.10	18.0	18.1	0.09	4.58	4.67	—	18,362	18,362	0.75	0.68	46.4	18,628
Total	31.5	28.6	20.5	253	0.70	0.38	70.6	71.0	0.36	17.9	18.3	—	71,832	71,832	2.92	2.64	181	72,874
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	5.61	5.08	3.98	41.9	0.12	0.07	12.6	12.7	0.06	3.21	3.27	—	12,360	12,360	0.54	0.49	0.84	12,521
Apartments Low Rise	17.7	16.1	12.6	132	0.38	0.22	39.9	40.1	0.20	10.1	10.3	—	39,062	39,062	1.71	1.56	2.66	39,572

Apartments High Rise	8.02	7.26	5.69	59.9	0.17	0.10	18.0	18.1	0.09	4.58	4.67	—	17,658	17,658	0.77	0.71	1.20	17,889
Total	31.4	28.4	22.3	234	0.68	0.38	70.6	71.0	0.36	17.9	18.3	—	69,080	69,080	3.02	2.76	4.70	69,982
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	1.02	0.92	0.73	7.84	0.02	0.01	2.28	2.29	0.01	0.58	0.59	—	2,068	2,068	0.09	0.08	2.32	2,097
Apartments Low Rise	3.21	2.91	2.32	24.8	0.07	0.04	7.20	7.24	0.04	1.83	1.86	—	6,537	6,537	0.28	0.26	7.33	6,628
Apartments High Rise	1.45	1.32	1.05	11.2	0.03	0.02	3.25	3.27	0.02	0.83	0.84	—	2,955	2,955	0.13	0.12	3.31	2,996
Total	5.69	5.15	4.10	43.8	0.12	0.07	12.7	12.8	0.06	3.23	3.30	—	11,560	11,560	0.50	0.46	13.0	11,722

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	2,116	2,116	0.13	0.02	—	2,124
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	4,712	4,712	0.29	0.04	—	4,730

Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	2,853	2,853	0.18	0.02	—	2,864
Total	—	—	—	—	—	—	—	—	—	—	—	—	9,681	9,681	0.60	0.07	—	9,718
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	2,116	2,116	0.13	0.02	—	2,124
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	4,712	4,712	0.29	0.04	—	4,730
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	2,853	2,853	0.18	0.02	—	2,864
Total	—	—	—	—	—	—	—	—	—	—	—	—	9,681	9,681	0.60	0.07	—	9,718
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	350	350	0.02	< 0.005	—	352
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	780	780	0.05	0.01	—	783
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	472	472	0.03	< 0.005	—	474
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,603	1,603	0.10	0.01	—	1,609

4.2.2. Electricity Emissions By Land Use - Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	30.7	30.7	< 0.005	< 0.005	—	30.8
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	3,095	3,095	0.19	0.02	—	3,106
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,352	1,352	0.08	0.01	—	1,357
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,477	4,477	0.28	0.03	—	4,494
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	15.0	15.0	< 0.005	< 0.005	—	15.0
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	3,061	3,061	0.19	0.02	—	3,073
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,331	1,331	0.08	0.01	—	1,336
Total	—	—	—	—	—	—	—	—	—	—	—	—	4,407	4,407	0.27	0.03	—	4,423
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	4.26	4.26	< 0.005	< 0.005	—	4.28
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	511	511	0.03	< 0.005	—	513

Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	223	223	0.01	< 0.005	—	224
Total	—	—	—	—	—	—	—	—	—	—	—	—	738	738	0.05	0.01	—	740

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.13	0.06	1.11	0.47	0.01	0.09	—	0.09	0.09	—	0.09	—	1,410	1,410	0.12	< 0.005	—	1,414
Apartments Low Rise	0.41	0.20	3.47	1.48	0.02	0.28	—	0.28	0.28	—	0.28	—	4,405	4,405	0.39	0.01	—	4,418
Apartments High Rise	0.18	0.09	1.50	0.64	0.01	0.12	—	0.12	0.12	—	0.12	—	1,901	1,901	0.17	< 0.005	—	1,906
Total	0.71	0.36	6.08	2.59	0.04	0.49	—	0.49	0.49	—	0.49	—	7,716	7,716	0.68	0.01	—	7,737
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.13	0.06	1.11	0.47	0.01	0.09	—	0.09	0.09	—	0.09	—	1,410	1,410	0.12	< 0.005	—	1,414
Apartments Low Rise	0.41	0.20	3.47	1.48	0.02	0.28	—	0.28	0.28	—	0.28	—	4,405	4,405	0.39	0.01	—	4,418

Apartments High Rise	0.18	0.09	1.50	0.64	0.01	0.12	—	0.12	0.12	—	0.12	—	1,901	1,901	0.17	< 0.005	—	1,906
Total	0.71	0.36	6.08	2.59	0.04	0.49	—	0.49	0.49	—	0.49	—	7,716	7,716	0.68	0.01	—	7,737
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.02	0.01	0.20	0.09	< 0.005	0.02	—	0.02	0.02	—	0.02	—	233	233	0.02	< 0.005	—	234
Apartments Low Rise	0.07	0.04	0.63	0.27	< 0.005	0.05	—	0.05	0.05	—	0.05	—	729	729	0.06	< 0.005	—	731
Apartments High Rise	0.03	0.02	0.27	0.12	< 0.005	0.02	—	0.02	0.02	—	0.02	—	315	315	0.03	< 0.005	—	316
Total	0.13	0.06	1.11	0.47	0.01	0.09	—	0.09	0.09	—	0.09	—	1,277	1,277	0.11	< 0.005	—	1,281

4.2.4. Natural Gas Emissions By Land Use - Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.12	0.06	1.02	0.44	0.01	0.08	—	0.08	0.08	—	0.08	—	1,299	1,299	0.11	< 0.005	—	1,303
Apartments Low Rise	0.37	0.19	3.20	1.36	0.02	0.26	—	0.26	0.26	—	0.26	—	4,066	4,066	0.36	0.01	—	4,077
Apartments High Rise	0.16	0.08	1.38	0.59	0.01	0.11	—	0.11	0.11	—	0.11	—	1,753	1,753	0.16	< 0.005	—	1,758
Total	0.66	0.33	5.61	2.39	0.04	0.45	—	0.45	0.45	—	0.45	—	7,118	7,118	0.63	0.01	—	7,138

