CITY OF PERRIS HOUSING IMPLEMENTATION MEASURES AIR QUALITY, GLOBAL CLIMATE CHANGE, HRA, AND ENERGY IMPACT ANALYSIS

City of Perris

August 14, 2023

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

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Project No. 19598

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EXECUTIVE SUMMARY

The purpose of this air quality, global climate change, health risk assessment and energy impact analysis is to provide an assessment of the impacts resulting from development of the proposed City of Perris Housing Implementation Measures project and to identify measures that may be necessary to reduce potentially significant impacts.

Construction-Source Emissions

With incorporation of the General Plan mitigation measures (see Section 7, Emissions Reduction Measures) and considering that all future individual developments within the proposed project would be subject to City environmental review, project construction-source emissions would not exceed applicable regional thresholds of significance established by the South Coast Air Quality Management District (SCAQMD).

With incorporation of the General Plan mitigation measures (see Section 7, Emissions Reduction Measures) and considering that all future individual developments within the proposed project would be subject to City environmental review, project construction-source emissions would not conflict with the Basin Air Quality Management Plan (AQMP). As discussed herein, the project will comply with all applicable SCAQMD construction-source emission reduction rules and guidelines. With incorporation of the General Plan mitigation measures (see Section 7, Emissions Reduction Measures) and considering that all future individual developments within the proposed project would be subject to City environmental review, project construction source emissions would not cause or substantively contribute to violation of the California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS).

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less than significant.

Operational-Source Emissions

Project operational-sourced emissions would exceed applicable regional thresholds of significance established by the SCAQMD. As shown in Section 6 of this report, in the comparison between the Existing General Plan Buildout and the Proposed Project, the emissions from the Proposed Project are generally lower than the emissions from the Existing General Plan Buildout. NOx is the only criteria pollutant that has an increase in emissions from those associated with the buildout of the existing general plan. Furthermore, at only an additional 17 pounds per day of NO_X, the net increase in project-related emissions would not exceed the SCAQMD threshold of 55 pounds per day. Therefore, the Proposed Project, which involves creation of an overlay zone for Housing Opportunity Sites identified in the recently adopted City of Perris General Plan Housing Element (August 17, 2022), would create less of an impact than the previously approved General Plan Buildout Scenario. Therefore, in comparison to the existing general plan buildout of the proposed project, the project operational-sourced emissions would not exceed applicable regional thresholds of significance.

Project operational-source emissions would not result in or cause a significant localized air quality or toxic air contaminant (TAC) impacts as discussed in the Operations-Related Local Air Quality Impacts section of this report. Additionally, project-related trips will not cause or result in CO concentrations exceeding applicable state and/or federal standards (CO "hotspots). The project will not be a significant source of toxic air contaminants. Project operational-source emissions would therefore not adversely affect sensitive receptors within the vicinity of the project.

Project operational-source emissions would not conflict with the Basin Air Quality Management Plan (AQMP). The project's emissions exceed SCAQMD regional thresholds and will potentially result in a significant cumulative impact. However, as stated above, in comparison to the existing general plan buildout of the proposed project, the net increase of project operational-sourced emissions would not exceed applicable regional thresholds of significance. The project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential operational-source odor impacts are therefore considered less than significant.

Greenhouse Gases

Project-related GHG emissions would not exceed the interpolated 2030 SCAQMD tier 4 screening threshold of 4.93 $MTCO_2e$ per service population per year for plans.[1]

Furthermore, the project's GHG emissions would not exceed the SCAQMD screening threshold (based on EO S-3-05). The project would not conflict with the goals of AB-32, SB-32, or the City of Perris CAP; therefore, the project would not conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases and impacts are considered to be less than significant.

Energy

For new development such as that proposed by the City of Perris Housing Implementation Measures project, compliance with California Building Standards Code Title 24 energy efficiency requirements (CALGreen), are considered demonstrable evidence of efficient use of energy. As discussed below, the project would provide for, and promote, energy efficiencies required under other applicable federal and State of California standards and regulations, and in so doing would meet or exceed all California Building Standards Code Title 24 standards. Moreover, energy consumed by the project's operation is calculated to be comparable to, or less than, energy consumed by other residential uses of similar scale and intensity that are constructed and operating in California. On this basis, the project would not result in the inefficient, wasteful, or unnecessary consumption of energy. Impacts are considered to be less than significant.

Comparison of the Existing General Plan and the Proposed Project

Buildout of the housing opportunity sites under the existing general plan zoning designations would create significant impacts in relation to regional operational and construction air quality impacts and greenhouse gas emission impacts. In comparison, as stated above, the proposed project (i.e., general plan buildout with the housing element update overlay zoning) would create significant impacts in relation to regional operational air quality impacts.

Emissions of criteria pollutants associated with both the proposed project and the existing general plan buildout exceed the SCAQMD thresholds for ROG, NOx, CO, PM10, and PM2.5. However, for all of the modeled criteria pollutants except NOx, the daily regional operational emissions associated with the proposed project would result in a decrease over those anticipated for the buildout of the existing general plan. Therefore, although the regional operational emissions for the proposed project would be considered to be cumulatively significant, the proposed project would not change the findings of significance in relation to operational emissions from that previously disclosed in the general plan. In addition, as construction would occur over the same area, the construction impacts of the proposed project would not be anticipated to generate more emissions than that of the existing general plan buildout.

The proposed project would result in an increase in GHG emissions over the existing general plan buildout; however, the emissions for the existing general plan buildout of the housing opportunity sites exceeds the interpolated 2030 SCAQMD draft tier 4 screening threshold of 4.93 $MTCO_2e$ per service population per year

[1] The year 2030 screening threshold of 4.93 MTCO2e/SP/year for plans was interpolated using the SCAQMD draft tier 4 screening thresholds for plans of 6.6 MTCO2e/SP/year for year 2020 and 4.1 MTCO2e/SP/year for year 2035.

for plans, whereas the proposed project does not exceed the SCAQMD tier 4 threshold. Therefore, the GHG emissions from the proposed project would result in a lower impact than the existing general plan buildout and would not be considered cumulatively considerable.

Regarding Energy, the energy consumed by both the existing general plan buildout and the proposed project's operation is calculated to be comparable to, or less than, energy consumed by other uses of similar scale and intensity that are constructed and operating in California. On this basis, the proposed project and the existing general plan buildout would not result in the inefficient, wasteful, or unnecessary consumption of energy.

1. INTRODUCTION

This section describes the purpose of this air quality, global climate change, health risk assessment, and energy impact analysis, project location, proposed development, and study area.

PURPOSE AND OBJECTIVES

This study was performed to address the possibility of regional/local air quality impacts and global climate change impacts, from project related air emissions. The objectives of the study include:

- documentation of the atmospheric setting
- discussion of criteria pollutants and greenhouse gases
- discussion of the air quality and global climate change regulatory framework
- discussion of the construction related air quality and greenhouse gas emissions
- analysis of the operations related air quality and greenhouse gas emissions
- discussion of the health risk impacts
- analysis of the conformity of the proposed project with the SCAQMD AQMP
- analysis of the project's energy use during construction and operation
- discussion/comparison of the project's air quality, greenhouse gas, and energy impacts to the existing general plan buildout
- recommendations for mitigation measures

The City of Perris is the lead agency for this air quality and greenhouse gas analysis, in accordance with the California Environmental Quality Act authorizing legislation. Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with terms unique to air quality and global climate change, a definition of terms has been provided in Appendix A.

PROJECT DESCRIPTION

The proposed project involves creation of an overlay zone for Housing Opportunity Sites identified in the recently adopted *City of Perris General Plan Housing Element* (August 17, 2022) that would continue to permit development in accordance with current zoning regulations or allow activation of the overlay zoning for development of up to 5,419 high-density, multi-family residential dwelling units distributed over 12 Housing Opportunity Areas ("Project").

The Housing Opportunity Areas are identified on Figure 7-3 of the Housing Element. Appendix B of the Housing Element provides detailed descriptions of each Housing Opportunity Area including the maximum number of potential units of multi-family housing that can be developed for each area. Table 1 summarizes the Housing Opportunity Area development potential, including the sites within each area and the maximum number of residential units estimated for each site. This information was obtained from Appendix B of the Housing Element. As shown in Table 1, full development of all Housing Opportunity Areas could result in up to 5,419 multi-family residential dwelling units.

Figure 1 shows the project location map. This figure shows the location of all twelve Housing Opportunity Areas.

PHASING AND TIMING

As stated previously, the proposed project is the buildout of the Housing Opportunity Sites identified in the *City of Perris General Plan Housing Element* (August 17, 2022) General Plan. Therefore, specific dates of

construction of the proposed project are unknown and would be speculative at this time; however, the buildout (operational) year for the General Plan is anticipated to be 2030.

SENSITIVE RECEPTORS IN PROJECT VICINITY

Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities (South Coast Air Quality Management District 2008). Commercial and industrial facilities are not included in the definition because employees do not typically remain on-site for 24 hours.

The nearest sensitive receptors to the Housing Opportunity Sites include:

- Area 1: The single-family residential uses located approximately 30 feet (9 meters) south and 55 feet (17 meters) west; multi-family residential uses located approximately 80 feet (24 meters) southwest (across the intersection of Dale St and Wilson Avenue); and the school use located approximately 850 feet (259 meters) north of the area boundaries.
- Area 2: The mobile home park located adjacent to the south; multi-family residential uses located adjacent to the northwest and approximately 50 feet (15 meters) north/northeast and 55 feet (16 meters) north; single-family residential uses located approximately 113 feet (34 meters) northeast and 120 feet (37 meters) west; and the school uses located adjacent to the northeast and northwest and approximately 360 feet (meters) north/northwest of the area boundaries.
- Area 3: The single-family residential uses located adjacent to the south and northeast and approximately 70 feet (21 meters) southeast, 355 feet (108 meters) north, 323 feet (98 meters) northwest, and 444 feet (135 meters) west; and the school use located approximately 55 feet (27 meters) east of the area boundaries.
- Area 4: The single-family residential uses located adjacent to the south and north and approximately 66 feet (20 meters) east and 308 feet (94 meters) north; and the school use located approximately 532 feet (162 meters) northeast of the area boundaries.
- Area 5: The single-family residential uses located adjacent to the south and west and approximately 50 feet (15 meters) east and 94 feet (28 meters) northeast of the area boundaries.
- Area 6: The single-family residential uses located approximately 2,617 feet (797 meters) east, 1,829 feet (557 meters) southwest, and 3,244 feet (988 meters) west of the area site boundaries.
- Area 7: The single-family residential uses located approximately 1,098 feet (335 meters) south, 1,004 feet (306 meters) southeast, and 1,599 feet (487 meters) southwest of the area site boundaries.
- Area 8: The single-family residential uses located approximately 40 feet (21 meters) northeast and 368 feet (112 meters) south of the area boundaries.
- Area 9: The single-family residential uses located adjacent to the north approximately 43 feet (13 meters) south, 112 feet (34 meters) southwest, 65 feet (19 meters) west, and 208 feet (63 meters) east; and the school use located approximately 591 feet (180 meters) north of the area boundaries.
- Area 10: The transient lodging use located approximately 85 feet (26 meters) west and the school use located approximately 126 feet (38 meters) south of the area boundaries.
- Area 11: The single-family residential uses located approximately 100 feet (38 meters) north and the multi-family residential uses located approximately 682 feet (208 meters) northwest of the area boundaries.
- Area 12: For the portion of Are 12 located at the southwestern corner of San Jacinto Avenue and G street, the single-family residential uses located approximately 155 feet (~48 meters) southeast, (~360 feet (~110 meters) west, and 381 feet (~116 meters) southwest; the mobile home park located approximately 385 feet (~117 meters) northeast; and multi-family residential uses located approximately 350 feet (~107 meters) east of the area boundaries. For the portion of Area 12 located east of G Street between 1st and 3rd streets, the single-family residential use located adjacent to the north and 704 feet (~215 meters) west; the mobile home park located approximately 517 feet (~158 meters) north; and multi-family residential uses located adjacent to the east and south of the area boundaries. For the portion of

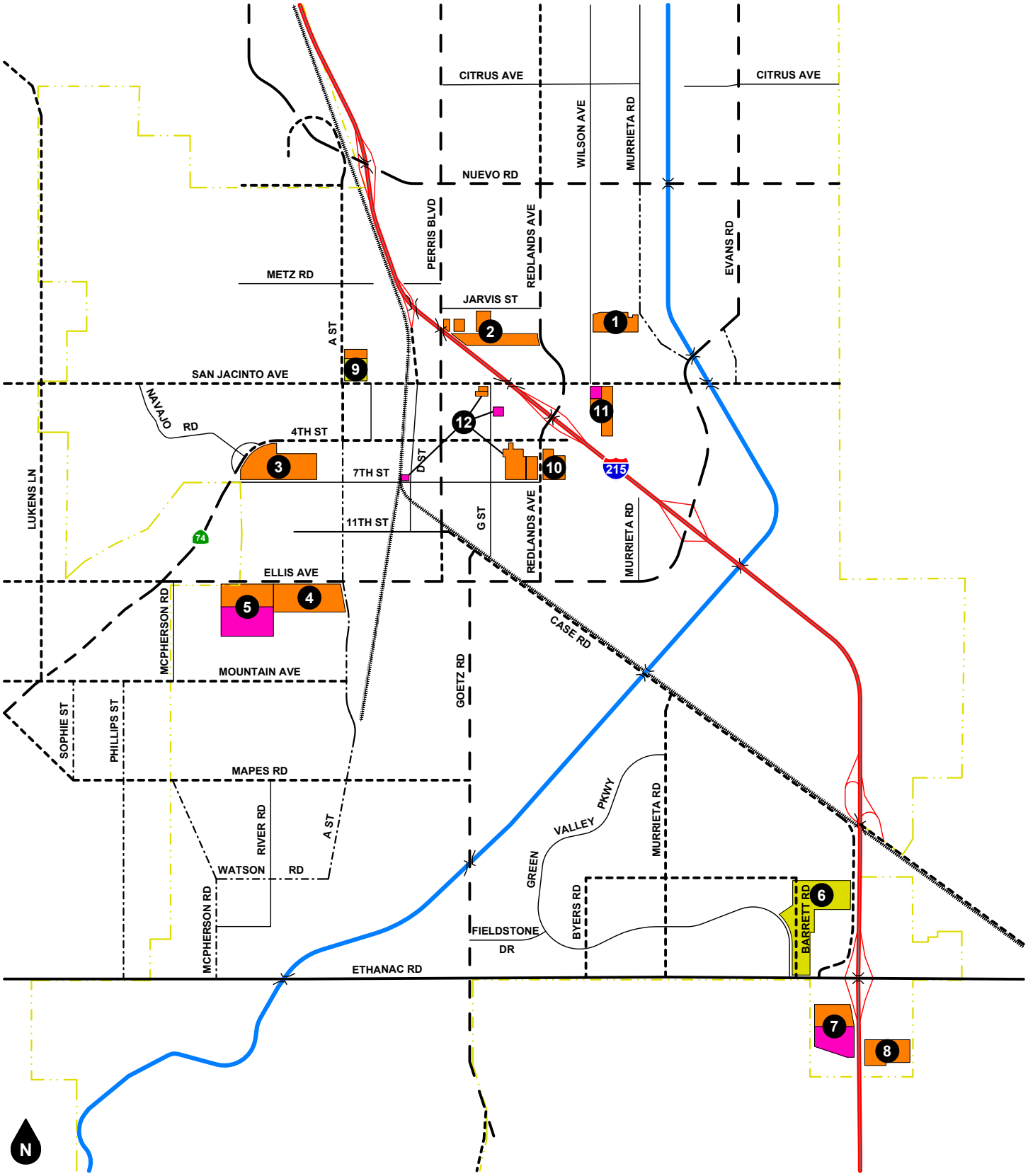
Area 12 located at the northwest corner of 7th Street and D Street, the single-family residential uses located approximately 105 feet (~32 meters) west and 190 feet (~58 meters) east, and multi-family residential uses located approximately 234 feet (~71 meters) south of the area boundaries. For the portion of Area 12 located between 4th Street and 7th Street and along Redlands Avenue, the single-family residential uses located approximately 357 feet (~108 meters) west, multi-family residential uses located approximately 529 feet (~161 meters) north, the transient lodging use located adjacent to the north, and the school use located approximately 86 feet (~26 meters) south of the area boundaries.

Other air quality sensitive land uses are located further from the project site and would experience lower impacts.