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.12	0.06	1.02	0.44	0.01	0.08	—	0.08	0.08	—	0.08	—	1,299	1,299	0.11	< 0.005	—	1,303
Apartments Low Rise	0.37	0.19	3.20	1.36	0.02	0.26	—	0.26	0.26	—	0.26	—	4,066	4,066	0.36	0.01	—	4,077
Apartments High Rise	0.16	0.08	1.38	0.59	0.01	0.11	—	0.11	0.11	—	0.11	—	1,753	1,753	0.16	< 0.005	—	1,758
Total	0.66	0.33	5.61	2.39	0.04	0.45	—	0.45	0.45	—	0.45	—	7,118	7,118	0.63	0.01	—	7,138
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.02	0.01	0.19	0.08	< 0.005	0.02	—	0.02	0.02	—	0.02	—	215	215	0.02	< 0.005	—	216
Apartments Low Rise	0.07	0.03	0.58	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	673	673	0.06	< 0.005	—	675
Apartments High Rise	0.03	0.01	0.25	0.11	< 0.005	0.02	—	0.02	0.02	—	0.02	—	290	290	0.03	< 0.005	—	291
Total	0.12	0.06	1.02	0.44	0.01	0.08	—	0.08	0.08	—	0.08	—	1,178	1,178	0.10	< 0.005	—	1,182

4.3. Area Emissions by Source

4.3.1. 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	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	38.2	38.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	3.06	3.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	9.22	8.73	0.95	101	< 0.005	0.05	—	0.05	0.04	—	0.04	—	269	269	0.01	< 0.005	—	270
Total	50.5	50.0	0.95	101	< 0.005	0.05	—	0.05	0.04	—	0.04	0.00	269	269	0.01	< 0.005	—	270
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	38.2	38.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	3.06	3.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	41.3	41.3	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	6.98	6.98	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.56	0.56	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landsca Equipment	1.15	1.09	0.12	12.6	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Total	8.69	8.63	0.12	12.6	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	0.00	30.5	30.5	< 0.005	< 0.005	—	30.6

4.3.2. Mitigated

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	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	38.2	38.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	2.45	2.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	40.7	40.7	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	38.2	38.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	2.45	2.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	40.7	40.7	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Hearths	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Consumer Products	6.98	6.98	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.45	0.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	7.42	7.42	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.1. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	28.5	1,118	1,146	2.99	0.08	—	1,244
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	60.6	882	943	6.27	0.15	—	1,146
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	38.4	965	1,004	4.00	0.10	—	1,134
Total	—	—	—	—	—	—	—	—	—	—	—	127	2,965	3,092	13.3	0.33	—	3,523
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments	—	—	—	—	—	—	—	—	—	—	—	28.5	1,118	1,146	2.99	0.08	—	1,244
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	60.6	882	943	6.27	0.15	—	1,146
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	38.4	965	1,004	4.00	0.10	—	1,134
Total	—	—	—	—	—	—	—	—	—	—	—	127	2,965	3,092	13.3	0.33	—	3,523
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	4.71	185	190	0.49	0.01	—	206
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	10.0	146	156	1.04	0.03	—	190
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	6.36	160	166	0.66	0.02	—	188
Total	—	—	—	—	—	—	—	—	—	—	—	21.1	491	512	2.19	0.06	—	583

4.4.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	24.3	1,096	1,120	2.56	0.07	—	1,205
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	51.8	836	888	5.36	0.13	—	1,062

Apartme High Rise	—	—	—	—	—	—	—	—	—	—	—	32.8	936	969	3.42	0.09	—	1,080
Total	—	—	—	—	—	—	—	—	—	—	—	109	2,869	2,978	11.3	0.29	—	3,347
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartme nts Mid Rise	—	—	—	—	—	—	—	—	—	—	—	24.3	1,096	1,120	2.56	0.07	—	1,205
Apartme nts Low Rise	—	—	—	—	—	—	—	—	—	—	—	51.8	836	888	5.36	0.13	—	1,062
Apartme nts High Rise	—	—	—	—	—	—	—	—	—	—	—	32.8	936	969	3.42	0.09	—	1,080
Total	—	—	—	—	—	—	—	—	—	—	—	109	2,869	2,978	11.3	0.29	—	3,347
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartme nts Mid Rise	—	—	—	—	—	—	—	—	—	—	—	4.03	181	185	0.42	0.01	—	199
Apartme nts Low Rise	—	—	—	—	—	—	—	—	—	—	—	8.57	138	147	0.89	0.02	—	176
Apartme nts High Rise	—	—	—	—	—	—	—	—	—	—	—	5.43	155	160	0.57	0.01	—	179
Total	—	—	—	—	—	—	—	—	—	—	—	18.0	475	493	1.88	0.05	—	554

4.5. Waste Emissions by Land Use

4.5.1. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	158	0.00	158	15.8	0.00	—	552
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	336	0.00	336	33.6	0.00	—	1,175
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	744
Total	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	158	0.00	158	15.8	0.00	—	552
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	336	0.00	336	33.6	0.00	—	1,175
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	744
Total	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	26.1	0.00	26.1	2.61	0.00	—	91.4
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	55.6	0.00	55.6	5.56	0.00	—	195

Apartme High Rise	—	—	—	—	—	—	—	—	—	—	—	35.2	0.00	35.2	3.52	0.00	—	123
Total	—	—	—	—	—	—	—	—	—	—	—	117	0.00	117	11.7	0.00	—	409

4.5.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	158	0.00	158	15.8	0.00	—	552
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	336	0.00	336	33.6	0.00	—	1,175
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	744
Total	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	158	0.00	158	15.8	0.00	—	552
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	336	0.00	336	33.6	0.00	—	1,175
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	213	0.00	213	21.3	0.00	—	744

Total	—	—	—	—	—	—	—	—	—	—	—	707	0.00	707	70.6	0.00	—	2,472
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	26.1	0.00	26.1	2.61	0.00	—	91.4
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	55.6	0.00	55.6	5.56	0.00	—	195
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	35.2	0.00	35.2	3.52	0.00	—	123
Total	—	—	—	—	—	—	—	—	—	—	—	117	0.00	117	11.7	0.00	—	409

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.72	2.72
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.40	6.40
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.67	3.67
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.72	2.72
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.40	6.40
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.67	3.67
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.45	0.45
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.06	1.06
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.61	0.61
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.12	2.12

4.6.2. Mitigated

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.72	2.72
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.40	6.40
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.67	3.67
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.72	2.72
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.40	6.40
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.67	3.67
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.8	12.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.45	0.45
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.06	1.06
Apartments High Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.61	0.61
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.12	2.12

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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
Apartments Mid Rise	1,798	1,798	1,798	656,212	17,847	17,847	17,847	6,514,003
Apartments Low Rise	5,682	5,682	5,682	2,073,864	56,402	56,402	56,402	20,586,589
Apartments High Rise	2,569	2,569	2,569	937,517	25,497	25,497	25,497	9,306,433

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	1,798	1,798	1,798	656,212	17,847	17,847	17,847	6,514,003
Apartments Low Rise	5,682	5,682	5,682	2,073,864	56,402	56,402	56,402	20,586,589
Apartments High Rise	2,569	2,569	2,569	937,517	25,497	25,497	25,497	9,306,433

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	786
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0

Electric Fireplaces	0
No Fireplaces	513
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0
Apartments High Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	534
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.1.2. Mitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	786
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0

Pellet Wood Stoves	0
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	513
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0
Apartments High Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	534
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

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)
3617419.5	1,205,807	0.00	0.00	—

5.10.3. Landscape Equipment

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

5.10.4. Landscape Equipment - Mitigated

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)
Apartments Mid Rise	1,451,670	532	0.0330	0.0040	4,398,310
Apartments Low Rise	3,232,943	532	0.0330	0.0040	13,745,684
Apartments High Rise	1,957,555	532	0.0330	0.0040	5,931,054

5.11.2. Mitigated

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)
Apartments Mid Rise	10,261	532	0.0330	0.0040	4,053,836
Apartments Low Rise	2,100,267	532	0.0330	0.0040	12,686,158
Apartments High Rise	913,001	532	0.0330	0.0040	5,470,231

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	14,860,157	125,422,998
Apartments Low Rise	31,634,123	73,472,641
Apartments High Rise	20,038,697	99,076,752

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	12,695,032	125,422,998
Apartments Low Rise	27,025,031	73,472,641
Apartments High Rise	17,119,059	99,076,752

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	293	—
Apartments Low Rise	623	—
Apartments High Rise	395	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	293	—
Apartments Low Rise	623	—
Apartments High Rise	395	—

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
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments High Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments High Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

Apartments High Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments High Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	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

5.15.2. Mitigated

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

5.18.1.2. Mitigated

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

5.18.1.2. Mitigated

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)

5.18.2.2. Mitigated

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	7.28	annual days of extreme heat
Extreme Precipitation	3.65	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	4.74	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 (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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	N/A	N/A	N/A	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	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 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	24.9
AQ-PM	60.5

AQ-DPM	40.5
Drinking Water	9.13
Lead Risk Housing	59.7
Pesticides	36.1
Toxic Releases	95.0
Traffic	53.4
Effect Indicators	—
CleanUp Sites	90.0
Groundwater	88.5
Haz Waste Facilities/Generators	89.8
Impaired Water Bodies	91.9
Solid Waste	67.5
Sensitive Population	—
Asthma	8.70
Cardio-vascular	22.7
Low Birth Weights	7.95
Socioeconomic Factor Indicators	—
Education	21.7
Housing	58.8
Linguistic	5.64
Poverty	0.83
Unemployment	32.3

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	97.84421917

Employed	59.16848454
Median HI	93.10920056
Education	—
Bachelor's or higher	89.32375209
High school enrollment	12.79353266
Preschool enrollment	95.7141024
Transportation	—
Auto Access	93.63531374
Active commuting	53.95868087
Social	—
2-parent households	51.8285641
Voting	90.4016425
Neighborhood	—
Alcohol availability	51.59758758
Park access	81.35506224
Retail density	52.62414988
Supermarket access	74.83639163
Tree canopy	28.25612729
Housing	—
Homeownership	99.76902348
Housing habitability	85.98742461
Low-inc homeowner severe housing cost burden	37.05889901
Low-inc renter severe housing cost burden	54.20248941
Uncrowded housing	83.16437829
Health Outcomes	—
Insured adults	89.59322469
Arthritis	0.0
Asthma ER Admissions	89.7

High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	87.6
Cognitively Disabled	60.3
Physically Disabled	86.7
Heart Attack ER Admissions	70.3
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	19.2
Children	95.4
Elderly	10.4
English Speaking	98.1
Foreign-born	4.6
Outdoor Workers	93.2

Climate Change Adaptive Capacity	—
Impervious Surface Cover	30.4
Traffic Density	43.9
Traffic Access	23.0
Other Indices	—
Hardship	11.8
Other Decision Support	—
2016 Voting	93.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	23.0
Healthy Places Index Score for Project Location (b)	92.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
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

Land Use	Acreage adjusted to match the estimated developable acres of Site No. 5.
Construction: Trips and VMT	Haul truck trips added into Demo and Site Prep phases to account for assumed material transport.
Operations: Vehicle Data	Trip generation rates updated per project-specific TIA. Trip lengths kept as defaults.
Operations: Hearths	No fireplaces or wood stoves.

APPENDIX B

ENERGY CALCULATIONS

Seal Beach Housing Element and Zoning Update Project—Energy Consumption Summary

Date of Last Revision: October 22, 2024

Summary of Energy Use During Construction		Annual Fuel Use
Construction On-Road Vehicle Fuel (D)	9,224	gallons (diesel)
Construction On-Road Vehicle Fuel (G)	69,952	gallons (gasoline)
Construction On-Road Vehicle Fuel (E)	35,411	kWh
Construction Off-Road Equipment Fuel	46,170	gallons (diesel)

Summary of Energy Use During Operations		Annual Fuel Use
Operational On-Road Vehicle Fuel (D)	133,422	gallons (diesel)
Operational On-Road Vehicle Fuel (G)	1,137,357	gallons (gasoline)
Operational On-Road Vehicle Fuel (E)	895,624	kWh
Building Electricity (unmitigated)	6,642,169	kWh
Building Natural Gas (unmitigated)	24,075,048	kBTU

Construction On-Road Vehicle Fuel Calculations

Housing Opportunity Site No. 4 of Seal Beach HE Update Project

Construction Schedule

Construction Phase Name	Start Date	End Date	Number of Days
Demolition	1/1/2025	1/29/2025	20
Site Preparation	1/30/2025	2/13/2025	10
Grading	2/14/2025	3/28/2025	30
Building Construction	3/29/2025	5/23/2026	300
Paving	5/24/2026	6/21/2026	20
Architectural Coating	6/22/2026	7/20/2026	20

Construction Trips and VMT

	Trips per Day				Construction Trip Length in Miles					Trips per Phase				VMT per Phase				
Phase Name	Worker Trip Number	Vendor Trip Number	Onsite Truck Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Onsite Truck Trip Length	Hauling Trip Length	Number of Days per Phase	Worker Trip Number	Vendor Trip Number	Onsite Truck Trip Number	Hauling Trip Number	Worker Trips	Vendor Trips	Onsite Truck Trips	Hauling Trips	
Demolition	15	0	0	10	18.5	10.2	0	20	20	300	0	0	200	5,550	0	0	4,000	
Site Preparation	18	0	0	15	18.5	10.2	0	20	10	175	0	0	150	3,238	0	0	3,000	
Grading	15	0	0	0	18.5	10.2	0	20	30	450	0	0	0	8,325	0	0	0	
Building Construction	331	49	0	0	18.5	10.2	0	20	300	99,360	14,752	0	0	1,838,160	150,472	0	0	
Paving	15	0	0	0	18.5	10.2	0	20	20	300	0	0	0	5,550	0	0	0	
Architectural Coating	66	0	0	0	18.5	10.2	0	20	20	1,325	0	0	0	24,509	0	0	0	
														1,885,331	150,472	0	7,000	2,042,804