Table 1
Housing Opportunity Area Development Potential

Area	Buildout Potential (DU)	Area	Buildout Potential (DU)
1 - Subtotal	**320**	7 - Site 7.1	113
2 - Site 2.1	109	7 - Site 7.2	179
2 - Site 2.2	120	7 - Site 7.3	13
2 - Site 2.3	123	7 - Site 7.4	69
2 - Site 2.4	120	**7 - Subtotal**	**374**
2 - Site 2.5	46	8 - Site 8.1	24
2 - Site 2.6	19	8 - Site 8.2	49
2 - Subtotal	**537**	8 - Site 8.3	111
3 - Site 3.1	104	8 - Site 8.4	17
3 - Site 3.2	122	**8 - Subtotal**	**201**
3 - Site 3.3	26	9 - Site 9.1	79
3 - Site 3.4	114	9 - Site 9.2	220
3 - Site 3.5	156	**9 - Subtotal**	**299**
3 - Site 3.6	36	10 - Site 10.1	70
3 - Site 3.7	127	10 - Site 10.2	60
3 - Subtotal	**685**	**10 - Subtotal**	**130**
4 - Subtotal	**881**	11 - Site 11.1	32
5 - Site 5.1	233	11 - Site 11.2	93
5 - Site 5.2	222	11 - Site 11.3	24
5 - Site 5.3	263	**11 - Subtotal**	**149**
5 - Site 5.4	251	12 - Site 12.1	35
5 - Subtotal	**969**	12 - Site 12.2	28
6 - Site 6.1	239	12 - Site 12.3	10
6 - Site 6.2	303	12 - Site 12.4	49
6 - Subtotal	**542**	12 - Site 12.5	31
-	**-**	12 - Site 12.6	109
-	**-**	12 - Site 12.7	70
-	**-**	**12 - Subtotal**	**332**
TOTAL			**5,419**

Source: *City of Perris Housing Element* (August 17, 2022); Appendix B.
DU = Dwelling Units



Legend

- Freeway
- Expressway (184' ROW)
- Arterial (128' ROW)
- Secondary Arterial (94' ROW)
- Major Collector (78' ROW)
- Collector (66' ROW)
- Railroad
- Bridge
- Water
- City Boundary

Housing Opportunity Areas

- Lower Income
- Moderate Income
- Mixed Income

Figure 1
Project Location Map

2. AIR QUALITY ANALYSIS

EXISTING AIR QUALITY CONDITIONS

Local Air Quality

The project is located within the City of Perris in the portion of Riverside County that lies within the South Coast Air Basin (Basin). The project area is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin is a 6,600-square-mile coastal plain bounded by the Pacific Ocean to the southwest and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, and all of Orange County.

The ambient concentrations of air pollutants are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The topography and climate of southern California combine to make the Basin an area of high air pollution potential. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of 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 disrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers the photochemical reactions that produce ozone. The region experiences more days of sunlight than any other major urban area in the nation except Phoenix (SCAQMD, 2007).

The temperature and precipitation levels for the City of Sun City, the closest station to the City of Perris with updated data, are shown below in Table 2. Table 2 shows that August is typically the warmest month and January is typically the coolest month. Rainfall in the project area varies considerably in both time and space. Almost all the annual rainfall comes from the fringes of mid-latitude storms from late November to early April, with summers being almost completely dry.

Table 2
Local Monthly Climate Data

Descriptor	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Max. Temperature	66.7	68.1	71.1	77.2	83.2	91.8	97.6	98.6	93.5	84.2	71.2	66.9
Avg. Min. Temperature	36.3	38.9	41.6	45.1	50.1	54.5	58.6	60.1	57.4	49.3	39.4	35.4
Avg. Total Precipitation (in.)	2.29	3.08	1.95	0.79	0.31	0.07	0.04	0.22	0.1	0.45	0.71	1.33

Source: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8655
Data from the Sun City, CA station (048655).

Pollutants

Pollutants are generally classified as either criteria pollutants or non-criteria pollutants. Federal ambient air quality standards have been established for criteria pollutants, whereas no ambient standards have been established for non-criteria pollutants. For some criteria pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). A summary of federal and state ambient air quality standards is provided in the Regulatory Framework section.

Criteria Pollutants

The criteria pollutants consist of: ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead, and particulate matter. These pollutants can harm your health and the environment, and cause property damage. The Environmental Protection Agency (EPA) calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria for setting permissible levels. The following provides descriptions of each of the criteria pollutants.

Nitrogen Dioxides

Nitrogen Oxides (NOx) is the generic term for a group of highly reactive gases which contain nitrogen and oxygen. While most NOx are colorless and odorless, concentrations of nitrogen dioxide (NO_2) can often be seen as a reddish-brown layer over many urban areas. NOx form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NOx are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuel. NOx reacts with other pollutants to form, ground-level ozone, nitrate particles, acid aerosols, as well as NO_2, which cause respiratory problems. NOx and the pollutants formed from NOx can be transported over long distances, following the patterns of prevailing winds. Therefore, controlling NOx is often most effective if done from a regional perspective, rather than focusing on the nearest sources.

Ozone

Ozone (O_3) is not usually emitted directly into the air but at ground-level is created by a chemical reaction between NOx and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents as well as natural sources emit NOx and VOC that help form ozone. Ground-level ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form with the greatest concentrations usually occurring downwind from urban areas. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Because NOx and VOC are ozone precursors, the health effects associated with ozone are also indirect health effects associated with significant levels of NOx and VOC emissions.

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are indoor sources of CO. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air. CO is described as having only a local influence because it dissipates quickly. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high

traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. The health threat from lower levels of CO is most serious for those who suffer from heart disease such as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

Sulfur Dioxide

Sulfur Oxide (SOx) gases (including sulfur dioxide [SO_2]) are formed when fuel containing sulfur, such as coal and oil is burned, and from the refining of gasoline. SOx dissolve easily in water vapor to form acid and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and the environment.

Lead

Lead (Pb) is a metal found naturally in the environment as well as manufactured products. The major sources of lead emissions have historically been motor vehicles and industrial sources. Due to the phase out of leaded gasoline, metal processing is now the primary source of lead emissions to the air. High levels of lead in the air are typically only found near lead smelters, waste incinerators, utilities, and lead-acid battery manufacturers. Exposure of fetuses, infants and children to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Particulate Matter

Particulate matter (PM) is the term for a mixture of solid particles and liquid droplets found in the air. Particulate matter is made up of a number of components including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. Particles that are less than 10 micrometers in diameter (PM10) are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Particles that are less than 2.5 micrometers in diameter (PM2.5) have been designated as a subset of PM10 due to their increased negative health impacts and its ability to remain suspended in the air longer and travel further.

Reactive Organic Gases (ROG) and Volatile Organic Compounds (VOC)

Although not a criteria pollutant, reactive organic gases (ROGs), or volatile organic compounds (VOCs), are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably. Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM10 and lower visibility.

Other Pollutants of Concern

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs) are another group of pollutants of concern. Sources of toxic air contaminants include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least forty different toxic air contaminants. The most important of these toxic air contaminants, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to toxic air contaminants can result from emissions from normal operations as well as from accidental releases. Health effects of toxic air contaminants include cancer, birth defects, neurological damage, and death.

Toxic air contaminants are less pervasive in the urban atmosphere than criteria air pollutants, however they are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are hundreds of different types of toxic air contaminants with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), and motor vehicle exhaust.

According to the 2013 California Almanac of Emissions and Air Quality, the majority of the estimated health risk from toxic air contaminants can be attributed to relatively few compounds, the most important of which is diesel particulate matter (DPM). Diesel particulate matter is a subset of PM2.5 because the size of diesel particles are typically 2.5 microns and smaller. The identification of diesel particulate matter as a toxic air contaminant in 1998 led the California Air Resources Board (CARB) to adopt the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-fueled Engines and Vehicles in September 2000. The plan's goals are a 75-percent reduction in diesel particulate matter by 2010 and an 85-percent reduction by 2020 from the 2000 baseline. Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are known as particulate matter or PM, which includes carbon particles or "soot". Diesel exhaust also contains a variety of harmful gases and over 40 other cancer-causing substances. California's identification of diesel particulate matter as a toxic air contaminant was based on its potential to cause cancer, premature deaths, and other health problems. Exposure to diesel particulate matter is a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. Overall, diesel engine emissions are responsible for the majority of California's potential airborne cancer risk from combustion sources.

According to the SCAQMD's MATES-V study, the project area has an estimated multi-pathway and inhalation pathway cancer risk ranging between 251 to 400 in a million chance of cancer. In comparison the average multi-pathway cancer risk for the South Coast Air Basin portion of Riverside County is 332 in one million and the inhalation risk is 313 in a million chance of cancer.

Asbestos

Asbestos is listed as a TAC by the ARB and as a Hazardous Air Pollutant by the EPA. Asbestos occurs naturally in mineral formations and crushing or breaking these rocks, through construction or other means, can release asbestiform fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma. The nearest likely locations of naturally occurring asbestos, as identified in the General Location Guide for Ultramafic Rocks in California prepared by the California Division of Mines and Geology, is located at Asbestos Mountain in the San Jacinto Mountains, approximately 43 miles southeast of the closest boundary of the proposed project. Due to the distance to the nearest natural occurrences of asbestos, the project site is not likely to contain asbestos.

REGULATORY SETTING

The proposed project is addressed through the efforts of various international, federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality are discussed below.

Federal – United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The National Ambient Air Quality Standards (NAAQS) pollutants were identified using medical evidence and are shown below in Table 3.

The EPA and the California Air Resource Board (CARB) designate air basins where ambient air quality standards are exceeded as "nonattainment" 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 nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. 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 values exceeds the threshold per year. In contrast, the Federal annual PM2.5 standard is met if the three-year average of the annual average PM2.5 concentration is less than or equal to the standard. Attainment status is shown in Table 4.

As part of its enforcement responsibilities, the EPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the national standards. The State Implementation Plan (SIP) must integrate federal, state, and local components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the State Implementation Plan (SIP).

As indicated below in Table 4, the Basin has been designated by the EPA as a non-attainment area for ozone (O_3) and suspended particulates (PM2.5). Currently, the Basin is in attainment with the ambient air quality standards for carbon monoxide (CO), lead, sulfur dioxide (SO_2), suspended particulate matter (PM-10), and nitrogen dioxide (NO_2).

State – California Air Resources Board

The California Air Resources Board (CARB), which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets the California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the State Implementation Plan (SIP). The California Ambient Air Quality Standards (CAAQS) for criteria pollutants are shown in Table 3. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g., hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. Furthermore, the motor vehicle emission standards established by CARB include compliance with the Safer Affordable Fuel-Efficient Vehicles (SAFE) Rule, issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020). The SAFE Rule sets fuel economy and carbon dioxide standards that increase 1.5 percent in stringency each year from model years 2021 through 2026, and apply to both passenger cars and light trucks. CARB. It also sets fuel specifications to further reduce vehicular emissions. The SAFE Rule was repealed on December 21, 2021. NHTSA is in process of adopting more stringent corporate average fuel economy (CAFE) standards for model year 2024–2026 vehicles

The South Coast Air Basin has been designated by the CARB as a nonattainment area for ozone, PM10 and PM2.5. Currently, the South Coast Air Basin is in attainment with the ambient air quality standards for CO, lead, SO_2, NO_2, and sulfates and is unclassified for visibility reducing particles and Hydrogen Sulfide.

On June 20, 2002, the CARB revised the PM10 annual average standard to 20 µg/m^3 and established an annual average standard for PM2.5 of 12 µg/m^3. These standards were approved by the Office of Administrative Law in June 2003 and are now effective. On September 27, 2007 CARB approved the South Coast Air Basin and the Coachella Valley 2007 Air Quality Management Plan for Attaining the Federal 8-hour Ozone and PM2.5 Standards. The plan projected attainment for the 8-hour Ozone standard by 2024 and the PM2.5 standard by 2015.

On December 12, 2008 the CARB adopted Resolution 08-43, which limits NOx, PM10 and PM2.5 emissions from on-road diesel truck fleets that operate in California. On October 12, 2009 Executive Order R-09-010 was adopted that codified Resolution 08-43 into Section 2025, Title 13 of the California Code of Regulations. This regulation requires that by the year 2023 all commercial diesel trucks that operate in California shall meet model year 2010 (Tier 4) or latter emission standards. In the interim period, this regulation provides annual interim targets for fleet owners to meet. This regulation also provides a few exemptions including a onetime per year 3-day pass for trucks registered outside of California.

The CARB is also responsible for regulations pertaining to toxic air contaminants. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in 1987 as a means to establish a formal air toxics emission inventory risk quantification program. AB 2588, as amended, establishes a process that requires stationary sources to report the type and quantities of certain substances their facilities routinely release into the South Coast Air Basin. The data is ranked by high, intermediate, and low categories, which are determined by: the potency, toxicity, quantity, volume, and proximity of the facility to nearby receptors.

AB 617 Nonvehicular air pollution: criteria air pollutants and toxic air contaminants

This bill requires the state board to develop a uniform statewide system of annual reporting of emissions of criteria air pollutants and toxic air contaminants for use by certain categories of stationary sources. The bill requires those stationary sources to report their annual emissions of criteria air pollutants and toxic air contaminants, as specified. This bill required the state board, by October 1, 2018, to prepare a monitoring plan regarding technologies for monitoring criteria air pollutants and toxic air contaminants and the need for and benefits of additional community air monitoring systems, as defined. The bill requires the state board to select, based on the monitoring plan, the highest priority locations in the state for the deployment of community air monitoring systems. The bill requires an air district containing a selected location, by July 1, 2019, to deploy a system in the selected location. The bill would authorize the air district to require a stationary source that emits air pollutants in, or that materially affect, the selected location to deploy a fence-line monitoring system, as defined, or other specified real-time, on-site monitoring. The bill authorizes the state board, by January 1, 2020, and annually thereafter, to select additional locations for the deployment of the systems. The bill would require air districts that have deployed a system to provide to the state board air quality data produced by the system. By increasing the duties of air districts, this bill would impose a state-mandated local program. The bill requires the state board to publish the data on its Internet Web site.

Regional

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin. To that end, as a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), county transportation commissions, and local governments and cooperates actively with all federal and state agencies.

South Coast Air Quality Management District

The SCAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines, when necessary. The SCAQMD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. It has responded to this requirement by preparing a sequence of AQMPs. On June 30, 2016, the SCAQMD released its Draft 2016 AQMP.

Air Quality Management Plan

The 2016 AQMP is a regional blueprint for achieving the federal air quality standards and healthful air. The 2016 AQMP includes both stationary and mobile source strategies to ensure that rapidly approaching attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the Plan is not approved or if the NAAQS are not met on time. As with every AQMP, a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures is updated with the latest data and methods. The most significant air quality challenge in the Basin is to reduce nitrogen oxide (NOx) emissions sufficiently to meet the upcoming ozone standard deadlines. On March 23, 2017 the CARB approved the 2016 AQMP. The primary goal of this Air Quality Management Plan is to meet clean air standards and protect public health, including ensuring benefits to environmental justice and disadvantaged communities. Now that the Plan has been approved by the CARB, it has been forwarded to the U.S. EPA for its review. The Plan was approved by the EPA on June 15, 2017.

In May 2022, the SCAQMD completed the 2022 Draft AQMP. The 2022 Draft AQMP is focused on attaining the 2015 8-hour ozone standard (70 ppb) for the South Coast Air Basin and Coachella Valley. The Draft 2022 AQMP builds upon measures already in place from previous AQMPs. It also includes a variety of additional strategies such as regulation, accelerated deployment of available cleaner technologies (e.g., zero emission technologies, when cost-effective and feasible, and low NOx technologies in other applications), best management practices, co-benefits from existing programs (e.g., climate and energy efficiency), incentives, and other CAA measures to achieve the 2015 8-hour ozone standard. The 2022 AQMP was adopted December 2, 2022, by SCAQMD Governing Board. The 2022 AQMP was approved and adopted by CARB on January 26, 2023. The 2022 AQMP strategy includes the following:[1]

- Wide adoption of zero emissions technologies anywhere available.
- Low NOx technologies where zero emissions aren't feasible.
- Federal Action.
- Zero emissions technologies for residential and industrial sources such as water and space heaters in buildings and homes regionwide.
- Incentive funding in environmental justice areas.
- Prioritize benefits on the most disadvantaged communities.

SCAQMD Rules and Regulations

During construction and operation, the project must comply with applicable rules and regulations. The following are the rules the project may be required to comply with, either directly, or indirectly:

SCAQMD Rule 402

Prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to

[1] SCAQMD 2022 AQMP Infographic. http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/2022-aqmp-infographic

the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

SCAQMD Rule 403

Governs emissions of fugitive dust during construction and operation activities. Compliance with this rule is achieved through application of standard Best Management Practices, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites.

Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. Rule 403 measures may include but are not limited to the following:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least three times daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 meters (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code section 23114.
- Reduce traffic speeds on all unpaved roads to 15 miles per hour (mph) or less.
- Suspension of all grading activities when wind speeds (including instantaneous wind gusts) exceed 25 mph.
- Bumper strips or similar best management practices shall be provided where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site each trip.
- Replanting disturbed areas as soon as practical.
- During all construction activities, construction contractors shall sweep on-site and off-site streets if silt is carried to adjacent public thoroughfares, to reduce the amount of particulate matter on public streets. All sweepers shall be compliant with SCAQMD Rule 1186.1, Less Polluting Sweepers.

SCAQMD Rule 445

Prohibits permanently installed wood burning devices into any new development. A wood burning device means any fireplace, wood burning heater, or pellet-fueled wood heater, or any similarly enclosed, permanently installed, indoor or outdoor device burning any solid fuel for aesthetic or space-heating purposes, which has a heat input of less than one million British thermal units per hour.

SCAQMD Rule 481

Applies to all spray painting and spray coating operations and equipment. The rule states that a person shall not use or operate any spray painting or spray coating equipment unless one of the following conditions is met:

(1) The spray coating equipment is operated inside a control enclosure, which is approved by the Executive Officer. Any control enclosure for which an application for permit for new construction, alteration, or change of ownership or location is submitted after the date of adoption of this rule shall be exhausted only through filters at a design face velocity not less than 100 feet per minute nor greater than 300 feet

per minute, or through a water wash system designed to be equally effective for the purpose of air pollution control.
(2) Coatings are applied with high-volume low-pressure, electrostatic and/or airless spray equipment.
(3) An alternative method of coating application or control is used which has effectiveness equal to or greater than the equipment specified in the rule.

SCAQMD Rule 1108

Governs the sale, use, and manufacturing of asphalt and limits the volatile organic compound (VOC) content in asphalt used in the South Coast Air Basin. This rule would regulate the VOC content of asphalt used during construction. Therefore, all asphalt used during construction of the project must comply with SCAQMD Rule 1108.

SCAQMD Rule 1113

Governs the sale, use, and manufacturing of architectural coating and limits the VOC content in paints and paint solvents. This rule regulates the VOC content of paints available during construction. Therefore, all paints and solvents used during construction and operation of the project must comply with SCAQMD Rule 1113.

SCAQMD Rule 1143

Governs the manufacture, sale, and use of paint thinners and solvents used in thinning of coating materials, cleaning of coating application equipment, and other solvent cleaning operations by limiting their VOC content. This rule regulates the VOC content of solvents used during construction. Solvents used during the construction phase must comply with this rule.

SCAQMD Rule 1186

Limits the presence of fugitive dust on paved and unpaved roads and sets certification protocols and requirements for street sweepers that are under contract to provide sweeping services to any federal, state, county, agency or special district such as water, air, sanitation, transit, or school district.

SCAQMD Rule 1303

Governs the permitting of re-located or new major emission sources, requiring Best Available Control Measures and setting significance limits for PM_{10} among other pollutants.

SCAQMD Rule 1401

New Source Review of Toxic Air Contaminants, specifies limits for maximum individual cancer risk, cancer burden, and non-cancer acute and chronic hazard index from new permit units, relocations, or modifications to existing permit units, which emit toxic air contaminants.

SCAQMD Rule 1403

Asbestos Emissions from Demolition/Renovation Activities, specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials (ACM).

SCAQMD Rule 2202

On-Road Motor Vehicle Mitigation Options, is to provide employers with a menu of options to reduce mobile source emissions generated from employee commutes, to comply with federal and state Clean Air Act

requirements, Health & Safety Code Section 40458, and Section 182(d)(1)(B) of the federal Clean Air Act. It applies to any employer who employs 250 or more employees on a full or part-time basis at a worksite for a consecutive six-month period calculated as a monthly average.

SCAQMD Rule 2305

The Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program aims to reduce nitrogen oxide and diesel emissions associated with warehouses, help meet federal standards and improve public health. The WAIRE Program is an indirect source rule that regulates warehouse facilities to reduce emissions from the goods movement industry. Owners and operators of warehouses that have 100,000 square feet or more of indoor floor space in a single building must comply with the WAIRE Program. WAIRE is a menu-based point system in which warehouse operators are required to earn a specific number of points every year. The yearly number of points required is based on the number of trucks trips made to and from the warehouse each year, with larger trucks such as tractors or tractor-trailers multiplied by 2.5. Warehouse operators may be exempt from parts of the rule if they operate less than 50,000 square feet of warehousing activities, if the number of points required is less than 10, or if the WAIRE menu action chosen under performs due to circumstances beyond the operator's control, such as a manufacturer defect. SCAQMD Rule 316 establishes fees to fund Rule 2305 compliance activities.

Air Quality Guidance Documents

SCAQMD CEQA Handbook

Although the SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate air quality issues associated with plans and new development projects throughout the South Coast Air Basin. Instead, this is controlled through local jurisdictions in accordance with the California Environmental Quality Act (CEQA). In order to assist local jurisdictions with air quality compliance issues the CEQA Air Quality Handbook (SCAQMD CEQA Handbook) prepared by the SCAQMD (1993) with the most current updates found at http://www.aqmd.gov/ceqa/hdbk.html, was developed in accordance with the projections and programs of the AQMP. The purpose of the SCAQMD CEQA Handbook is to assist Lead Agencies, as well as consultants, project proponents, and other interested parties in evaluating a proposed project's potential air quality impacts. Specifically, the SCAQMD CEQA Handbook explains the procedures that the SCAQMD recommends be followed for the environmental review process required by CEQA. The SCAQMD CEQA Handbook provides direction on how to evaluate potential air quality impacts, how to determine whether these impacts are significant, and how to mitigate these impacts. SCAQMD is in the process of developing an "Air Quality Analysis Guidance Handbook" to replace the CEQA Air Quality Handbook approved by the AQMD Governing Board in 1993. The 1993 CEQA Air Quality Handbook is still available but not online. In addition, there are sections of the 1993 Handbook that are obsolete. In order to assist the CEQA practitioner in conducting an air quality analysis while the new Handbook is being prepared, supplemental information regarding: significance thresholds and analysis, emissions factors, cumulative impacts emissions analysis, and other useful subjects, are available at the SCAQMD website[2]. The SCAQMD CEQA Handbook and supplemental information is used in this analysis.

Southern California Association of Governments

The SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG is the Federally designated MPO for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the Regional Transportation Plan and Regional Transportation Improvement Plan (RTIP), which addresses regional development and growth forecasts. These plans form the basis for the land use and transportation components of the AQMP, which are utilized in the preparation of air quality forecasts and in the consistency

[2] http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

analysis included in the AQMP. The Regional Transportation Plan, Regional Transportation Improvement Plan, and AQMP are based on projections originating within the City and County General Plans.

On April 7, 2016, SCAG's Regional Council adopted the 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (2016 RTP/SCS or Plan). The Plan is a long-range visioning plan that balances future mobility and housing needs with economic, environmental and public health goals. The Plan charts a course for closely integrating land use and transportation – so that the region can grow smartly and sustainably. It outlines more than $556.5 billion in transportation system investments through 2040. The Plan was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. In June 2016, SCAG received its conformity determination from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) indicating that all air quality conformity requirements for the 2016 RTP/SCS and associated 2015 FTIP Consistency Amendment through Amendment 15-12 have been met.

On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy), and the addendum to the Connect SoCal Program Environmental Impact Report. Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. Connect SoCal outlines more than $638 billion in transportation system investments through 2045. It was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura.

Local – City of Perris

Local jurisdictions, such as the City of Perris, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The City is also responsible for the implementation of transportation control measures as outlined in the 2022 AQMP. Examples of such measures include bus turnouts, energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

The City relies on the expertise of the SCAQMD and utilizes the SCAQMD CEQA Air Quality Handbook as the guidance document for the environmental review of plans and development proposals within its jurisdiction.

The Healthy Community Element as well as the Conservation Element of the Perris General Plan summarize air quality issues in the Basin, air quality-related plans and programs administered by federal, state, and special purpose agencies, and establishes goals and policies to improve air quality.

Applicable goals and policies from the Healthy Community Element include:

Goal HC-6 Healthy Environment – Support efforts of local businesses and regional agencies to improve the health of our region's environment.

Policy HC-6.1 Support regional efforts to improve air quality through energy efficient technology, use of alternative fuels, and land use and transportation planning.

Policy HC-6.3 Promote measures that will be effective in reducing emissions during construction activities

- Perris will ensure that construction activities follow existing South Coast Air Quality Management District (SCAQMD) rules and regulations.
- All construction equipment for public and private projects will also comply with California Air Resources Board's vehicle standards. For projects that may exceed daily construction emissions established by the SCAQMD, Best Available Control Measures will be incorporated to reduce construction emissions to below daily emission standards established by the SCAQMD.
- Project proponents will be required to prepare and implement a Construction Management Plan which will include Best Available Control Measures among others. Appropriate control measures will be determined on a project-by-project basis, and should be specific to the pollutant for which the daily threshold is exceeded.

Applicable goals and policies from the Conservation Element include:

Goal X Encourage improved energy performance standards above and beyond the California Title 24 requirements.

Policy X.B Encourage the use of trees within project design to lessen energy needs, reduce the urban heat island effect, and improve air quality throughout the region.

Table 3
State and Federal Criteria Pollutant Standards

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
Ozone (O_3)	0.09 ppm/1-hour 0.07 ppm/8-hour	0.070 ppm/8-hour	(a) Decline in pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage.
Carbon Monoxide (CO)	20.0 ppm/1-hour 9.0 ppm/8-hour	35.0 ppm/1-hour 9.0 ppm/8-hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
Nitrogen Dioxide (NO_2)	0.18 ppm/1-hour 0.03 ppm/annual	100 ppb/1-hour 0.053 ppm/annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
Sulfur Dioxide (SO_2)	0.25 ppm/1-hour 0.04 ppm/24-hour	75 ppb/1-hour 0.14 ppm/annual	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
Suspended Particulate Matter (PM_{10})	50 µg/m^3/24-hour 20 µg/m^3/annual	150 µg/m^3/24-hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in elderly.
Suspended Particulate Matter ($PM_{2.5}$)	12 µg/m^3 / annual	35 µg/m^3/24-hour 12 µg/m^3/annual	
Sulfates	25 µg/m^3/24-hour	No Federal Standards	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) property damage.
Lead	1.5 µg/m^3/30-day	0.15 µg/m^3/3-month rolling	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.
Visibility Reducing Particles	Extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more due to particles when humidity is less than 70 percent.	No Federal Standards	Visibility impairment on days when relative humidity is less than 70 percent.

Source: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

Table 4
South Coast Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone	Nonattainment	Nonattainment (Extreme)
Carbon monoxide	Attainment	Attainment (Maintenance)
Nitrogen dioxide	Attainment	Unclassifable/Attainment
Sulfur dioxide	Attainment	Unclassifiable/Attainment
PM10	Nonattainment	Attainment (Maintenance)
PM2.5	Nonattainment	Nonattainment (Serious)

Source (Federal and State Status): California Air Resources Board (2022) https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations & SCAQMD 2022 Air Quality Management Plan (December 2022) 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.

MONITORED AIR QUALITY

The air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin. Estimates of the existing emissions in the Basin provided in the Final 2022 Air Quality Management Plan prepared by SCAQMD (December 2022) indicate that collectively, mobile sources account for 46 percent of the VOC, 85 percent of the NOx emissions, 89 percent of the CO emissions and 29 percent of directly emitted PM2.5, with another 18 percent of PM2.5 from road dust.

The SCAQMD has divided the South Coast Air Basin into 38 air-monitoring areas with a designated ambient air monitoring station representative of each area. The project site is located in the Perris Valley Air Monitoring Area (Area 24), which is located in Riverside County and covers from the San Bernardino and Riverside County line on the north, Paloma Valley on the south, Perris on the west, and the San Jacinto Valley on the east. The nearest air monitoring station to the project site is the Perris Monitoring Station (Perris Station). The Perris Station is located at 237 ½ N. D Street, Perris. As not all monitoring stations monitor all pollutants, data was also taken from the Lake Elsinore-W Flint Street Monitoring Station at 506 W Flint Street, Lake Elsinore. However, it should be noted that due to the air monitoring stations' distances from the project site, recorded air pollution levels at the air monitoring station reflect with varying degrees of accuracy, local air quality conditions at the project site. Table 5 presents the monitored pollutant levels from the Perris and Lake Elsinore Stations.

Table 5 summarizes 2019 through 2021 published monitoring data, which is the most recent 3-year period available. The data shows that during the past few years, the project area has exceeded the ozone standards.

Ozone

During the 2019 to 2021 monitoring period, the State 1-hour concentration standard for ozone was exceeded between 25 and 34 days each year at the Perris Station. The State 8-hour ozone standard has been exceeded between 60 and 77 days each year over the past three years at the Perris Station. The Federal 8-hour ozone standard was exceeded between 55 and 74 days each year over the past three years at the Perris Station.

Ozone is a secondary pollutant as it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly hydrocarbons and NO_2, which occur only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the area. Many areas of the SCAQMD contribute to the ozone levels experienced at the monitoring station, with the more significant areas being those directly upwind.

Carbon Monoxide

CO is another important pollutant that is due mainly to motor vehicles. The Lake Elsinore Station did not record an exceedance of the state or federal 8-hour CO standard for the last three years.

Nitrogen Dioxide

The Lake Elsinore Station did not record an exceedance of the State or Federal NO_2 standards for the last three years.

Particulate Matter

The State 24-hour concentration standards for PM10 were exceeded between four and six days each year over the last three years at the Perris Station. Over the past three years, the Perris Station did not record an exceedance of the Federal 24-hour standards for PM10.

There was insufficient data over the last three years for the Federal 24-hour standard for PM2.5 at the Lake Elsinore Station.

According to the EPA, some people are much more sensitive than others to breathing fine particles (PM10 and PM2.5). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10 and PM2.5. Other groups considered sensitive are smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive, because many breathe through their mouths during exercise.

Table 5
Air Quality Monitoring Summary

Pollutant (Standard)[1]		Year		
		2019	2019	2021
Ozone:	Maximum 1-Hour Concentration (ppm)	0.118	0.125	0.117
	Days > CAAQS (0.09 ppm)	28	34	25
	Maximum 8-Hour Concentration (ppm)	0.096	0.106	0.094
	Days > NAAQS (0.070 ppm)	64	74	55
	Days > CAAQS (0.070 ppm)	66	77	60
Carbon Monoxide:[2]	Maximum 8-Hour Concentration (ppm)	*	*	*
	Days > CAAQS (9 ppm)	0	0	0
	Days > NAAQS (9 ppm)	0	0	0
Nitrogen Dioxide:[2]	Maximum 1-Hour Concentration (ppm)	0.038	0.044	0.044
	Days > CAAQS (0.18 ppm)	0	0	0
Inhalable Particulates (PM10):	Maximum 24-Hour Concentration (µg/m^3)	97.0	92.3	77.5
	Days > NAAQS (150 µg/m3)	0	0	0
	Days > CAAQS (50 µg/m3)	4	6	4
	Annual Average (µg/m3)	25.8	33.4	30.4
Ultra-Fine Particulates (PM2.5):[2]	Maximum 24-Hour Concentration (µg/m3)	17.6	41.6	28.8
	Days > NAAQS (35 µg/m3)	*	*	*
	Annual Average (µg/m3)	*	7.2	6.9

Notes:

Source: http://www.arb.ca.gov/adam/topfour/topfour1.php. Data from the Perris Monitoring Station, unless otherwise noted.

(1) CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million

* Means there was insufficient data available to determine value.

(2) Data taken from the Lake Elsinore-W Flint Street Monitoring Station.

AIR QUALITY STANDARDS

Significance Thresholds

Appendix G of the State CEQA Guidelines

Appendix G of the State CEQA Guidelines states that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make a significance determination. Pursuant to Appendix G, the project would result in a significant impact related to air quality if it would:

- Conflict with or obstruct the implementation of the applicable air quality plan;
- 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;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The CEQA Guidelines Section 15064.7 provides the significance criteria established by the applicable air quality management district or air pollution control district, when available, may be relied upon to make determinations of significance. The potential air quality impacts of the project are, therefore, evaluated according to thresholds developed by SCAQMD in their CEQA Air Quality Handbook, Air Quality Analysis Guidance Handbook, and subsequent guidance, which are listed below.[3] Therefore, the project would result in a potentially significant impact to air quality if it would:

AIR-1: Conflict with or obstruct the implementation of the applicable air quality plan;

AIR-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation as a result of:

- Criteria pollutant emissions during construction (direct and indirect) in excess of the SCAQMD's regional significance thresholds,
- Criteria pollutant emissions during operation (direct and indirect) in excess of the SCAQMD's regional significance thresholds.