		Gasoline		Diesel		Electric	
Trip Type	VMT	VMT	Consumption	VMT	Consumption	VMT	Consumption
Worker Trips	1,885,331	1,788,309	65,515	8,048	258	88,975	34,352
Vendor Trips	150,472	56,063	4,436	93,007	7,819	1,402	977
Hauling Trips	7,000	3	1	6,951	1,146	45	82
TOTALS	*2,042,804*	*1,844,375*	*69,952*	*108,006*	*9,224*	*90,423*	*35,411*
Statewide Consumption			13,629,998,406		3,067,876,790		
			0.0005%		0.0003%		
			0.0015%		0.0009%		

2,042,804

Total Project Construction VMT (miles)

2,042,804

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Orange
Calendar Year: 2025
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

VMT = Vehicle Miles Traveled
FE = Fuel Economy

						Given					*Calculations*	
Region	Calendar Year	Vehicle Categ	Model Year	Speed	Fuel	Population	VMT (mi/day)	% of Fleet	Energy Consumption (kWh/day)	Fuel Consumption (1000 gallons/day)	FE (mi/gallon)/(mi/kWh)	VMT*FE
Orange	2025	HHDT	Aggregate	Aggregate	Gasoline	6.7222924	572.5132259	0.04%	0	0.132943836	4.3064293	2465.488
Orange	2025	HHDT	Aggregate	Aggregate	Diesel	11420.65	1281007.926	99.31%	0	211.237609	6.0642985	7768415
Orange	2025	HHDT	Aggregate	Aggregate	Electricity	83.088293	8366.060491	0.65%	15115.80723	0	0.5534644	4630.316
Orange	2025	LDA	Aggregate	Aggregate	Gasoline	1056312.5	41885606.83	91.86%	0	1364.761186	30.690796	1.29E+09
Orange	2025	LDA	Aggregate	Aggregate	Diesel	3018.2865	89138.09087	0.20%	0	2.06406705	43.185657	3849487
Orange	2025	LDA	Aggregate	Aggregate	Electricity	74944.83	3623884.151	7.95%	1399118.378	0	2.5901198	9386294
Orange	2025	LDT1	Aggregate	Aggregate	Gasoline	96356.973	3443415.123	99.60%	0	134.366068	25.627118	88244807
Orange	2025	LDT1	Aggregate	Aggregate	Diesel	28.508221	428.3760164	0.01%	0	0.017924086	23.899462	10237.96
Orange	2025	LDT1	Aggregate	Aggregate	Electricity	292.06875	13382.73952	0.39%	5166.841994	0	2.5901198	34662.9
Orange	2025	LDT2	Aggregate	Aggregate	Gasoline	529834.47	21568112.97	98.89%	0	860.9716631	25.050898	5.4E+08
Orange	2025	LDT2	Aggregate	Aggregate	Diesel	2111.5254	87946.98549	0.40%	0	2.68272495	32.782707	2883140
Orange	2025	LDT2	Aggregate	Aggregate	Electricity	4251.5063	154415.472	0.71%	59617.11678	0	2.5901198	399954.6
Orange	2025	LHDT1	Aggregate	Aggregate	Gasoline	41223.987	1660486.368	62.85%	0	115.6151536	14.362186	23848214
Orange	2025	LHDT1	Aggregate	Aggregate	Diesel	22344.745	951494.9678	36.01%	0	45.63388289	20.850625	19839265
Orange	2025	LHDT1	Aggregate	Aggregate	Electricity	428.31076	30121.52667	1.14%	16925.44598	0	1.7796593	53606.05
Orange	2025	LHDT2	Aggregate	Aggregate	Gasoline	6668.4375	250352.8675	37.61%	0	19.99612697	12.520068	3134435
Orange	2025	LHDT2	Aggregate	Aggregate	Diesel	9609.5748	407866.7845	61.28%	0	23.15667142	17.61336	7183904
Orange	2025	LHDT2	Aggregate	Aggregate	Electricity	110.61689	7389.195621	1.11%	4155.863955	0	1.7780167	13138.11
Orange	2025	MDV	Aggregate	Aggregate	Gasoline	325579.96	12660247.41	97.33%	0	622.3110176	20.343923	2.58E+08
Orange	2025	MDV	Aggregate	Aggregate	Diesel	4600.6408	180507.4796	1.39%	0	7.379567219	24.460442	4415293
Orange	2025	MDV	Aggregate	Aggregate	Electricity	4586.9893	166596.8195	1.28%	64320.12231	0	2.5901198	431505.7
Orange	2025	MHDT	Aggregate	Aggregate	Gasoline	7268.4134	379776.8426	24.47%	0	73.08335708	5.1964887	1973506
Orange	2025	MHDT	Aggregate	Aggregate	Diesel	28028.877	1160618.703	74.79%	0	129.2771257	8.9777576	10419753
Orange	2025	MHDT	Aggregate	Aggregate	Electricity	222.61699	11431.93425	0.74%	11989.52129	0	0.9534938	10900.28

	2026		
Worker (LDA, LDT1, LDT2, MDV)	**gas**	**diesel**	**elec**
Sum of VMT*FE (Column BI)	**2171607099**	**11158158**	**10252417.11**
Total VMT	**79557382.33**	**358020.932**	**3958279.182**
Weighted Average Fuel Economy	**27.29611049**	**31.16621686**	**2.590119756**
Percentage	95%	0%	5%
Vendor (HHDT, LHDT1, LHDT2, MHDT)			
Sum of VMT*FE (Column BI)	**28958620.95**	**45211336.86**	**82274.76199**
Total VMT	**2291188.592**	**3800988.381**	**57308.71702**
Weighted Average Fuel Economy	**12.63912585**	**11.89462643**	**1.435641317**
Percentage	37%	62%	1%
Onsite Trucks (LHDT1, LHDT2, MDV)			
Sum of VMT*FE (Column BI)	**284541747.5**	**31438461.75**	**498249.8807**
Total VMT	**14571086.64**	**1539869.232**	**204107.5418**
Weighted Average Fuel Economy	**19.52783306**	**20.41631919**	**2.441114504**
Percentage	89%	9%	1%
Haul (HHDT)			
Sum of VMT*FE (Column BI)	**2465.487715**	**7768414.507**	**4630.316268**
Total VMT	**572.5132259**	**1281007.926**	**8366.060491**
Weighted Average Fuel Economy	**4.306429273**	**6.06429855**	**0.553464354**
Percentage	0%	99%	1%

Construction Off-Road Equipment Fuel Calculation

Housing Opportunity Site No. 4 of Seal Beach HE Update Project

Construction Schedule

Construction Phase Name	Start Date	End Date	Number of Days
Demolition	1/1/2025	1/29/2025	20
Site Preparation	1/30/2025	2/13/2025	10
Grading	2/14/2025	3/28/2025	30
Building Construction	3/29/2025	5/23/2026	300
Paving	5/24/2026	6/21/2026	20
Architectural Coating	6/22/2026	7/20/2026	20

Construction Equipment

Phase Name	Standardized Equipment Type	HP Bin	Equipment Type + HP Bin	Amount	Use Hours per Day	Horse Power	Load Factor	Number of Days	HP Hours	Fuel (gallons/HP-hour)	Diesel Fuel Usage
Demolition	Rubber Tired Dozers	600	Rubber Tired Dozers 600	2	8	367	0.4	20	46,976.00	0.045360697	2130.864102
Demolition	Excavators	50	Excavators 50	3	8	36	0.38	20	6,566.40	0.056097854	368.3609507
Demolition	Concrete/Industrial Saws	50	Concrete/Industrial Saws 50	1	8	33	0.73	20	3,854.40	0.041778545	161.0312236
Site Preparation	Rubber Tired Dozers	600	Rubber Tired Dozers 600	3	8	367	0.4	10	35,232.00	0.045360697	1598.148077
Site Preparation	Tractors/Loaders/Backhoes	100	Tractors/Loaders/Backhoes 100	4	8	84	0.37	10	9,945.60	0.056488273	561.8097728
Grading	Graders	175	Graders 175	1	8	148	0.41	30	14,563.20	0.053828804	783.9196317
Grading	Excavators	50	Excavators 50	2	8	36	0.38	30	6,566.40	0.056097854	368.3609507
Grading	Tractors/Loaders/Backhoes	100	Tractors/Loaders/Backhoes 100	2	8	84	0.37	30	14,918.40	0.056488273	842.7146592
Grading	Rubber Tired Dozers	600	Rubber Tired Dozers 600	1	8	367	0.4	30	35,232.00	0.045360697	1598.148077
Grading	Scrapers	600	Scrapers 600	2	8	423	0.48	30	97,459.20	0.047681676	4647.017963
Building Construction	Rough Terrain Forklifts	75	Rough Terrain Forklifts 75	3	8	82	0.2	300	118,080.00	0.056397679	6659.43796
Building Construction	Generator Sets	15	Generator Sets 15	1	8	14	0.74	300	24,864.00	0.042313653	1052.086662
Building Construction	Cranes	600	Cranes 600	1	7	367	0.29	300	223,503.00	0.051529327	11516.95926
Building Construction	Welders	50	Welders 50	1	8	46	0.45	300	49,680.00	0.025812315	1282.355817
Building Construction	Tractors/Loaders/Backhoes	100	Tractors/Loaders/Backhoes 100	3	7	84	0.37	300	195,804.00	0.056488273	11060.6299
Paving	Pavers	100	Pavers 100	2	8	81	0.42	20	10,886.40	0.056536354	615.4773657
Paving	Paving Equipment	100	Paving Equipment 100	2	8	89	0.36	20	10,252.80	0.059586515	610.9286182
Paving	Rollers	50	Rollers 50	2	8	36	0.38	20	4,377.60	0.057851044	253.2487304
Architectural Coating	Air Compressors	50	Air Compressors 50	1	6	37	0.48	20	2,131.20	0.027574332	58.76641691

46,170.27

Notes:

Source of usage estimates: California Air Resource Board (CARB). 2024. OFFROAD2021 (v1.0.5) Emissions Inventory

Website: https://arb.ca.gov/emfac/offroad/emissions-inventory/21d33152fb51a3d56eeba52cc9a2a7b426d5034f. Accessed January 31, 2024.

0.0015% 0.004%

Operational Fuel Calculation—Project-Generated Operational Trips

Total Operational VMT

Seal Beach HE Update Project

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	1,798	1,798	1,798	656,212	17,847	17,847	17,847	6,514,003
Apartments Low Rise	5,682	5,682	5,682	2,073,864	256,402	56,402	56,402	20,586,589
Apartments High Rise	2,569	2,569	2,569	937,517	25,497	25,497	25,497	9,306,433
							Total Annual VMT	36,407,025

Vehicle Type	Fraction of 1	Annual VMT	Gasoline		Diesel		Electric		
			VMT	Consumption	VMT	Consumption	VMT	Consumption	
Passenger Cars (LDA, LDT1, LDT2, MDV)	0.9236	33,625,528	31,463,781	1,069,206	124,755	3,881	2,036,992	786,447	
Trucks (HHDT, MHDT, LHDT1, LHDT2)	0.0701	2,552,132	848,520	61,979	1,551,371	125,861	152,241	106,883	
Motor Homes and Buses (MCY, MH, OBUS, SBUS, UI	0.0063	229,364	196,061	6,171	31,265	3,679	2,038	2,294	
Total	*1.0000*	*36,407,025*	*32,508,363*	*1,137,357*	*1,707,391*	*133,422*	*2,191,271*	*895,624*	*36,407,025*