AIR-3: 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors);

AIR-4: Expose sensitive receptors to substantial pollutant concentrations that would:

- Exceed SCAQMD's localized significance thresholds,
- Cause or contribute to the formation of CO hotspots.

AIR-5: Create objectionable odors affecting a substantial number of people.

[3] While the SCAQMD CEQA Air Quality Handbook contains significance thresholds for lead, Project construction and operation would not include sources of lead emissions and would not exceed the established thresholds for lead. Unleaded fuel and unleaded paints have virtually eliminated lead emissions from industrial land use projects such as the Project. As a result, lead emissions are not further evaluated herein.

The SCAQMD is in the process of developing an Air Quality Analysis Guidance Handbook to replace the CEQA Air Quality Handbook. In the interim, supplemental guidance has been adopted by the SCAQMD. The potential air quality impacts of the project are, therefore, evaluated according to numeric indicators developed by the SCAQMD in the CEQA Air Quality Handbook and supplemental guidance from the SCAQMD.[4]

Regional Air Quality

Many air quality impacts that derive from dispersed mobile sources, which are the dominate pollution generators in the basin, often occurs hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual project is generally very small and difficult to measure. Therefore, the SCAQMD has developed significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The SCAQMD CEQA Handbook states that any project in the South Coast Air Basin with daily emissions that exceed any of the identified significance thresholds should be considered as having an individually and cumulatively significant air quality impact. For the purposes to this air quality impact analysis, a regional air quality impact would be considered significant if emissions exceed the SCAQMD significance thresholds identified in Table 6.

Local Air Quality

Project-related construction air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. In order to assess local air quality impacts the SCAQMD has developed Localized Significance Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. The SCAQMD has also provided Final Localized Significance Threshold Methodology (LST Methodology), June 2003, which details the methodology to analyze local air emission impacts. The Localized Significance Threshold Methodology found that the primary emissions of concern are NO_2, CO, PM10, and PM2.5.

The significance thresholds for the local emissions of NO_2 and CO are determined by subtracting the highest background concentration from the last three years of these pollutants from Table 5 above, from the most restrictive ambient air quality standards for these pollutants that are outlined in the Localized Significance Thresholds. Table 6 shows the ambient air quality standards for NO_2, CO, and PM10 and PM2.5.

Toxic Air Contaminants

According to the SCAQMD CEQA Handbook, any project that has the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact:

- If the Maximum Incremental Cancer Risk is 10 in one million or greater; or
- Toxic air contaminants from the proposed project would result in a Hazard Index increase of 1 or greater.

In order to determine if the proposed project may have a significant impact related to hazardous air pollutants (HAP), the Health Risk Assessment Guidance for analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis, (Diesel Analysis), prepared by SCAQMD, August 2003, recommends that if the proposed project is anticipated to create hazardous air pollutants through stationary sources or regular operations of diesel trucks on the project site, then the proximity of the nearest receptors to the

[4] While the SCAQMD CEQA Air Quality Handbook contains significance thresholds for lead, Project construction and operation would not include sources of lead emissions and would not exceed the established thresholds for lead. Unleaded fuel and unleaded paints have virtually eliminated lead emissions from residential land use projects such as the Project. As a result, lead emissions are not further evaluated herein.

source of the hazardous air pollutants and the toxicity of the hazardous air pollutants should be analyzed through a comprehensive facility-wide health risk assessment (HRA).

The proposed project includes the development of the Housing Opportunity Sites identified in the *City of Perris General Plan Housing Element*; however, some of these sites are in close proximity to the Interstate 215 Freeway and State Route 74. Therefore, the potential of freeway related health risks associated to the proposed project is discussed in Section 3 of this report.

Odor Impacts

The SCAQMD CEQA Handbook states that an odor impact would occur if the proposed project creates an odor nuisance pursuant to SCAQMD Rule 402, which states:

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

If the proposed project results in a violation of Rule 402 with regards to odor impacts, then the proposed project would create a significant odor impact.

Table 6
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds[1]		
Pollutant	Construction (lbs/day)	Operation (lbs/day)
NOx	100	55
VOC	75	55
PM10	150	150
PM2.5	55	55
SOx	150	150
CO	550	550
Lead	3	3
Toxic Air Contaminants (TACs), Odor and GHG Thresholds		
TACs (including carginogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index > 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to South Coast AQMD Rule 402	
GHG	10,000 MT/yr CO2e for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants[2]		
NO2	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards:	
1-hour average	0.18 ppm (state)	
annual arithmetic mean	0.03 ppm (state) & 0.0534 ppm (federal)	
PM10		
24-hour average	10.4 µg/m^3 (construction)[3] & 2.5 ug/m^3 (operation)	
annual average	1.0 ug/m^3	
PM2.5		
24-hour average	10.4 µg/m^3 (construction)[3] & 2.5 µg/m^3 (operation)	
SO2		
1-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile)	
24-hour average	0.04 ppm (state)	
Sulfate		
24-hour average	25 µg/m^3 (state)	
CO	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards:	
1-hour average	20 ppm (state) & 35 ppm (federal)	
8-hour average	9 ppm (state/federal)	
Lead		
30-day average	1.5 µg/m^3 (state)	
Rolling 3-month average	0.15 µg/m^3 (federal)	

Notes:
Source: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook
(1) Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993)
(2) Ambient air quality thresholds for criteria pollutants based on South Coast AQMD Rule 1303, Table A-2 unless otherwise stated.
(3) Ambient air quality threshold based on South Coast AQMD Rule 403.

SHORT-TERM CONSTRUCTION EMISSIONS

Construction activities associated with the proposed project would have the potential to generate air emissions, toxic air contaminant emissions, and odor impacts. However, as construction of the proposed project is speculative at this time, a qualitative discussion of the potential short-term air quality impacts due to regional air quality and local air quality impacts associated with the construction of the proposed project is provided below.

The proposed project involves creation of an overlay zone for the Housing Opportunity Sites identified in the recently adopted *City of Perris General Plan Housing Element* (August 17, 2022); therefore, construction of the proposed project may occur over the course of the buildout of the General Plan and be separated into multiple individual project developments. Some of the potential individual development projects may be small and generate construction emissions that do not exceed the SCAQMD's recommended thresholds of significance; however, others could be large enough to generate construction emissions that exceed these thresholds. Through the environmental review process, the city evaluates individual development projects to identify site-specific air quality impacts and requires mitigation measures as may be required to reduce emissions and potential impacts.

Furthermore, the construction of the proposed project will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, managing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 acres or more of soil or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD.

SCAQMD's Rule 403 minimum requirements require that the application of the best available dust control measures is used for all grading operations and include the application of water or other soil stabilizers in sufficient quantity to prevent the generation of visible dust plumes. Compliance with Rule 403 would require the use of water trucks during all phases where earth-moving operations would occur.

Project construction would also be required to adhere to SCAQMD Rule 1113, as amended on June 3, 2011, which requires architectural coatings applied after January 1, 2014 be limited to an average of 50 grams per liter or less of VOCs for building coatings and 100 grams per liter or less of VOCs for traffic coatings.

Furthermore, construction of the proposed project is also required to comply with the construction-related mitigation measures identified in the City's General Plan Environmental Impact Report (EIR) (October 2004). These measures include AQ-1 through AQ-6 as provided below.

AQ-1 Project applicants shall provide construction site electrical hook ups for electric hand tools such as saws, drills, and compressors, to eliminate the need for diesel powered electric generators or provide evidence that electrical hook ups at construction sites are not practical or prohibitively expensive.

AQ-2 All development projects greater than 19 single-family residential units, 40 multifamily residential units, or retail/commercial/industrial land uses greater than 45,000 square feet of floor space shall apply paints using either high volume low pressure (HVLP) spray equipment or by hand application.

AQ-3 Prior to issuance of any area grading permits, all applicants shall submit a traffic control plan that will describe in detail safe detours and provide temporary traffic control during construction activities.

AQ-4 For all development projects, all applicants must abide by the South Coast Air Quality Management District's Rule 404 concerning Best Management Practices for construction sites in order to reduce emissions during the construction phase. Measures may include:

- Development of construction traffic management program that includes, but is not limited to, rerouting construction related traffic off congested streets, consolidating truck deliveries, and providing temporary dedicated turn lanes for movement of construction traffic to and from site;
- Sweep streets at the end of the day if visible soil material is carried onto adjacent paved public roads;
- Wash off trucks and other equipment leaving the site;
- Replace ground cover in disturbed areas immediately after construction;
- Keep disturbed/loose soil moist at all times;
- Suspend grading activities when wind speeds exceed 25 miles per hour;
- Enforce a 15 miles per hour speed limit on unpaved portions of the construction site.

AQ-5 Prior to issuance of any grading permits, all Applicants shall submit evidence to the City of Perris that construction equipment is and will be properly maintained, including proper tuning and timing of engines.

AQ-6 Building and grading permits shall include a restriction to limit idling of construction equipment on site to no more than ten minutes.

Furthermore, potential sources that may emit odors during construction activities include the application of materials such as asphalt pavement. The objectionable odors that may be produced during the construction process are short-term in nature and the odor emissions are expected cease upon the drying or hardening of the odor producing materials. Due to the short-term nature and limited amounts of odor producing materials being utilized, no significant impact related to odors would occur during construction of the proposed project. Diesel exhaust and VOCs would be emitted during construction of the project, which are objectionable to some; however, emissions would disperse rapidly from the housing opportunity sites and therefore should not reach an objectionable level at the nearest sensitive receptors.

Therefore, with incorporation of the General Plan mitigation measures stated above and considering that all future individual developments within the proposed project would be subject to City environmental review, it is anticipated that construction of the proposed project would create a less than significant regional air quality impact.

LONG-TERM OPERATIONAL EMISSIONS

The on-going operation of the proposed project would result in a long-term increase in air quality emissions. This increase would be due to emissions from the project-generated vehicle trips and operational emissions from the on-going use of the proposed project. The following section provides an analysis of potential long-term air quality impacts due to: regional air quality and local air quality impacts with the on-going operations of the proposed project.

Operations-Related Regional Air Quality Impacts

The potential operations-related air emissions have been analyzed below for the criteria pollutants and cumulative impacts.

Operations-Related Criteria Pollutants Analysis

The operations-related criteria air quality impacts created by the proposed project have been analyzed through the use of the CalEEMod model. The operating emissions were based on the year 2030, as this is the buildout year for the General Plan. The operations emissions printouts from the CalEEMod model are provided in Appendix B. The CalEEMod analyzes operational emissions from area sources, energy usage, and mobile sources, which are discussed below.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips (trip generation rate) from the City of Perris Housing Implementation Measures Transportation Study (Transportation Study) prepared by Ganddini Group, Inc. (May 12, 2023) into the CalEEMod Model. The Transportation Study found that the proposed project will generate approximately 36,524 daily vehicle trips with a trip generation rate of 6.74 trips per dwelling unit per day.[5] As the Transportation Study provided only weekday rates, the Saturday and Sunday rates were taken from the ITE Trip Generation Manual 11th Edition (2021). Per the ITE Trip Generation Manual, the Saturday trip generation rate for the residential uses is 4.55 trips per dwelling unit per day and the Sunday trip generation rate is 3.86 trips per dwelling unit per day. The program then applies the emission factors for each trip which is provided by the EMFAC2021 model to determine the vehicular traffic pollutant emissions.

Area Sources

Per the CAPCOA Appendix A Calculation Details for CalEEMod, area sources include emissions from consumer products, landscape equipment and architectural coatings. Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as well as air compressors, generators, and pumps. As specifics were not known about the landscaping equipment fleet, CalEEMod defaults were used to estimate emissions from landscaping equipment. No changes were made to the default area source parameters.

[5] As discussed in the Transportation Analysis, the proposed overlay would require a minimum density of 30 dwelling units/acre and developments within the Housing Opportunity Areas would likely consist of both low-rise and mid-rise multi-family uses. As the trip generation rates for low-rise multi-family housing are greater than mid-rise multi-family housing and to provide a conservative analysis, the Transportation Study utilized the trip generation rates for low-rise multi-family housing for all 5,419 potential multi-family housing dwelling units. To be consistent with the Transportation Analysis and to also provide a conservative analysis, this study also utilizes the trip generation rate for low-rise multi-family housing for all 5,419 potential multi-family housing dwelling units.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Project Impacts

The maximum daily pollutant emissions created from the proposed project's long-term operations have been calculated and are shown below in Table 7. The results show that the SCAQMD regional thresholds would not be exceeded for SO_2, but would be exceeded for ROG, NOx, CO, PM10, and PM2.5. Therefore, a potential significant regional air quality impact would occur from the operation of the proposed project.

However, as shown in Section 6 of this report, in the comparison between the Existing General Plan Buildout and the Proposed Project, the emissions from the Proposed Project are generally lower than the emissions from the Existing General Plan Buildout. Therefore, the Proposed Project, which involves creation of an overlay zone for Housing Opportunity Sites identified in the recently adopted *City of Perris General Plan Housing Element* (August 17, 2022), would create less of an impact than the previously approved General Plan Buildout Scenario. See Section 6 of this report for further details on the comparative analysis.

Operations-Related Local Air Quality Impacts

Project-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The proposed project has been analyzed for the potential local CO emission impacts from the project-generated vehicular trips and from the potential local air quality impacts from on-site operations. The following analysis analyzes the vehicular CO emissions, local impacts from on-site operations per SCAQMD LST methodology, and odor impacts.

Local CO Emission Impacts from Project-Generated Vehicular Trips

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be assessed by comparing future without and with project CO levels to the State and Federal CO standards which were presented above.

To determine if the proposed project could cause emission levels in excess of the CO standards discussed above, a sensitivity analysis is typically conducted to determine the potential for CO "hot spots" at a number of intersections in the general project vicinity. Because of reduced speeds and vehicle queuing, "hot spots" potentially can occur at high traffic volume intersections with a Level of Service E or worse.

The analysis prepared for CO attainment in the South Coast Air Basin by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the South Coast Air Basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan (2003 AQMP) and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan). As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of 1992 CO Plan and subsequent plan updates and air quality management plans. In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: South Long Beach Boulevard and Imperial Highway (Lynwood); Wilshire Boulevard and Veteran Avenue (Westwood); Sunset Boulevard and Highland Avenue (Hollywood); and La Cienega Boulevard and Century Boulevard (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Boulevard and

Veteran Avenue, which has a daily traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the Level of Service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be Level of Service E during the morning peak hour and Level of Service F during the afternoon peak hour.

The Transportation Study showed that the proposed project would generate a maximum of approximately 36,524 daily vehicle trips. As shown in the Transportation Study, under the General Plan Buildout (Post 2030) With Project Scenario, the roadway segment with the highest average daily traffic volume is State Route 74 (4th Street) from A Street to D Street with 35,900 average daily vehicle trips. In addition, under the General Plan Buildout (Post 2030) Without Project Scenario, the roadway segment with the highest average daily traffic volume is State Route 74 (4th Street) from Navajo Road to A Street with 39,500 average daily vehicle trips. The 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan) showed that an intersection which has a daily traffic volume of approximately 100,000 vehicles per day would not violate the CO standard. Therefore, as the average daily vehicle trips on the modeled roadway segments will fall far short of 100,000 vehicles per day, no CO "hot spot" modeling was performed and no significant long-term air quality impact is anticipated to local air quality with the on-going use of the proposed project.

Local Air Quality Impacts from On-Site Operations

Project-related air emissions from on-site sources such as architectural coatings, landscaping equipment, on-site usage of natural gas appliances as well as the operation of vehicles on-site may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. As discussed in detail in Section 1, Introduction, the nearest sensitive receptors that may be impacted by the proposed project are located adjacent to project site boundaries.

According to SCAQMD LST methodology, LSTs would apply to the operational phase of a project, if the project includes stationary sources, or attracts mobile sources (such as heavy-duty trucks) that may spend long periods queuing and idling at the site; such as industrial warehouse/transfer facilities. The proposed project is the development of the Housing Opportunity Sites identified in the *City of Perris General Plan Housing Element* and includes only residential uses and does not include such uses. Therefore, due the lack of stationary source emissions, no long-term localized significance threshold analysis is warranted.

Operations-Related Health Impacts

Regarding health effects related to criteria pollutant emissions, the applicable significance thresholds are established for regional compliance with the state and federal ambient air quality standards, which are intended to protect public health from both acute and long-term health impacts, depending on the potential effects of the pollutant. Because regional emissions of criteria pollutants during operation of the project would exceed applicable thresholds; the proposed project could contribute to long-term health impacts related to nonattainment of the ambient air quality standards. Therefore, the proposed project operation may result in significant adverse acute health impacts. However, as shown in Section 6, Existing General Plan Buildout Impact Analysis, in comparison to the existing general plan buildout of the proposed project the proposed project results in lower emissions for the majority of the analyzed criteria pollutants. NOx is the only criteria pollutant that has an increase in emissions from those associated with the buildout of the existing general plan. Furthermore, at only an additional 17 pounds per day of NO_X, the net increase in emissions would not exceed the SCAQMD threshold of 55 pounds per day. Therefore, in comparison to the existing general plan buildout of the proposed project, the project operational-sourced emissions would not exceed applicable regional thresholds of significance. Please see Section 6 of this report for the comparative analysis.

Operations-Related Odor Impacts

Potential sources that may emit odors during the on-going operations of the proposed project would include odor emissions from the intermittent diesel delivery truck emissions and trash storage areas. Due to the

distance of the nearest receptors from the project site areas and through compliance with SCAQMD's Rule 402 no significant impact related to odors would occur during the on-going operations of the proposed project.

Table 7
Regional Operational Pollutant Emissions

Activity	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO2	PM10	PM2.5
Maximum Daily Emissions	298.00	195.00	1,279.00	2.84	211.00	61.10
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	Yes	Yes	Yes	No	Yes	Yes

Notes:

Source: CalEEMod Version 2022.1.1.16; the higher of either summer or winter emissions.

CUMULATIVE AIR QUALITY IMPACTS

There are a number of cumulative projects in the project area that have not yet been built or are currently under construction. Since the timing or sequencing of the cumulative projects is unknown, any quantitative analysis to ascertain daily construction emissions that assumes multiple, concurrent construction projects would be speculative. Further, cumulative projects include local development as well as general growth within the project area. However, as with most development, the greatest source of emissions is from mobile sources, which travel well out of the local area. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond any local projects and when wind patterns are considered would cover an even larger area. The SCAQMD recommends using two different methodologies: (1) that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality;[6] and (2) that a project's consistency with the current AQMP be used to determine its potential cumulative impacts.

Project Specific Impacts

The project area is out of attainment for ozone, PM10, and PM2.5. Construction and operation of cumulative projects will further degrade the local air quality, as well as the air quality of the South Coast Air Basin. The greatest cumulative impact on the quality of regional air cell will be the incremental addition of pollutants mainly from increased traffic volumes from residential, commercial, and industrial development and the use of heavy equipment and trucks associated with the construction of these projects. Air quality will be temporarily degraded during construction activities that occur separately or simultaneously. However, in accordance with the SCAQMD methodology, projects that do not exceed the SCAQMD criteria or can be mitigated to less than criteria levels are not significant and do not add to the overall cumulative impact. This applies to TACs as well, as the SCAQMD does not have any cumulative TAC thresholds; therefore, projects that do not exceed the SCAQMD TAC threshold criteria or can be mitigated to less than criteria levels are not significant and do not add to the overall cumulative impact. A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant.

Project operations would generate emissions of NOx, ROG, CO, PM10, and PM2.5, which would exceed the SCAQMD regional thresholds and would be expected to result in ground level concentrations that exceed the NAAQS or CAAQS. The project will not be a source of significant TACs and will not cause significant cancer or non-cancer-related health risks. Since the project would not introduce any substantial stationary sources of emissions, CO is the benchmark pollutant for assessing local area air quality impacts from post-construction motor vehicle operations. As indicated earlier, no violations of the state and federal CO standards are projected to occur for the project, based on the magnitude of traffic the project is anticipated to create.

Therefore, operation of the project could potentially result in a cumulatively considerable net increase for non-attainment of criteria pollutants or ozone precursors, or TACs. As a result, the project would result in a significant cumulative impact for operational emissions. However, as shown in Section 6, Existing General Plan Buildout Impact Analysis, in comparison to the existing general plan buildout of the proposed project the proposed project results in lower emissions for the majority of the analyzed criteria pollutants. NOx is the only criteria pollutant that has an increase in emissions from those associated with the buildout of the existing general plan. Furthermore, at only an additional 17 pounds per day of NO_X, the net increase in emissions would not exceed the SCAQMD threshold of 55 pounds per day. Please see Section 6 of this report for the comparative analysis. Therefore, in comparison to the existing general plan buildout of the proposed project, the project operational-sourced emissions would not exceed applicable regional thresholds of significance.

Air Quality Compliance

The California Environmental Quality Act (CEQA) requires a discussion of any inconsistencies between a proposed project and applicable General Plans and Regional Plans (CEQA Guidelines Section 15125). The

[6] South Coast Air Quality Management District, Potential Control Strategies to Address Cumulative Impacts from Air Pollution White Paper, 1993, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

regional plan that applies to the proposed project includes the SCAQMD Air Quality Management Plan (AQMP). Therefore, this section discusses any potential inconsistencies of the proposed project with the AQMP.

The purpose of this discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the proposed project would interfere with the region's ability to comply with Federal and State air quality standards. If the decision-makers determine that the proposed project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

The SCAQMD CEQA Handbook states that "New or amended General Plan Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP". Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies. The SCAQMD CEQA Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
(2) Whether the project will exceed the assumptions in the AQMP in 2022 or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

Criteria 1 – Increase in the Frequency or Severity of Violations

Based on the air quality modeling analysis contained in this Air Analysis, short-term construction impacts will not result in significant impacts based on the SCAQMD regional and local thresholds of significance. This Air Analysis also found that, long-term operations impacts will result in significant impacts based on the SCAQMD regional thresholds of significance. However, as stated previously, as shown in Section 6, Existing General Plan Buildout Impact Analysis, in comparison to the existing general plan buildout of the proposed project the proposed project results in lower emissions for the majority of the analyzed criteria pollutants. NOx is the only criteria pollutant that has an increase in emissions from those associated with the buildout of the existing general plan. Furthermore, at only an additional 17 pounds per day of NO_X, the net increase in emissions would not exceed the SCAQMD threshold of 55 pounds per day. Please see Section 6 of this report for the comparative analysis. Therefore, in comparison to the existing general plan buildout of the proposed project, the project operational-sourced emissions would not exceed applicable regional thresholds of significance.

Therefore, the proposed project is not projected to contribute to the exceedance of any air pollutant concentration standards and is found to be consistent with the AQMP for the first criterion.

Criteria 2 – Exceed Assumptions in the AQMP?

Consistency with the AQMP assumptions is determined by performing an analysis of the proposed project with the assumptions in the AQMP. The emphasis of this criterion is to ensure that the analyses conducted for the proposed project are based on the same forecasts as the AQMP. The 2020-2045 Regional Transportation/Sustainable Communities Strategy prepared by SCAG (2020) includes chapters on: the challenges in a changing region, creating a plan for our future, and the road to greater mobility and sustainable growth. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA. For this project, the City of Perris Land Use Plan defines the assumptions that are represented in the AQMP.

The proposed project involves creation of an overlay zone for Housing Opportunity Sites identified in the recently adopted *City of Perris General Plan Housing Element* (August 17, 2022) that would continue to permit development in accordance with current zoning regulations or allow activation of the overlay zoning for development of up to 5,419 high-density, multi-family residential dwelling units distributed over 12 Housing Opportunity Areas. Full development of all Housing Opportunity Areas could result in up to 5,419 multi-family residential dwelling units. Therefore, the proposed project is consistent with the City's land use designation. The proposed project is not anticipated to exceed the AQMP assumptions for the project site and is found to be consistent with the AQMP for the second criterion.

Based on the above, the proposed project will not result in an inconsistency with the SCAQMD AQMP. Therefore, a less than significant impact will occur.

3. DIESEL EMISSIONS HEALTH RISK ASSESSMENT

According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 30-year lifetime will contract cancer, based on the use of revised Office of Environmental Health Hazard Assessment (OEHHA) risk-assessment methodology[7]. The 2015 OEHHA guidance states that "Districts are to determine which facilities will prepare an HRA based on a prioritization process outlined in the law. The process by which Districts identify priority facilities for risk assessment involves consideration of potency, toxicity, quantity of emissions, and proximity to sensitive receptors such as hospitals, daycare centers, schools, work-sites, and residences". The Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis prepared by SCAQMD (August 2003) defers to CARB (State) guidance for "technical guidance for diesel toxic impact analyses for various source categories".

The California Air Pollution Control Officers Association (CAPCOA) has developed TAC health risk assessment guidelines to provide consistent, statewide procedures for preparing the health risk assessments required under the Air Toxics "Hot Spots" Act. The title of these guidelines is CAPCOA Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines. The District recommends that lead agencies conduct TAC risk assessments in accordance with the CAPCOA Risk Assessment Guidelines, as supplemented by the District's supplemental guidelines. According to SCAQMD and CAPCOA guidelines, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 30-year lifetime will contract cancer, based on the use of standard risk-assessment methodology.

As determined in the California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal. 4th 369 (CBIA) case the California Supreme Court determined that CEQA does not generally require an impact analysis of the existing environmental conditions on the future residents of a proposed project and generally only requires an analysis of the proposed project's impact on the environment. However, the CBIA case also stated that when a proposed project brings development and people into an area already subject to specific hazards and the new development/people exacerbate the existing hazards, then CEQA requires an analysis of the hazards and the proposed project's effect in terms of increasing the risks related to those hazards. In regards to air quality hazards, TACs are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. As such, if a proposed project would not exacerbate pre-existing hazards (e.g., TAC health risks) then an analysis of those hazards and the proposed project's effect on increasing those hazards is not required. The project is a residential project and will not be a source of toxic air contaminants. The site is currently vacant and does not contain any operational land uses that emit toxic air contaminants.

Furthermore, the most recent Health Risk Assessment for Proposed Land Use Projects prepared by CAPCOA (July 2009) recommends avoiding siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. A summary of the basis for the distance recommendations can be found in the ARB Handbook *Air Quality and Land Use Handbook: A Community Health Perspective*.

The proposed project includes the development of the Housing Opportunity Sites identified in the *City of Perris General Plan Housing Element*. The Interstate 215 Freeway and State Route 74 are located in close

[7] In February 2015, the Office of Environmental Health Hazard Assessment updated their "Air Toxics Hot Spots Program, Risk Assessments Guidelines, Guidance Manual for Preparation of Health Risk Assessments; however, the updated OEHHA guidance states in the page footers "do not cite or quote". SCAQMD staff have incorporated the updates into their methodology for SCAQMD's Rules 1401, 1401.1, 1402, and 212, and have updated their HRA Guidance for permitting; however, they are still in the process of updating the guidance for CEQA analyses (via working group sessions).

proximity to the overall project area. The closest Housing Opportunity Site to the Interstate 215 Freeway is Area 2, with its western boundary located adjacent to the eastern side of the Interstate 215 Freeway. In addition, the closest Housing Opportunity Site to State Route 74 is Area 3, with its northwestern boundary located adjacent to the eastern side of State Route 74.

According to the latest traffic volume data from the California Department of Transportation, the portions of the Interstate 215 Freeway that lie in proximity of the Housing Opportunity Sites has a current annual average daily trip (AADT) ranging between 94,000 to 102,000 vehicles.[8]In addition, the portions of State Route 74 that lie in proximity of the Housing Opportunity Sites has a current AADT ranging between 18,000 to 22,000 vehicles.[9] Therefore, in the vicinity of the propose project, the Interstate 215 Freeway has more than 50,000 vehicles per day.

As proposed sensitive receptors are located within 500 feet of the Interstate 215 Freeway, project-specific health risk assessments would be required to assess potential impacts. However, at this time, specifics regarding the development of each housing opportunity site are not available; therefore, a mitigation measure has been included which requires a health risk assessment be prepared for any future development of housing opportunity sites located within 500 feet of the Interstate 215 Freeway. Impacts to future on-site sensitive receptors from freeway-related diesel emissions are considered to be less than significant with incorporation of mitigation.

[8] https://dot.ca.gov/programs/traffic-operations/census

[9] https://dot.ca.gov/programs/traffic-operations/census

4. GLOBAL CLIMATE CHANGE ANALYSIS

EXISTING GREENHOUSE GAS ENVIRONMENT

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHG), play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent greenhouse gases contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's greenhouse gas emissions, followed by electricity generation. Emissions of CO_2 and nitrous oxide (NOx) are byproducts of fossil fuel combustion. Methane, a potent greenhouse gas, results from off-gassing associated with agricultural practices and landfills. Sinks of CO_2, where CO_2 is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean. The following provides a description of each of the greenhouse gases and their global warming potential.

Water Vapor

Water vapor is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop". The extent to which this positive feedback loop will continue is unknown as there is also dynamics that put the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

Carbon Dioxide (CO_2)

The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s. Each of these activities has increased in scale and distribution. CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration with the first conclusive measurements being made in the last half of the 20th century. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). The International Panel on Climate Change (IPCC Fifth Assessment Report, 2014) Emissions of CO_2 from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emissions increase from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000 to 2010. Globally, economic and population growth continued to be the most important drivers of increases in CO_2 emissions from fossil fuel combustion. The contribution of population growth between 2000 and 2010 remained roughly identical to the previous three decades, while the contribution of economic growth has risen sharply.

Methane (CH_4)

CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Its lifetime in the atmosphere is brief (10 to 12 years), compared to some other GHGs (such as CO_2, N_2O, and Chlorofluorocarbons (CFCs). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O)

Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration of this GHG was documented at 314 parts per billion (ppb). N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is also commonly used as an aerosol spray propellant, (i.e., in whipped cream bottles, in potato chip bags to keep chips fresh, and in rocket engines and in race cars).

Chlorofluorocarbons (CFC)

CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and in 1989 the European Community agreed to ban CFCs by 2000 and subsequent treaties banned CFCs worldwide by 2010. This effort was extremely successful, and the levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydrofluorocarbons (HFC)

HFCs are synthetic man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 and HFC-134a in the atmosphere are now about 10 parts per trillion (ppt) each. Concentrations of HFC-152a are about 1 ppt. HFCs are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFC)

PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing.

Sulfur Hexafluoride (SF_6)

SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 has the highest global warming potential of any gas evaluated; 23,900 times that of CO_2. Concentrations in the 1990s were about 4 ppt. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Aerosols

Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel containing sulfur is burned. Black carbon (or soot) is emitted during biomass burning due to the incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.

Global Warming Potential

The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory), and allows policymakers to compare emissions reduction opportunities across sectors and gases. A summary of the atmospheric lifetime and the global warming potential of selected gases are summarized in Table 8. As shown in Table 8, the global warming potential of GHGs ranges from 1 to 22,800.

Table 8
Global Warming Potentials and Atmospheric Lifetimes

Gas	Atmospheric Lifetime	Global Warming Potential[1] (100 Year Horizon)
Carbon Dioxide (CO_2)	–[2]	1
Methane (CH_4)	12	28-36
Nitrous Oxide (NO)	114	298
Hydrofluorocarbons (HFCs)	1-270	12-14,800
Perfluorocarbons (PFCs)	2,600-50,000	7,390-12,200
Nitrogen trifluoride (NF_3)	740	17,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Notes:

Source: http://www3.epa.gov/climatechange/ghgemissions/gases.html

(1) Compared to the same quantity of CO_2 emissions.

(2) Carbon dioxide's lifetime is poorly defined because the gas is not destroyed over time, but instead moves among different parts of the ocean–atmosphere–land system. Some of the excess carbon dioxide will be absorbed quickly (for example, by the ocean surface), but some will remain in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments.

GREENHOUSE GAS STANDARDS AND REGULATION

International

Montreal Protocol

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to evaluate the impacts of global climate change and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere—CFCs, halons, carbon tetrachloride, and methyl chloroform—were to be phased out, with the first three by the year 2000 and methyl chloroform by 2005.

The Paris Agreement

The Paris Agreement became effective on November 4, 2016. Thirty days after this date at least 55 Parties to the United Nations Framework Convention on Climate Change (Convention), accounting in total for at least an estimated 55 % of the total global greenhouse gas emissions, had deposited their instruments of ratification, acceptance, approval or accession with the Depositary.

The Paris Agreement built upon the Convention and – for the first time – attempted to bring all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. As such, it charts a new course in the global climate effort.

The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place, thus supporting action by developing countries and the most vulnerable countries, in line with their own national objectives. The Agreement also provides for enhanced transparency of action and support through a more robust transparency framework.

Federal

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address GHGs. The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the ENERGY STAR labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate greenhouse gases, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As

such, the U.S. Supreme Court ruled that the EPA should be required to regulate CO_2 and other greenhouse gases as pollutants under the federal Clean Air Act (CAA).

In response to the FY2008 Consolidations Appropriations Act (H.R. 2764; Public Law 110-161), EPA proposed a rule on March 10, 2009 that requires mandatory reporting of GHG emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of GHG Rule was signed and published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. This rule requires suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA.