*Note: Fleet mix pulled from CalEEMod defaults

13,629,998,406

3,067,876,790

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory
Region Type: County
Region: Orange
Calendar Year: 2025
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	CalYr	Vehicle Class + HP Bin	Model Year	Fuel	Fuel Consumption (gallons/year)	Horsepower Hours (HP-hours/year)	Fuel Efficiency (gallons/HP-hour)
Orange	2025	Bore/Drill Rigs 100	Aggregate	Diesel	8047.956398	143130.4005	0.056228141
Orange	2025	Bore/Drill Rigs 175	Aggregate	Diesel	57784.34477	1149682.507	0.050261132
Orange	2025	Bore/Drill Rigs 300	Aggregate	Diesel	68721.21865	1368634.032	0.050211537
Orange	2025	Bore/Drill Rigs 50	Aggregate	Diesel	2727.061314	48627.6513	0.056080465
Orange	2025	Bore/Drill Rigs 600	Aggregate	Diesel	98845.90753	1984167.838	0.049817312
Orange	2025	Bore/Drill Rigs 75	Aggregate	Diesel	10526.74281	186862.1108	0.056334282
Orange	2025	Cranes 100	Aggregate	Diesel	3730.920371	45691.9119	0.081653847
Orange	2025	Cranes 175	Aggregate	Diesel	27948.95982	473921.8272	0.058973776
Orange	2025	Cranes 25	Aggregate	Diesel	7.504915654	133.8240616	0.056080465
Orange	2025	Cranes 300	Aggregate	Diesel	90421.6181	1699779.135	0.053196098
Orange	2025	Cranes 50	Aggregate	Diesel	317.4093014	3720.171057	0.085321158
Orange	2025	Cranes 600	Aggregate	Diesel	126004.2459	2445291.882	0.051529327
Orange	2025	Cranes 75	Aggregate	Diesel	1233.65802	15719.7116	0.078478413
Orange	2025	Crawler Tractors 100	Aggregate	Diesel	41846.36245	718287.4958	0.058258514
Orange	2025	Crawler Tractors 175	Aggregate	Diesel	151203.9201	2978733.396	0.050761146
Orange	2025	Crawler Tractors 300	Aggregate	Diesel	187184.9854	3693148.302	0.050684394
Orange	2025	Crawler Tractors 50	Aggregate	Diesel	1593.150587	24985.74282	0.063762386
Orange	2025	Crawler Tractors 600	Aggregate	Diesel	328163.2929	6614937.188	0.049609434
Orange	2025	Crawler Tractors 75	Aggregate	Diesel	10863.53913	181145.8738	0.05997122
Orange	2025	Excavators 100	Aggregate	Diesel	104118.9426	1848175.565	0.056336067
Orange	2025	Excavators 175	Aggregate	Diesel	587497.315	11642564.64	0.05046116
Orange	2025	Excavators 25	Aggregate	Diesel	4.492051707	80.10011468	0.056080465
Orange	2025	Excavators 300	Aggregate	Diesel	628568.0585	12464545.5	0.050428478
Orange	2025	Excavators 50	Aggregate	Diesel	168671.7025	3006740.712	0.056097854
Orange	2025	Excavators 600	Aggregate	Diesel	725662.1502	14423719.46	0.050310334
Orange	2025	Excavators 75	Aggregate	Diesel	133908.8034	2382098.988	0.056214626
Orange	2025	Graders 100	Aggregate	Diesel	4309.538077	71459.00663	0.060307836
Orange	2025	Graders 175	Aggregate	Diesel	68870.6614	1279438.83	0.053828804
Orange	2025	Graders 300	Aggregate	Diesel	227458.8536	4470068.303	0.050884872
Orange	2025	Graders 50	Aggregate	Diesel	528.6503952	8762.07119	0.060333953
Orange	2025	Graders 600	Aggregate	Diesel	54993.71001	1090934.916	0.050409707
Orange	2025	Graders 75	Aggregate	Diesel	2023.520067	27565.68917	0.0734072
Orange	2025	Bore/Drill Rigs 15	Aggregate	Diesel	14.84514218	0	0
Orange	2025	Bore/Drill Rigs 25	Aggregate	Diesel	68.74970391	0	0
Orange	2025	Cement And Mortar Mixers 15	Aggregate	Diesel	102.4155322	0	0
Orange	2025	Cement And Mortar Mixers 25	Aggregate	Diesel	19.9940538	0	0
Orange	2025	Concrete/Industrial Saws 25	Aggregate	Diesel	13.71482815	0	0
Orange	2025	Concrete/Industrial Saws 50	Aggregate	Diesel	4770.55	114186.6	0.041778545
Orange	2025	Dumpers/Tenders 25	Aggregate	Diesel	9.869450947	0	0
Orange	2025	Excavators 25	Aggregate	Diesel	70.49524482	0	0
Orange	2025	Other 15	Aggregate	Diesel	225.6256843	0	0
Orange	2025	Other 25	Aggregate	Diesel	36.87567026	0	0
Orange	2025	Pavers 25	Aggregate	Diesel	18.52927664	0	0
Orange	2025	Paving Equipment 25	Aggregate	Diesel	31.49191056	0	0
Orange	2025	Plate Compactors 15	Aggregate	Diesel	88.09380801	0	0
Orange	2025	Rollers 15	Aggregate	Diesel	319.481019	0	0
Orange	2025	Rollers 25	Aggregate	Diesel	221.0333329	0	0
Orange	2025	Rubber Tired Loaders 25	Aggregate	Diesel	12.82136126	0	0
Orange	2025	Signal Boards 15	Aggregate	Diesel	1377.029059	0	0
Orange	2025	Signal Boards 50	Aggregate	Diesel	2102.4	47267.5	0.044478764
Orange	2025	Skid Steer Loaders 25	Aggregate	Diesel	3632.492465	0	0
Orange	2025	Tractors/Loaders/Backhoes 25	Aggregate	Diesel	337.3350078	0	0
Orange	2025	Trenchers 15	Aggregate	Diesel	126.503726	0	0

Orange	2025	Trenchers 25	Aggregate	Diesel	327.6747419	0	0
Orange	2025	Off-Highway Tractors 100	Aggregate	Diesel	23758.49872	422684.1397	0.056208635
Orange	2025	Off-Highway Tractors 175	Aggregate	Diesel	129148.7508	2564191.879	0.050366258
Orange	2025	Off-Highway Tractors 300	Aggregate	Diesel	57920.67328	1155692.929	0.050117702
Orange	2025	Off-Highway Tractors 50	Aggregate	Diesel	28406.58821	494337.0239	0.057464011
Orange	2025	Off-Highway Tractors 600	Aggregate	Diesel	152814.986	3092350.713	0.049417094
Orange	2025	Off-Highway Tractors 75	Aggregate	Diesel	24896.68206	428381.5809	0.058118003
Orange	2025	Off-Highway Trucks 100	Aggregate	Diesel	645.2765976	11506.26325	0.056080465
Orange	2025	Off-Highway Trucks 175	Aggregate	Diesel	33274.11327	660043.1152	0.05041203
Orange	2025	Off-Highway Trucks 300	Aggregate	Diesel	77912.23009	1550989.375	0.05023389
Orange	2025	Off-Highway Trucks 50	Aggregate	Diesel	1215.570396	21675.46913	0.056080465
Orange	2025	Off-Highway Trucks 600	Aggregate	Diesel	573074.9857	11427939.27	0.050146835
Orange	2025	Off-Highway Trucks 75	Aggregate	Diesel	1359.024354	22603.7471	0.060123852
Orange	2025	Pavers 100	Aggregate	Diesel	14480.20603	256122.0342	0.056536354
Orange	2025	Pavers 175	Aggregate	Diesel	48715.56932	965140.7252	0.050475095
Orange	2025	Pavers 300	Aggregate	Diesel	59154.13573	1172535.869	0.050449745
Orange	2025	Pavers 50	Aggregate	Diesel	2630.939589	46229.38633	0.056910545
Orange	2025	Pavers 600	Aggregate	Diesel	10476.3768	209394.1281	0.050031856
Orange	2025	Pavers 75	Aggregate	Diesel	13394.8975	235734.0187	0.056822081
Orange	2025	Paving Equipment 100	Aggregate	Diesel	8237.251878	138240.2028	0.059586515
Orange	2025	Paving Equipment 175	Aggregate	Diesel	54084.53736	1068816.847	0.05060225
Orange	2025	Paving Equipment 300	Aggregate	Diesel	24361.59164	481587.9282	0.050585968
Orange	2025	Paving Equipment 50	Aggregate	Diesel	6793.258491	119265.0548	0.056959337
Orange	2025	Paving Equipment 600	Aggregate	Diesel	57739.53475	1150296.137	0.050195365
Orange	2025	Paving Equipment 75	Aggregate	Diesel	4935.770453	88012.29484	0.056080465
Orange	2025	Rollers 100	Aggregate	Diesel	40676.60129	700979.0809	0.058028267
Orange	2025	Rollers 175	Aggregate	Diesel	233843.3844	4622563.726	0.050587379
Orange	2025	Rollers 300	Aggregate	Diesel	20126.07946	390708.7805	0.051511715
Orange	2025	Rollers 50	Aggregate	Diesel	65650.46014	1134818.934	0.057851044
Orange	2025	Rollers 600	Aggregate	Diesel	16280.52885	330715.3023	0.04922823
Orange	2025	Rollers 75	Aggregate	Diesel	26095.92961	462173.0614	0.056463545
Orange	2025	Rough Terrain Forklifts 100	Aggregate	Diesel	58194.07133	1005509.271	0.057875221
Orange	2025	Rough Terrain Forklifts 175	Aggregate	Diesel	374083.8757	7410863.024	0.050477775
Orange	2025	Rough Terrain Forklifts 300	Aggregate	Diesel	3193.989513	62262.30311	0.05129893
Orange	2025	Rough Terrain Forklifts 50	Aggregate	Diesel	2092.573628	37313.77075	0.056080465
Orange	2025	Rough Terrain Forklifts 600	Aggregate	Diesel	910.1322636	18007.09776	0.050542973
Orange	2025	Rough Terrain Forklifts 75	Aggregate	Diesel	83132.66172	1474044.019	0.056397679
Orange	2025	Rubber Tired Dozers 100	Aggregate	Diesel	2840.834499	48071.95498	0.059095464
Orange	2025	Rubber Tired Dozers 175	Aggregate	Diesel	8841.300714	174865.2787	0.050560642
Orange	2025	Rubber Tired Dozers 300	Aggregate	Diesel	11067.85188	219207.8885	0.050490208
Orange	2025	Rubber Tired Dozers 50	Aggregate	Diesel	617.8911745	6702.315588	0.092190701
Orange	2025	Rubber Tired Dozers 600	Aggregate	Diesel	58584.64601	1291528.788	0.045360697
Orange	2025	Rubber Tired Dozers 75	Aggregate	Diesel	1358.718182	21607.24532	0.062882527
Orange	2025	Rubber Tired Loaders 100	Aggregate	Diesel	50440.1934	879117.7682	0.057375923
Orange	2025	Rubber Tired Loaders 175	Aggregate	Diesel	382550.4847	7569437.293	0.050538827
Orange	2025	Rubber Tired Loaders 300	Aggregate	Diesel	719017.2735	14266532.67	0.05039888
Orange	2025	Rubber Tired Loaders 50	Aggregate	Diesel	3992.679395	67437.96245	0.05920522
Orange	2025	Rubber Tired Loaders 600	Aggregate	Diesel	554582.3176	11083273.54	0.050037772
Orange	2025	Rubber Tired Loaders 75	Aggregate	Diesel	30894.19523	535259.5018	0.057718163
Orange	2025	Scrapers 100	Aggregate	Diesel	1521.020472	24043.73784	0.063260566
Orange	2025	Scrapers 175	Aggregate	Diesel	12301.15724	238516.1225	0.051573693
Orange	2025	Scrapers 300	Aggregate	Diesel	179872.0337	3432258.382	0.052406321
Orange	2025	Scrapers 50	Aggregate	Diesel	175.5888662	1500.983487	0.116982544
Orange	2025	Scrapers 600	Aggregate	Diesel	633526.4096	13286580.24	0.047681676
Orange	2025	Scrapers 75	Aggregate	Diesel	1252.787239	20099.42569	0.062329504
Orange	2025	Skid Steer Loaders 100	Aggregate	Diesel	230761.6787	4109400.757	0.056154581
Orange	2025	Skid Steer Loaders 175	Aggregate	Diesel	67798.38672	1342350.673	0.05050721
Orange	2025	Skid Steer Loaders 300	Aggregate	Diesel	5546.090085	109943.4623	0.050444928
Orange	2025	Skid Steer Loaders 50	Aggregate	Diesel	63936.44225	1115784.766	0.05730177
Orange	2025	Skid Steer Loaders 600	Aggregate	Diesel	3852.461967	76369.65873	0.050444928
Orange	2025	Skid Steer Loaders 75	Aggregate	Diesel	454481.9497	8083366.967	0.056224337
Orange	2025	Surfacing Equipment 100	Aggregate	Diesel	1667.41534	24301.16706	0.06861462
Orange	2025	Surfacing Equipment 175	Aggregate	Diesel	6163.578159	121520.0276	0.050720678

Orange	2025	Surfacing Equipment 300	Aggregate	Diesel	7215.037953	141039.1791	0.051156267
Orange	2025	Surfacing Equipment 50	Aggregate	Diesel	732.5983429	11199.20912	0.065415186
Orange	2025	Surfacing Equipment 600	Aggregate	Diesel	41383.53328	822464.2522	0.050316513
Orange	2025	Surfacing Equipment 75	Aggregate	Diesel	1250.68493	19736.1493	0.063370261
Orange	2025	Tractors/Loaders/Backhoes 100	Aggregate	Diesel	700686.4623	12404104.76	0.056488273
Orange	2025	Tractors/Loaders/Backhoes 175	Aggregate	Diesel	742452.0073	14668171.59	0.050616534
Orange	2025	Tractors/Loaders/Backhoes 25	Aggregate	Diesel	15.15233424	270.1891674	0.056080465
Orange	2025	Tractors/Loaders/Backhoes 300	Aggregate	Diesel	314515.8355	6228391.036	0.050497124
Orange	2025	Tractors/Loaders/Backhoes 50	Aggregate	Diesel	65944.63594	1115802.968	0.05910061
Orange	2025	Tractors/Loaders/Backhoes 600	Aggregate	Diesel	239665.0947	4769953.061	0.050244749
Orange	2025	Tractors/Loaders/Backhoes 75	Aggregate	Diesel	299556.8192	5234721.391	0.057224979
Orange	2025	Trenchers 100	Aggregate	Diesel	7842.968073	137395.109	0.057083313
Orange	2025	Trenchers 175	Aggregate	Diesel	12803.38088	251592.4386	0.050889371
Orange	2025	Trenchers 300	Aggregate	Diesel	7693.547354	151975.9281	0.05062346
Orange	2025	Trenchers 50	Aggregate	Diesel	20237.57453	354993.7389	0.057008258
Orange	2025	Trenchers 600	Aggregate	Diesel	12489.37165	252381.5336	0.049486076
Orange	2025	Trenchers 75	Aggregate	Diesel	6504.12176	110639.6964	0.058786511
Orange	2025	Air Compressors 50	Aggregate	Diesel	91947.15	3334519.55	0.027574332
Orange	2025	Generator Sets 15	Aggregate	Diesel	253335.55	5987087.7	0.042313653
Orange	2025	Welders 50	Aggregate	Diesel	422016.65	16349430.4	0.025812315

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Orange
Calendar Year: 2029
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