On December 7, 2009, the EPA Administrator signed two distinct findings under section 202(a) of the Clean Air Act. One is an endangerment finding that finds concentrations of the six GHGs in the atmosphere threaten the public health and welfare of current and future generations. The other is a cause or contribute finding, that finds emissions from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare. These actions will not themselves impose any requirements on industry or other entities. However, it is a prerequisite to finalizing the EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by the EPA and Department of Transportation on September 15, 2009.

Clean Air Act

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), the U.S. Supreme Court held in April of 2007 that the USEPA has statutory authority under Section 202 of the federal Clean Air Act (CAA) to regulate GHGs. The court did not hold that the USEPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA. The USEPA adopted a Final Endangerment Finding for the six defined GHGs (CO2, CH4, N2O, HFCs, PFCs, and SF6) on December 7, 2009. The Endangerment Finding is required before USEPA can regulate GHG emissions under Section 202(a)(1) of the CAA consistently with the United States Supreme Court decision. The USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicle and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not, by themselves, impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Energy Independence Security Act

The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by the USEPA and NHTSA actions described above, (i) establishing miles per gallon targets for cars and light trucks and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of green jobs.[10]

Executive Order 13432

In response to the Massachusetts v. Environmental Protection Agency ruling, the President signed Executive Order 13432 on May 14, 2007, directing the USEPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court's decision. Executive Order 13432 was codified into law by the 2009 Omnibus Appropriations Law signed on February 17, 2009. The order sets goals in the areas of energy efficiency, acquisition, renewable energy, toxics reductions, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Light-Duty Vehicle Greenhouse Gas and Corporate Average Fuel Economy Standards.

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the United States auto industry. The adopted federal standard applies to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpasses the prior Corporate Average Fuel Economy standards (CAFE)[11] and requires an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO2 per mile by model year 2016, based on USEPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 for passenger cars and light-duty trucks. By 2025, vehicles are required to achieve 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO2 per mile. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle.[12] In 2017, the USEPA recommended no change to the GHG standards for light-duty vehicles for model years 2022-2025.

Issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020), the Safer Affordable Fuel-Efficient Vehicles Rule would maintain the CAFE and CO2 standards applicable in model year 2020 for model years 2021 through 2026. The estimated CAFE and CO2 standards for model year 2020 are 43.7 mpg and 204 grams of CO2 per mile for passenger cars and 31.3 mpg and 284 grams of CO2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012. This Rule also excludes CO2-equivalent emission improvements associated with air conditioning refrigerants and leakage (and, optionally, offsets for nitrous oxide and methane emissions) after model year 2020.[13]

State of California

California Air Resources Board

CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards (California Ambient Air Quality Standards

[10] A green job, as defined by the United States Department of Labor, is a job in business that produces goods or provides services that benefit the environment or conserve natural resources.

[11] The Corporate Average Fuel Economy standards are regulations in the United States, first enacted by Congress in 1975, to improve the average fuel economy of cars and light trucks. The U.S Department of Transportation has delegated the National Highway Traffic Safety Administration as the regulatory agency for the Corporate Average Fuel Economy standards.

[12] United States Environmental Protection Agency, EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel Economy for Model Years 2017-2025 Cars and Light Trucks, August 2012, https://nepis.epa.gov/Exe/ZyPDF.cgi/P100EZ7C.PDF?Dockey=P100EZ7C.PDF.

[13] National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA), 2018. Federal Register / Vol. 83, No. 165 / Friday, August 24, 2018 / Proposed Rules, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks 2018. Available at: https://www.gpo.gov/fdsys/pkg/FR-2018-08-24/pdf/2018-16820.pdf.

[CAAQS]), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In 2004, the California Air Resources Board (CARB) adopted an Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other toxic air contaminants (Title 13 California Code of Regulations [CCR], Section 2485). The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure generally does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given location with certain exemptions for equipment in which idling is a necessary function such as concrete trucks. While this measure primarily targets diesel particulate matter emissions, it has co-benefits of minimizing GHG emissions from unnecessary truck idling.

In 2008, CARB approved the Truck and Bus regulation to reduce particulate matter and nitrogen oxide emissions from existing diesel vehicles operating in California (13 CCR, Section 2025, subsection (h)). CARB has also promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation, adopted by the CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. While these regulations primarily target reductions in criteria air pollutant emission, they have co-benefits of minimizing GHG emissions due to improved engine efficiencies.

The State currently has no regulations that establish ambient air quality standards for GHGs. However, the State has passed laws directing CARB to develop actions to reduce GHG emissions, which are listed below.

Assembly Bill 1493

California Assembly Bill 1493 enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a "waiver" request to the EPA from a portion of the federal Clean Air Act in order to allow the State to set more stringent tailpipe emission standards for CO_2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the "waiver" request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State's request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

Executive Order S-3-05

The California Governor issued Executive Order S-3-05, GHG Emission, in June 2005, which established the following reduction targets:

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

The Executive Order directed the secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. To comply with the Executive Order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of businesses, local governments, and communities and through State incentive and regulatory programs.

Assembly Bill 32 (California Health and Safety Code, Division 25.5 – California Global Warming Solutions Act of 2006)

In 2006, the California State Legislature adopted Assembly Bill (AB) 32 (codified in the California Health and Safety Code [HSC], Division 25.5 – California Global Warming Solutions Act of 2006), which focuses on reducing GHG emissions in California to 1990 levels by 2020. HSC Division 25.5 defines GHGs as CO2, CH4, N2O, HFCs, PFCs, and SF6 and represents the first enforceable statewide program to limit emissions of these GHGs from all major industries with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. Under HSC Division 25.5, CARB has the primary responsibility for reducing GHG emissions. CARB is required to adopt rules and regulations directing state actions that would achieve GHG emissions reductions equivalent to 1990 statewide levels by 2020.

Senate Bill 32 and Assembly Bill 197

In 2016, the California State Legislature adopted Senate Bill (SB) 32 and its companion bill AB 197, and both were signed by Governor Brown. SB 32 and AB 197 amends HSC Division 25.5 and establishes a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and includes provisions to ensure the benefits of state climate policies reach into disadvantaged communities.

Climate Change Scoping Plan (2008)

A specific requirement of AB 32 was to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020 (Health and Safety Code section 38561 (h)). CARB developed an AB 32 Scoping Plan that contains strategies to achieve the 2020 emissions cap. The initial Scoping Plan was approved in 2008 and contains a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives.

As required by HSC Division 25.5, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was originally set at 427 $MMTCO_2e$ using the GWP values from the IPCC SAR. CARB also projected the state's 2020 GHG emissions under no-action-taken (NAT) conditions – that is, emissions that would occur without any plans, policies, or regulations to reduce GHG emissions. CARB originally used an average of the state's GHG emissions from 2002 through 2004 and projected the 2020 levels at approximately 596 $MMTCO_2e$ (using GWP values from the IPCC SAR). Therefore, under the original projections, the state must reduce its 2020 NAT emissions by 28.4 percent in order to meet the 1990 target of 427 $MMTCO_2e$.

First Update to the Climate Change Scoping Plan (2014)

The First Update to the Scoping Plan was approved by CARB in May 2014 and builds upon the initial Scoping Plan with new strategies and recommendations. In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 $MMTCO_2e$. CARB also updated the State's 2020 NAT emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that were recently adopted for motor vehicles and renewable energy. CARB's projected statewide 2020 emissions estimate using the GWP values from the IPCC AR4 is 509.4 $MMTCO_2e$.

2017 Climate Change Scoping Plan

In response to the 2030 GHG reduction target, CARB adopted the 2017 Climate Change Scoping Plan at a public meeting held in December 2017. The 2017 Scoping Plan outlines the strategies the State will implement to achieve the 2030 GHG reduction target of 40 percent below 1990 levels. The 2017 Scoping Plan also

addresses GHG emissions from natural and working lands of California, including the agriculture and forestry sectors. The 2017 Scoping Plan considered the Scoping Plan Scenario and four alternatives for achieving the required GHG reductions but ultimately selected the Scoping Plan Scenario.

CARB states that the Scoping Plan Scenario "is the best choice to achieve the State's climate and clean air goals."[14] Under the Scoping Plan Scenario, the majority of the reductions would result from the continuation of the Cap-and-Trade regulation. Additional reductions are achieved from electricity sector standards (i.e., utility providers to supply at least 50 percent renewable electricity by 2030), doubling the energy efficiency savings at end uses, additional reductions from the LCFS, implementing the short-lived GHG strategy (e.g., hydrofluorocarbons), and implementing the mobile source strategy and sustainable freight action plan. The alternatives were designed to consider various combinations of these programs, as well as consideration of a carbon tax in the event the Cap-and-Trade regulation is not continued. However, in July 2017, the California Legislature voted to extend the Cap-and-Trade regulation to 2030. Implementing this Scoping Plan will ensure that California's climate actions continue to promote innovation, drive the generation of new jobs, and achieve continued reductions of smog and air toxics. The ambitious approach draws on a decade of successful programs that address the major sources of climate-changing gases in every sector of the economy:

- More Clean Cars and Trucks: The plan sets out far-reaching programs to incentivize the sale of millions of zero-emission vehicles, drive the deployment of zero-emission trucks, and shift to a cleaner system of handling freight statewide.
- Increased Renewable Energy: California's electric utilities are ahead of schedule meeting the requirement that 33 percent of electricity come from renewable sources by 2020. The Scoping Plan guides utilities to 50 percent renewables, as required under SB 350.
- Slashing Super-Pollutants: The plan calls for a significant cut in super-pollutants such as methane and HFC refrigerants, which are responsible for as much as 40 percent of global warming.
- Cleaner Industry and Electricity: California's renewed cap-and-trade program extends the declining cap on emissions from utilities and industries and the carbon allowance auctions. The auctions will continue to fund investments in clean energy and efficiency, particularly in disadvantaged communities.
- Cleaner Fuels: The Low Carbon Fuel Standard will drive further development of cleaner, renewable transportation fuels to replace fossil fuels.
- Smart Community Planning: Local communities will continue developing plans which will further link transportation and housing policies to create sustainable communities.
- Improved Agriculture and Forests: The Scoping Plan also outlines innovative programs to account for and reduce emissions from agriculture, as well as forests and other natural lands.

The 2017 Scoping Plan also evaluates reductions of smog-causing pollutants through California's climate programs.

2022 Climate Change Scoping Plan

CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality on November 16, 2022. The 2022 Scoping Plan lays out the sector-by-sector roadmap for California, the world's fifth largest economy, to achieve carbon neutrality by 2045 or earlier, outlining a technologically feasible, cost-effective, and equity-focused path to achieve the state's climate target. The Plan addresses recent legislation and direction from Governor Newsom and extends and expands upon earlier plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. The plan also takes the unprecedented step of adding carbon neutrality as a science-based guide and touchstone for California's climate work. Specifically, this plan:

- Identifies a path to keep California on track to meet its SB 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030.

[14] California Air Resources Board, California's 2017 Climate Change Scoping Plan, November 2017, https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 and a reduction in anthropogenic emissions by 85 percent below 1990 levels.
- Focuses on strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs.
- Integrates equity and protecting California's most impacted communities as driving principles throughout the document.
- Incorporates the contribution of natural and working lands (NWL) to the state's GHG emissions, as well as their role in achieving carbon neutrality.
- Relies on the most up-to-date science, including the need to deploy all viable tools to address the existential threat that climate change presents, including carbon capture and sequestration, as well as direct air capture.
- Evaluates the substantial health and economic benefits of taking action.
- Identifies key implementation actions to ensure success.

SB 32, Pavley. California Global Warming Solutions Act of 2006

(1) The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective greenhouse gas emissions reductions. This bill would require the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.
(2) This bill would become operative only if AB 197 of the 2015–16 Regular Session is enacted and becomes effective on or before January 1, 2017. AB 197 requires that the California Air Resources Board, which directs implementation of emission-reduction programs, should target direct reductions at both stationary and mobile sources. AB 197 of the 2015-2016 Regular Session was approved on September 8, 2016.

Executive Order S-1-07

Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs the CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009, CARB approved the proposed regulation to implement the low carbon fuel standard and began implementation on January 1, 2011. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. CARB approved some amendments to the LCFS in December 2011, which were implemented on January 1, 2013. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

The LCFS is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery

electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

Senate Bill 97

Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to the CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify and adopt those guidelines by January 1, 2010.

Pursuant to the requirements of SB 97 as stated above, on December 30, 2009, the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The CEQA Guidelines Amendments changed 14 sections of the CEQA Guidelines and incorporate GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided, and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010, and are summarized below:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation".
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Senate Bill 100

Senate Bill 100 (SB 100) requires 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045. SB 100 was adopted September 2018.

The interim thresholds from prior Senate Bills and Executive Orders would also remain in effect. These include Senate Bill 1078 (SB 1078), which requires retail sellers of electricity, including investor-owned utilities and

community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) which changed the target date to 2010. Executive Order S-14-08, which was signed on November 2008 and expanded the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed the CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

Senate Bill 375

Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). The CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. The CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Southern California Association of Governments (SCAG) jurisdiction, which has authority to develop the SCS or APS. For the SCAG region, the targets set by the CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 19 percent below 2005 per capita GHG emissions levels by 2035. These reduction targets became effective October 2018.

Senate Bill X7-7

Senate Bill X7-7 (SB X7-7), enacted on November 9, 2009, mandates water conservation targets and efficiency improvements for urban and agricultural water suppliers. SB X7-7 requires the Department of Water Resources (DWR) to develop a task force and technical panel to develop alternative best management practices for the water sector. In addition, SB X7-7 required the DWR to develop criteria for baseline uses for residential, commercial, and industrial uses for both indoor and landscaped area uses. The DWR was also required to develop targets and regulations that achieve a statewide 20 percent reduction in water usage.

Assembly Bill 939 and Senate Bill 1374

Assembly Bill 939 (AB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004, suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills.

California Code of Regulations (CCR) Title 24, Part 6

CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008, and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. 2013 Standards were approved and have been effective since July 1, 2014. 2016 Standards were adopted January 1, 2017. 2019 standards were published July 1, 2019 and became effective January 1, 2020. All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow

the 2019 standards. The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards, whereas the 2019 residential standards are estimated to be approximately 7 percent more efficient than the 2016 standards. Furthermore, once rooftop solar electricity generation is factored in, 2019 residential standards are estimated to be approximately 53 percent more efficient than the 2016 standards. Under the 2019 standards, nonresidential buildings are estimated to be approximately 30 percent more efficient than the 2016 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

Section 120.1 Ventilation and Indoor Air Quality included both additions and revisions in the 2019 Code. This section now requires nonresidential and hotel/motel buildings to have air filtration systems that use forced air ducts to supply air to occupiable spaces to have air filters. Further, the air filter efficiency must be either MERV 13 or use a particle size efficiency rating specific in the Energy Code AND be equipped with air filters with a minimum 2-inch depth or minimum 1-inch depth if sized according to the equation 120.1-A. If natural ventilation is to be used the space must also use mechanical unless ventilation openings are either permanently open or controlled to stay open during occupied times. The 2019 version of the Code also completely revised the minimum ventilation requirements including DVC airflow rates within Section 120.1 Table 120.1–A. Table 120.1-A now includes air classification and recirculation limitations, these are based on either the number of occupants or the CFM/ft^2 (cubic feet per minute per square foot), whichever is greater.

Section 140.4 Space Conditioning Systems included both additions and revisions within the 2019 Code. The changes provided new requirements for cooling tower efficiency, new chilled water-cooling system requirements, as well as new formulas for calculating allowed fan power. Section 140.4(n) also provide a new exception for mechanical system shut-offs for high-rise multifamily dwelling units, while Section 140.4(o) added new requirements for conditioned supply air being delivered to space with mechanical exhaust.

Section 120.6 Covered Processes added information in regards to adiabatic chiller requirements that included that all condenser fans for air-cooled converseness, evaporative-cooled condensers, adiabatic condensers, gas coolers, air or water fluid coolers or cooling towers must be continuously variable speed, with the speed of all fans serving a common condenser high side controlled in unison .Further, the mid-condensing setpoint must be 70 degrees Fahrenheit for all of the above mentioned systems.

New regulations were also adopted under Section 130.1 Indoor Lighting Controls. These included new exceptions being added for restrooms, the exception for classrooms being removed, as well as exceptions in regard to sunlight provided through skylights and overhangs.

Section 130.2 Outdoor Lighting Controls and Equipment added automatic scheduling controls which included that outdoor lighting power must be reduced by 50 to 90 percent, turn the lighting off during unoccupied times and have at least two scheduling options for each luminaire independent from each other and with a 2-hour override function. Furthermore, motion sensing controls must have the ability to reduce power within 15 minutes of area being vacant and be able to come back on again when occupied. An exception allows for lighting subject to a health or life safety statute, ordinance, or regulation may have a minimum time-out period longer than 15 minutes or a minimum dimming level above 50% when necessary to comply with the applicable law.

The 2022 Building Energy Efficiency Standards will become effective on January 1, 2023. [15] The core focus of the building standards has been efficiency, but the 2019 Energy Code ventured into onsite generation by requiring solar PV on new homes, providing significant GHG savings. The 2022 update builds off this progress with expanded solar standards and the move to onsite energy storage that will help Californians save on utility bills while bolstering the grid. The 2022 Energy Code update focuses on four key areas in new construction of homes and businesses:

[15] California Energy Commission (CEC). 2022. Building Energy Efficiency Standards. https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency.

- Encouraging electric heat pump technology and use, which consumes less energy and produces fewer emissions than traditional HVACs and water heaters.
- Establishing electric-ready requirements when natural gas is installed, which positions owners to use cleaner electric heating, cooking and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available onsite and complement the state's progress toward a 100 percent clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

The 2022 Energy Code affects homes by establishing energy budgets based on efficient heat pumps for space or water heating to encourage builders to install heat pumps over gas-fueled HVAC units; requiring homes to be electric-ready, with dedicated 240-volt outlets and space (with plumbing for water heaters) so electric appliances can eventually replace installed gas appliances; increasing minimum kitchen ventilation requirements so that fans over cooktops have higher airflow or capture efficiency to better exhaust pollution from gas cooking and improve indoor air quality; and allowing exceptions to existing solar PV standards when roof area is not available (such as for smaller homes). In addition, the effect on businesses includes establishing combined solar PV and battery standards for select businesses with systems being sized to maximize onsite use of solar energy and avoid electricity demand during times when the grid must use gas-powered plants; establishing new efficiency standards for commercial greenhouses (primarily cannabis growing); and improving efficiency standards for building envelope, various internal systems, and grid integration equipment, such as demand-responsive controls to buoy grid stability.[16,17]

California Code of Regulations (CCR) Title 24, Part 11 (California Green Building Standards)

On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011.The 2016 version of the California Green Building Standards became effective January 1, 2017.

2016 CALGreen Code: The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions. During the 2016-2017 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2015 Triennial Code Adoption Cycle.

HCD also increased the required construction waste reduction from 50 percent to 65 percent of the total building site waste. This increase aids in meeting CalRecycle's statewide solid waste recycling goal of 75 percent for 2020 as stated in Chapter 476, Statutes of 2011 (AB 341). HCD adopted new regulations requiring recycling areas for multifamily projects of five or more dwelling units. This regulation requires developers to provide readily accessible areas adequate in size to accommodate containers for depositing, storage and collection of non-hazardous materials (including organic waste) for recycling. This requirement assists businesses that were required as of April 1, 2016, to meet the requirements of Chapter 727, Statutes of 2014 (AB 1826).

HCD adopted new regulations to require information on photovoltaic systems and electric vehicle chargers to be included in operation and maintenance manuals. Currently, CALGreen section 4.410.1 Item 2(a) requires operation and maintenance instructions for equipment and appliances. Photovoltaic systems and electric vehicle chargers are systems that play an important role in many households in California, and their importance is increasing every day. HCD incorporated these two terms in the existing language in order to provide clarity to code users as to additional systems requiring operation and maintenance instructions.

[16] https://www.lightnowblog.com/2021/08/california-energy-commission-adopts-2022-building-energy-efficiency-standards/

[17] State of California Energy Commission. 2022 Building Energy Efficiency Standards Summary. https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf

HCD updated the reference to Clean Air Standards of the United States Environmental Protection Agency applicable to woodstoves and pellet stoves. HCD also adopted a new requirement for woodstoves and pellet stoves to have a permanent label indicating they are certified to meet the emission limits. This requirement provides clarity to the code user and is consistent with the United States Environmental Protection Agency's New Source Performance Standards. HCD updated the list of standards which can be used for verification of compliance for exterior grade composite wood products. This list now includes four standards from the Canadian Standards Association (CSA): CSA O121, CSA O151, CSA O153 and CSA O325. HCD updated heating and air-conditioning system design references to the ANSI/ACCA 2 Manual J, ANSI/ACCA 1 Manual D, and ANSI/ACCA 3 Manual S to the most recent versions approved by ANSI. HCD adopted a new elective measure for hot water recirculation systems for water conservation. The United States Department of Energy estimates that 3,600 to 12,000 gallons of water per year can be saved by the typical household (with four points of hot water use) if a hot water recirculation system is installed.

2019 CALGreen Code: During the 2019-2020 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2019 Triennial Code Adoption Cycle. The 2019 version of the California Green Building Standards became effective January 1, 2020.

HCD modified the best management practices for stormwater pollution prevention adding Section 5.106.2 for projects that disturb one or more acres of land. This section requires projects that disturb one acre or more of land or less than one acre of land but are part of a larger common plan of development or sale must comply with the postconstruction requirement detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board. The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff pre-project hydrology) with installation of postconstruction stormwater management measures.

Section 5.106.4.1.5 states that acceptable bicycle parking facility for Sections 5.106.4.1.2 through 5.106.4.1.4 shall be convenient from the street and shall meeting one of the following: (1) covered, lockable enclosures with permanently anchored racks for bicycles; (2) lockable bicycle rooms with permanently anchored racks; or (3) lockable, permanently anchored bicycle lockers.

HCD amended section 5.106.5.3.5 allowing future charging spaces to qualify as designated parking for clean air vehicles.

HCD amended section 5.304.1 for outdoor potable water use in landscape areas and repealed sections 5.304.2 and 5.304.3. The update requires nonresidential developments to comply with a local water efficient landscape ordinance or the current California Department of Water Resource's' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. Some updates were also made in regard to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regard to the use of MERV filters in mechanically ventilated buildings. This update changed the filter use from MERV 8 to MERV 13. MERV 13 filters are to be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

The 2022 California Green Building Standards Code became effective on January 1, 2023.[18]

HCD amended Section 5.106.5.3 in regard to increasing the EV capable space percentages and adding a new requirement for installed Level 2 DCFC chargers.

[18] California Building Standards Commission (CBSC). 2022. California Green Building Standards. Website: https://codes.iccsafe.org/content/CAGBC2022P1.

HCD under Section 5.106.5.4 added new regulation for electric vehicle charging readiness requirements for new construction of warehouse, grocery stores, and retail stores with planned off-street loading spaces. [19]

Executive Order B-30-15

On April 29, 2015, Governor Brown issued Executive Order B-30-15. Therein, the Governor directed the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030.
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

Executive Order B-29-15

Executive Order B-29-15, mandates a statewide 25 percent reduction in potable water usage. EO B-29-15 signed into law on April 1, 2015.

Executive Order B-37-16

Executive Order B-37-16, continuing the State's adopted water reductions, was signed into law on May 9, 2016. The water reductions build off the mandatory 25 percent reduction called for in EO B-29-15.

Executive Order N-79-20

Executive Order N-79-20 was signed into law on September 23, 2020 and mandates 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035; 100 percent of medium- and heavy-duty vehicles in the state be zero-emission vehicles by 2045 for all operations where feasible and by 2035 for drayage trucks; and to transition to 100 percent zero-emission off-road vehicles and equipment by 2035 where feasible.

SBX1 2

Signed into law in April 2011, SBX1 2, requires one-third of the State's electricity to come from renewable sources. The legislation increases California's current 20 percent renewables portfolio standard target in 2010 to a 33 percent renewables portfolio standard by December 31, 2020.

Senate Bill 350

Signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

[19] https://www.dgs.ca.gov/BSC/Resources/2022-Title-24-California-Code-Changes

Energy Sector and CEQA Guidelines Appendix F

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (CCR, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The 2016 update to the Energy Efficiency Standards for Residential and Nonresidential Buildings focuses on several key areas to improve the energy efficiency of renovations and addition to existing buildings as well as newly constructed buildings and renovations and additions to existing buildings. The major efficiency improvements to the residential Standards involve improvements for attics, walls, water heating, and lighting, whereas the major efficiency improvements to the nonresidential Standards include alignment with the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2013 national standards. Furthermore, the 2016 update required that enforcement agencies determine compliance with CCR, Title 24, Part 6 before issuing building permits for any construction.[20]

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality."[21] As of January 1, 2011, the CALGreen Code is mandatory for all new buildings constructed in the state. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code was most recently updated in 2022 to include new mandatory measures for residential and nonresidential uses; the new measures took effect on January 1, 2023.

Regional – South Coast Air Quality Management District

The project is within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

SCAQMD Regulation XXVII, Climate Change

SCAQMD Regulation XXVII currently includes three rules:

- The purpose of Rule 2700 is to define terms and post global warming potentials.
- The purpose of Rule 2701, SoCal Climate Solutions Exchange, is to establish a voluntary program to encourage, quantify, and certify voluntary, high quality certified greenhouse gas emission reductions in the SCAQMD.
- Rule 2702, Greenhouse Gas Reduction Program, was adopted on February 6, 2009. The purpose of this rule is to create a Greenhouse Gas Reduction Program for greenhouse gas emission reductions in the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

[20] California Energy Commission, 2016 Building Energy Efficiency Standards, June 2015, http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf

[21] California Building Standards Commission, 2010 California Green Building Standards Code, (2010).

A variety of agencies have developed greenhouse gas emission thresholds and/or have made recommendations for how to identify a threshold. However, the thresholds for projects in the jurisdiction of the SCAQMD remain in flux. The California Air Pollution Control Officers Association explored a variety of threshold approaches but did not recommend one approach (2008). The ARB recommended approaches for setting interim significance thresholds (California Air Resources Board 2008b), in which a draft industrial project threshold suggests that non-transportation related emissions under 7,000 $MTCO_2e$ per year would be less than significant; however, the ARB has not approved those thresholds and has not published anything since then. The SCAQMD is in the process of developing thresholds, as discussed below.

SCAQMD Threshold Development

For GHG emissions and global warming, there is not, at this time, one established, universally agreed-upon "threshold of significance" by which to measure an impact. While the CARB published some draft thresholds in 2008, they were never adopted, and the CARB recommended that local air districts and lead agencies adopt their own thresholds for GHG impacts.

The SCAQMD has been evaluating GHG significance thresholds since April 2008. On December 5, 2008, the SCAQMD Governing Board adopted an interim greenhouse gas significance threshold of 10,000 $MTCO_2e$ for stationary sources, rules, and plans where the SCAQMD is lead agency (SCAQMD permit threshold. However, the SCAQMD is not the lead agency for this project.

The SCAQMD has continued to consider adoption of significance thresholds for residential and general development projects. The most recent proposal issued in September 2010 uses the following tiered approach to evaluate potential GHG impacts from various uses ("SCAQMD draft local agency threshold"):

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a greenhouse gas reduction plan. If a project is consistent with a qualifying local greenhouse gas reduction plan, it does not have significant greenhouse gas emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to a project's operational emissions. If a project's emissions are under one of the following screening thresholds, then the project is less than significant:
  - All land use types: 3,000 $MTCO_2e$ per year
  - Based on land use type: residential: 3,500 $MTCO_2e$ per year; commercial: 1,400 $MTCO_2e$ per year; or mixed use: 3,000 $MTCO_2e$ per year.
  - Based on land type: Industrial (where SCAQMD is the lead agency), 10,000 $MTCO_2e$ per year.
- Tier 4 has the following options:
  - Option 1: Reduce emissions from business as usual (BAU) by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures.
  - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 $MTCO_2e$/SP/year for projects and 6.6 $MTCO_2e$/SP/year for plans;
  - Option 3, 2035 target: 3.0 $MTCO_2e$/SP/year for projects and 4.1 $MTCO_2e$/SP/year for plans.
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The thresholds identified above have not been adopted by the SCAQMD or distributed for widespread public review and comment and the working group tasked with developing the thresholds has not met since September 2010. The future schedule and likelihood of threshold adoption is uncertain. If the CARB adopts statewide significance thresholds, SCAQMD staff plan to report back to the SCAQMD Governing Board regarding any recommended changes or additions to the SCAQMD's interim threshold.

In the absence of other thresholds of significance promulgated by the SCAQMD, the City of Perris has been using the SCAQMD's 10,000 $MTCO_2e$ threshold for industrial projects and the draft thresholds for non-industrial projects the purpose of evaluating the GHG impacts associated with proposed general development projects. Other lead agencies through the Basin have also been using these adopted and draft thresholds. The City's evaluation of impacts under the 10,000 $MTCO_2e$ per year threshold is also considered to be conservative since it is being applied to all of the GHG emissions generated by the project (i.e., area sources, energy sources, vehicular sources, solid waste sources, and water sources) whereas the SCAQMD's adopted 10,000 $MTCO_2e$ per year threshold applies only to the new stationary sources generated at industrial facilities.

SCAQMD Working Group

In order to assist local agencies with direction on GHG emissions, the SCAQMD organized a working group and adopted Rules 2700, 2701, 2702, and 3002 which are described below.

SCAQMD Rules 2700 and 2701

The SCAQMD adopted Rules 2700 and 2701 on December 5, 2008, which establishes the administrative structure for a voluntary program designed to quantify GHG emission reductions. Rule 2700 establishes definitions for the various terms used in Regulation XXVII – Global Climate Change. Rule 2701 provides specific protocols for private parties to follow to generate certified GHG emission reductions for projects within the district. Approved protocols include forest projects, urban tree planting, and manure management. The SCAQMD is currently developing additional protocols for other reduction measures. For a GHG emission reduction project to qualify, it must be verified and certified by the SCAQMD Executive Officer, who has 60 days to approve or deny the Plan to reduce GHG emissions. Upon approval of the Plan, the Executive Officer issues required to issue a certified receipt of the GHG emission reductions within 90 days.

SCAQMD Rule 2702

The SCAQMD adopted Rule 2702 on February 6, 2009, which establishes a voluntary air quality investment program from which SCAQMD can collect funds from parties that desire certified GHG emission reductions, pool those funds, and use them to purchase or fund GHG emission reduction projects within two years, unless extended by the Governing Board. Priority will be given to projects that result in co-benefit emission reductions of GHG emissions and criteria or toxic air pollutants within environmental justice areas. Further, this voluntary program may compete with the cap-and-trade program identified for implementation in CARB's Scoping Plan, or a federal cap and trade program.

SCAQMD Rule 3002

The SCAQMD amended Rule 3002 on November 5, 2010 to include facilities that emit greater than 100,000 tons per year of CO_2e are required to apply for a Title V permit by July 1, 2011. A Title V permit is for facilities that are considered major sources of emissions.

Local – City of Perris

The City of Perris Climate Action Plan (CAP) was completed in February 2016. The CAP was developed to address global climate change through the reduction of harmful greenhouse gas emissions at the community level and as part of California's mandated statewide GHG reduction goal (AB 32). Through the CAP, the city has developed multiple sustainable strategies to directly benefit the community by decreasing carbon emissions while adapting to a changing climate. The programs and actions provided in the CAP were developed to help the city grow healthily, resourcefully, and sustainably.

SIGNIFICANCE THRESHOLDS

Appendix G of State CEQA Guidelines

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
- The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions[22].

Thresholds of Significance for this Project

To determine whether the project's GHG emissions are significant, this analysis uses the SCAQMD draft tier 4 screening thresholds for plans of 6.6 $MTCO_2e$/SP/year for year 2020 and 4.1 $MTCO_2e$/SP/year for year 2035 to interpolate the year 2030 threshold. Based on the interpolation, the year 2030 screening threshold is 4.93 $MTCO_2e$/SP/year for plans.

METHODOLOGY

The proposed project is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, waste, water, and construction equipment. The following provides the methodology used to calculate the project-related GHG emissions and the project impacts.

CalEEMod Version 2022.1.1.16 was used to calculate the GHG emissions from the proposed project. Per the CalEEMod output, the service population of the proposed project is anticipated to be approximately 17,503 residents. This population value was used to calculate the emissions per service population for comparison against the interpolated year 2030 SCAQMD draft tier 4 screening thresholds for plans. The CalEEMod output for the year 2030 is available in Appendix B. Each source of GHG emissions is described in greater detail below.

Area Sources

Area sources include emissions from consumer products, landscape equipment and architectural coatings. No changes were made to the default area source emissions.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips from the Transportation Study into the CalEEMod Model. The program then applies the

[22] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

emission factors for each trip which is provided by the EMFAC2021 model to determine the vehicular traffic pollutant emissions. See Section 2 for details.

Waste

Waste includes the GHG emissions generated from the processing of waste from the proposed project as well as the GHG emissions from the waste once it is interred into a landfill. AB 341 requires that 75 percent of waste be diverted from landfills by 2020. No changes were made to the default waste parameters.

Water

Water includes the water used for the interior of the building as well as for landscaping and is based on the GHG emissions associated with the energy used to transport and filter the water. No changes were made to the default water usage parameters.