VMT = Vehicle Miles Traveled
FE = Fuel Economy

						Given				*Calculations*	
Region	Calendar Year	Vehicle Class	Model Year	Speed	Fuel	Population	VMT	Energy Consumption	Fuel Consumption	FE (mi/gallon)/(mi/kWh)	VMT*FE
Orange	2029	HHDT	Aggregate	Aggregate	Diesel	12191.4017	1327935.748	0	207.4294256	6.40186774	8501269.027
Orange	2029	LDA	Aggregate	Aggregate	Diesel	1925.877657	58348.44754	0	1.287785666	45.30912952	2643717.367
Orange	2029	LDT1	Aggregate	Aggregate	Diesel	2.902217211	55.85633946	0	0.002102861	26.56206625	1483.659789
Orange	2029	LDT2	Aggregate	Aggregate	Diesel	2216.820715	89349.39377	0	2.549871681	35.04074124	3130868.987
Orange	2029	LHDT1	Aggregate	Aggregate	Diesel	24434.47216	1013330.39	0	47.8258656	21.18791531	21470358.48
Orange	2029	LHDT2	Aggregate	Aggregate	Diesel	10948.49634	447485.6852	0	24.82858777	18.02300193	8065035.366
Orange	2029	MDV	Aggregate	Aggregate	Diesel	4422.111559	168242.7577	0	6.460445706	26.04197377	4381373.483
Orange	2029	MH	Aggregate	Aggregate	Diesel	3027.333223	29055.74108	0	2.863629808	10.14647249	294813.2775
Orange	2029	MHDT	Aggregate	Aggregate	Diesel	29061.59525	1142312.203	0	125.2548755	9.119902108	10417775.47
Orange	2029	OBUS	Aggregate	Aggregate	Diesel	526.8225109	37172.07412	0	4.920352281	7.554758684	280826.0498
Orange	2029	SBUS	Aggregate	Aggregate	Diesel	651.9418709	13265.18631	0	1.761992045	7.528516574	99867.17503
Orange	2029	HHDT	Aggregate	Aggregate	Electricity	522.0698146	52092.53799	94345.67217	0	0.552145496	28762.66024
Orange	2029	LDA	Aggregate	Aggregate	Electricity	98016.32358	4514188.416	1742849.305	0	2.590119756	11692288.6
Orange	2029	LDT1	Aggregate	Aggregate	Electricity	662.9227227	32054.50283	12375.6837	0	2.590119756	83025.00105
Orange	2029	LDT2	Aggregate	Aggregate	Electricity	8828.976102	304521.1035	117570.2794	0	2.590119756	788746.1262
Orange	2029	LHDT1	Aggregate	Aggregate	Electricity	3159.739873	197245.2106	111020.6576	0	1.776653236	350436.3417
Orange	2029	LHDT2	Aggregate	Aggregate	Electricity	825.914217	49071.70376	27641.13103	0	1.77531461	87117.71263
Orange	2029	MDV	Aggregate	Aggregate	Electricity	8994.905126	308794.0816	119220.0016	0	2.590119756	799813.6512
Orange	2029	MHDT	Aggregate	Aggregate	Electricity	1742.62018	87359.31243	91767.73915	0	0.95196104	83162.66194
Orange	2029	OBUS	Aggregate	Aggregate	Electricity	36.31806959	2640.030273	2751.818001	0	0.959376773	2532.783724
Orange	2029	SBUS	Aggregate	Aggregate	Electricity	71.74051726	2213.73253	2559.741896	0	0.864826463	1914.494474
Orange	2029	UBUS	Aggregate	Aggregate	Electricity	5.944034594	327.053411	695.8022999	0	0.470037841	153.7274793
Orange	2029	HHDT	Aggregate	Aggregate	Gasoline	4.943091464	533.4895587	0	0.114806492	4.646858793	2479.050647
Orange	2029	LDA	Aggregate	Aggregate	Gasoline	1034856.174	41149375.45	0	1241.885608	33.13459404	1363467851
Orange	2029	LDT1	Aggregate	Aggregate	Gasoline	91581.52842	3277866.345	0	119.5500421	27.41836211	89873726.39
Orange	2029	LDT2	Aggregate	Aggregate	Gasoline	555722.2366	22415240.23	0	825.9977049	27.13717011	608286187.2
Orange	2029	LHDT1	Aggregate	Aggregate	Gasoline	40268.54793	1609503.505	0	104.948662	15.33610314	24683511.75
Orange	2029	LHDT2	Aggregate	Aggregate	Gasoline	6367.767391	235311.5961	0	17.70025781	13.29424682	3128290.439
Orange	2029	MCY	Aggregate	Aggregate	Gasoline	53993.0701	341399.2508	0	7.997771221	42.68679878	14573241.12
Orange	2029	MDV	Aggregate	Aggregate	Gasoline	331005.2666	12853071.73	0	582.5334921	22.06409057	283591338.7
Orange	2029	MH	Aggregate	Aggregate	Gasoline	5192.597132	52456.55971	0	10.74280936	4.882946161	256142.5569
Orange	2029	MHDT	Aggregate	Aggregate	Gasoline	6434.040691	304742.1499	0	57.27871773	5.320338198	1621331.3
Orange	2029	OBUS	Aggregate	Aggregate	Gasoline	761.1596295	30255.30829	0	5.525730761	5.475349704	165658.3933
Orange	2029	SBUS	Aggregate	Aggregate	Gasoline	702.653337	31753.64333	0	3.510382783	9.04563556	287231.8853
Orange	2029	UBUS	Aggregate	Aggregate	Gasoline	258.4023617	42628.96157	0	3.268690854	13.0416009	555949.9035

Passenger Cars (LDA, LDT1, LDT2, MDV)	gas	diesel	elec
Sum of VMT*FE (Column BI)	2345219103	10157443.5	13363873.4
Total VMT	79695553.8	315996.4553	5159558.1
Weighted Average Fuel Economy	29.4272264	32.14416911	2.59011976
Percentage	94%	0%	6%
Trucks (HHDT, MHDT, LHDT1, LHDT2)			
Sum of VMT*FE (Column BI)	29435612.5	48454438.34	549479.376
Total VMT	2150090.74	3931064.026	385768.765
Weighted Average Fuel Economy	13.6904048	12.32603642	1.42437498
Percentage	33%	61%	6%
Motor Homes and Buses (MCY, MH, OBUS, SBUS, UBUS)			
Sum of VMT*FE (Column BI)	15838223.9	675506.5023	4601.00568
Total VMT	498493.724	79493.00151	5180.81621
Weighted Average Fuel Economy	31.772163	8.497685198	0.8880851
Percentage	85%	14%	1%

Building Energy

From CalEEMod Results Tab 5.11.1

Land Use	Electricity (kWh/yr)	Natural Gas (kBTU/yr)
Apartments Mid Rise	1,451,670.30	4,398,309.79
Apartments Low Rise	3,232,943.00	13,745,684.00
Apartments High Rise	1,957,555.41	5,931,054.11
Totals*	***6,642,169***	***24,075,048***

*does not account for implementation of any mitigation