PROJECT GREENHOUSE GAS EMISSIONS

The GHG emissions have been calculated based on the parameters described above. A summary of the results is shown below in Table 9 and the CalEEMod Model run for the proposed project is provided in Appendix B. Table 9 shows that the total for the proposed project's emissions (without credit for any reductions from sustainable design and/or regulatory requirements) would be 48,536 $MTCO_2e$ per year resulting in 2.77 $MTCO_2e$ per service population per year. According to the thresholds of significance established above, a cumulative global climate change impact would occur if the GHG emissions created from the on-going operations of the proposed project would exceed the interpolated year 2030 SCAQMD draft tier 4 screening threshold of 4.93 $MTCO_2e$/SP/year for plans. Therefore, operation of the proposed project would not create a significant cumulative impact to global climate change. No mitigation is required.

Table 9
Project-Related Greenhouse Gas Emissions

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Maximum Annual Operations	427.00	46,406.00	46,833.00	45.30	1.78	48,536.00
Total Emissions Per Service Population Per Year[1]						2.77
Exceeds Interpolated 2030 SCAQMD Tier 4 Screening Threshold for Plans of 4.93 $MTCO_2e$/SP/year[2]						No

Notes:

Source: CalEEMod Version 2022.1.1.16 for Buildout Year 2030.

(1) Per the CalEEMod output, the service population of the proposed project is anticipated to be approximately 17,503 residents.

(2) The year 2030 screening threshold of 4.93 $MTCO_2e$/SP/year for plans was interpolated using the SCAQMD draft tier 4 screening thresholds for plans of 6.6 $MTCO_2e$/SP/year for year 2020 and 4.1 MTCO2e/SP/year for year 2035.

Consistency With Applicable Greenhouse Gas Reduction Plans and Policies

The proposed project would have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. As stated previously, the City of Perris has a Climate Action Plan; therefore, the project and its GHG emissions have been compared to the goals of the City of Perris CAP.

The City of Perris CAP includes local GHG reduction measures. The proposed project's consistency with these measures has been provided in Table 10. As shown in Table 10, the proposed project is consistent with the local GHG reduction measures provided in the City's CAP.

At a level of 48,536 $MTCO_2e$ per year resulting in 2.77 $MTCO_2e$ per service population per year, the project's GHG emissions do not exceed the SCAQMD draft tier 4 screening threshold of 6.6 $MTCO_2e$/SP/year for plans and would be in compliance with the reduction goals of the City of Perris' CAP, AB-32 and SB-32. Furthermore, the project will comply with applicable Green Building Standards and City of Perris' policies regarding sustainability (as dictated by the City's General Plan and CAP). Impacts are considered to be less than significant.

Cumulative Greenhouse Gas Impacts

Although the project is expected to emit GHGs, the emission of GHGs by a single project into the atmosphere is not itself necessarily an adverse environmental effect. Rather, it is the increased accumulation of GHG from more than one project and many sources in the atmosphere that may result in global climate change. Therefore, in the case of global climate change, the proximity of the project to other GHG emission generating activities is not directly relevant to the determination of a cumulative impact because climate change is a global condition. According to CAPCOA, "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective."[23] The resultant consequences of that climate change can cause adverse environmental effects. A project's GHG emissions typically would be very small in comparison to state or global GHG emissions and, consequently, they would, in isolation, have no significant direct impact on climate change.

The state has mandated a goal of reducing statewide emissions to 1990 levels by 2020, even though statewide population and commerce are predicted to continue to expand. In order to achieve this goal, CARB is in the process of establishing and implementing regulations to reduce statewide GHG emissions. Consistent with CEQA Guidelines Section 15064h(3),[24] the City, as lead agency, has determined that the project's contribution to cumulative GHG emissions and global climate change would be less than significant if the project is consistent with the applicable regulatory plans and policies to reduce GHG emissions.

As discussed in the Consistency With Applicable Greenhouse Gas Reduction Plans and Policies section above, the project is consistent with the goals and objectives of the City of Perris CAP.

Thus, given the project's consistency with the City's CAP and SCAQMD's 10,000 $MTCO_2e$ per year threshold for industrial uses, the project would not conflict with any applicable plan, policy, or regulation of an agency

[23] Source: California Air Pollution Control Officers Association, CEQA & Climate change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, (2008).

[24] The State CEQA Guidelines were amended in response to SB 97. In particular, the State CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction program renders a cumulative impact insignificant. Per State CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project will comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] plans or regulations for the reduction of greenhouse gas emissions."

adopted for the purpose of reducing the emissions of GHGs. Given this consistency, it is concluded that the project's incremental contribution to greenhouse gas emissions and their effects on climate change would not be cumulatively considerable.

Table 10
Proposed Project Consistency with City of Perris Climate Action Plan Local GHG Reduction Measures

CAP Measure[1]		Consistency Analysis
Energy		
E-1 Energy Action Plan	Improve municipal and community-wide energy efficiency and reduce energy consumption through the adoption of the local Energy Action Plans (EAP).	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element.The proposed project would not affect the ability of the City to adopt local EAPs. Furthermore, any future development of the housing opportunity sites would be required to be consistent with all applicable measures of an adopted local EAP.
Transportation		
T-1 Bicycle Infrastructure Improvements	Expand on-street and off-street bicycle infrastructure, including bicycle lanes and bicycle trails.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Any future development of the housing opportunity sites would be required to follow the City's regulations on the inclusion of bicycle infrastructure, bicycle lanes, and bicycle trails.
T-2 Bicycle Parking	Provide additional options for bicycle parking.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Any future development of the of the housing opportunity sites would required to provide bicycle parking per the City's regulations.
T-3 End of Trip Facilities	Encourage use of non-motorized transporation modes by providing appropriate facilities and amenities for commuters.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Future development of the housing opportunity sites would not affect the City's ability to provide facilities for commuters.
T-4 Transit Frequency Expansion	Collaborate with local and regional transit providers to provide more frequent transit in the subregion.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Any future development of the housing opportunity sites would not affect the City's abilility to collaborate with transit providers.
T-5 Traffic Signal Coordination	Incorporate technology to synchonize and coordinate traffic signals along local arterial.	No Applicable. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element and any future development of these sites would not affect the traffic signal technology.
T-6 Density	Improve jobs-housing balance and reduce vehicle miles traveled by increasing household and employment densities.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Therefore, the proposed project is aimed at increasing the number of housing sites available based on the City's projected future need. In addition, the existing general plan designations include a mix of housing and commercial uses.
T-7 Mixed-Use Development	Provide for a variety of development types and uses.	No Applicable. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Therefore, the proposed project is aimed at increasing the number of housing sites available based on the City's projected future need. In addition, the existing general plan designations include a mix of housing and commercial uses.
T-8 Design/Site Planning	Design neighborhoods and sites to reduce VMT.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. The Housing Opportunity Sites are located in multiple areas throughout the City and are surrounded by existing residential and commercial development.
T-10 Limit Parking Requirements for New Developments	Reduce requirements for vehicle parking in new development projects.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Future development of the housing opportunity sites would not affect the ability of the City to reduce requirements for vehicle parking.
T-11 Voluntary Transporation Demand Management	Reduce demand for roadway travel through incentives for alternative modes of transportation and disincentives for driving.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Future development of the housing opportunity sites would not affect the ability of the City to provide incentives for alternative modes of transportation.
T-12 Accelerated Bike Plan Implementation	Accelerate the implementation of all or specified components of a jurisdiction's adopted bike plan.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Future development of the housing opportunity sites would not affect the ability of the City to accelerate the implementation of an adopted bike plan.
Solid Waste		
SW-1 Yard Waste Collection	Provide green waste collection bins community-wide.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Future development of the housing opportunity sites would not affect the ability of the City to provide green waste bins throughout the community. Furthermore, any future development is required to have recycling programs that reduce waste to landfills by a minimum of 75 percent (per AB 341).
SW-2 Food Scrap and Compostable Paper Division	Divert food and paper waste from landfills byimplementing collection systems.	No Conflict. The proposed project is that of the Housing Opportunity Sites identifed in the City's latest Housing Element. Future development of the housing opportunity sites is required to have recycling programs that reduce waste to landfills by a minimum of 75 percent (per AB 341).

Notes:
Source: City of Perris Climate Action Plan adopted February 23, 2016.

5. ENERGY ANALYSIS

EXISTING CONDITIONS

This section provides an overview of the existing energy conditions in the project area and region.

Overview

California's estimated annual energy use as of 2021 included:

- Approximately 277,764 gigawatt hours of electricity;[25]
- Approximately 2,092,612 million cubic feet of natural gas per year;[26] and
- Approximately 23.2 billion gallons of transportation fuel (for the year 2015).[27]

As of 2020, the year of most recent data currently available by the United States Energy Information Administration (EIA), energy use in California by demand sector was:

- Approximately 34 percent transportation;
- Approximately 24.6 percent industrial;
- Approximately 21.8 percent residential; and
- Approximately 19.6 percent commercial.[28]

California's electricity in-state generation system generates approximately 194,127 gigawatt-hours each year. In 2021, California produced approximately 70 percent of the electricity it uses; the rest was imported from the Pacific Northwest (approximately 12 percent) and the U.S. Southwest (approximately 18 percent). Natural gas is the main source for electricity generation at approximately 50.2 percent of the total in-state electric generation system power as shown in Table 11.

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

- California was the seventh-largest producer of crude oil among the 50 states in 2021, and, as of January 2021, it ranked third in oil refining capacity.
- California is the largest consumer of jet fuel and second-largest consumer of motor gasoline among the 50 states and accounted for fifteen percent of the nation's jet fuel consumption and ten percent of motor gasoline consumption in 2020.
- In 2019, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all other states except Rhode Island, due in part to its mild climate and its energy efficiency programs
- In 2021, California was the nation's top producer of electricity from solar, geothermal, and biomass energy. The state was fourth in the nation in conventional hydroelectric power generation, down from second in 2019, in part because of drought and increased water demand

[25] California Energy Commission. Energy Almanac. Total Electric Generation. [Online] 2021. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation.

[26] Natural Gas Consumption by End Use. U.S. Energy Information Administration. [Online] 2021. https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm.

[27] California Energy Commission. Revised Transportation Energy Demand Forecast 2018-2030. [Online] 2021. https://www.energy.ca.gov/data-reports/planning-and-forecasting

[28] U.S. Energy Information Administration. California Energy Consumption by End-Use Sector, 2020. California State Profile Overview.[Online] December 20, 2022 https://www.eia.gov/state/?sid=CA#tabs-2

- In 2021, California was the fourth-largest electricity producer in the nation, but the state was also the nation's second-largest consumer of electricity, and in 2020, it received about 30% of its electricity supply from generating facilities outside of California, including imports from Mexico.[29]

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

Electricity

Electricity would be provided to the project by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons, within a service area encompassing approximately 50,000 square miles.[30] SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers.[31]

Table 12 identifies SCE's specific proportional shares of electricity sources in 2021. As shown in Table 12, the 2021 SCE Power Mix has renewable energy at 34.1 percent of the overall energy resources, of which biomass and waste is at 0.1 percent, geothermal is at 5.7 percent, eligible hydroelectric is at 0.5 percent, solar energy is at 14.9 percent, and wind power is at 10.2 percent; other energy sources include large hydroelectric at 2.3 percent, natural gas at 22.3 percent, nuclear at 9.2 percent, and unspecified sources of power at 34.6 percent.

Natural Gas

Natural gas would be provided to the project by Southern California Gas (SoCalGas). The following summary of natural gas resources and service providers, delivery systems, and associated regulation is excerpted from information provided by the California Public Utilities Commission (CPUC).

The CPUC regulates natural gas utility service for approximately 11 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller investor-owned natural gas utilities. The CPUC also regulates independent storage operators Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.

The vast majority of California's natural gas customers are residential and small commercial customers, referred to as "core" customers. Larger volume gas customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.

The PUC regulates the California utilities' natural gas rates and natural gas services, including in-state transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering and billing.

Most of the natural gas used in California comes from out-of-state natural gas basins. In 2017, for example, California utility customers received 38% of their natural gas supply from basins located in the U.S. Southwest, 27% from Canada, 27% from the U.S. Rocky Mountain area, and 8% from production located in California."[32]

[29] State Profile Overview. [Online] [Cited: March 17, 2022.] https://www.eia.gov/state/?sid=CA#tabs-2

[30] https://www.sce.com/about-us/who-we-are/leadership/our-service-territory

[31] California Energy Commission. Utility Energy Supply plans from 2015. https://www.energy.ca.gov/almanac/electricity_data/supply_forms.html

[32] California Public Utilities Commission. Natural Gas and California. http://www.cpuc.ca.gov/natural_gas/

Transportation Energy Resources

The project would attract additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. Gasoline (and other vehicle fuels) are commercially provided commodities and would be available to the project patrons and employees via commercial outlets.

The most recent data available shows the transportation sector emits 38 percent of the total greenhouse gases in the state and about 84 percent of smog-forming oxides of nitrogen (NOx).[33,34] About 28 percent of total United States energy consumption in 2021 was for transporting people and goods from one place to another. In 2021, petroleum comprised about 77 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels.[35] In 2021, about 134.83 billion gallons (or about 3.21 billion barrels) of finished motor gasoline were consumed in the United States, an average of about 369 million gallons (or about 8.8 million barrels) per day.[36]

REGULATORY BACKGROUND

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

Federal Regulations

Corporate Average Fuel Economy (CAFE) Standards

First established by the U.S. Congress in 1975, the Corporate Average Fuel Economy (CAFE) standards reduce energy consumption by increasing the fuel economy of cars and light trucks. The National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA) jointly administer the CAFE standards. The U.S. Congress has specified that CAFE standards must be set at the "maximum feasible level" with consideration given for: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) need for the nation to conserve energy.[37]

Issued by NHTSA and EPA in March 2020 (published on April 30, 2020 and effective after June 29, 2020), the Safer Affordable Fuel-Efficient Vehicles Rule would maintain the CAFE and CO2 standards applicable in model year 2020 for model years 2021 through 2026. The estimated CAFE and CO2 standards for model year 2020 are 43.7 mpg and 204 grams of CO2 per mile for passenger cars and 31.3 mpg and 284 grams of CO2 per mile for light trucks, projecting an overall industry average of 37 mpg, as compared to 46.7 mpg under the standards issued in 2012.[38]

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[33] CARB. California Greenhouse Gas Emissions Inventory – 2022 Edition. https://www.arb.ca.gov/cc/inventory/data/data.htm

[34] CARB. 2016 SIP Emission Projection Data. https://www.arb.ca.gov/app/emsinv/2017/emseic1_query.php?F_DIV=-4&F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_AREA=CA

[35] US Energy Information Administration. Use of Energy in the United States Explained: Energy Use for Transportation. https://www.eia.gov/energyexplained/?page=us_energy_transportation

[36] https://www.eia.gov/tools/faqs/faq.php?id=23&t=10

[37] https://www.nhtsa.gov/lawsregulations/corporate-average-fuel-economy.

[38] National Highway Traffic Safety Administration (NHTSA) and U.S. Environmental Protection Agency (USEPA), 2018. Federal Register / Vol. 83, No. 165 / Friday, August 24, 2018 / Proposed Rules, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks 2018. Available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-final-rule.

Intermodal Surface transportation Efficiency Act of 1991 (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

The Transportation Equity Act of the 21st Century (TEA-21)

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

State Regulations

Integrated Energy Policy Report (IEPR)

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

The 2019 Integrated Energy Policy Report (2019 IEPR) was adopted February 20, 2020, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2019 IEPR focuses on a variety of topics such as decarbonizing buildings, integrating renewables, energy efficiency, energy equity, integrating renewable energy, updates on Southern California electricity reliability, climate adaptation activities for the energy sector, natural gas assessment, transportation energy demand forecast, and the California Energy Demand Forecast.[39]

State of California Energy Plan

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

[39] California Energy Commission. Final 2019 Integrated Energy Policy Report. February 20, 2020. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2019-integrated-energy-policy-report

California Building Standards Code (Title 24)

The California Building Standards Code Title 24 was previously discussed in Section 4 of this report.

California Building Energy Efficiency Standards (Title 24, Part 6)

The California Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) were adopted to ensure that building construction and system design and installation achieve energy efficiency and preserve outdoor and indoor environmental quality. The current California Building Energy Efficiency Standards (Title 24 standards) are the 2019 Title 24 standards, which became effective on January 1, 2020. The 2019 Title 24 standards include efficiency improvements to the lighting and efficiency improvements to the non-residential standards include alignment with the American Society of Heating and Air-Conditioning Engineers. Ventilation and Indoor Air Quality included both additions and revisions in the 2019 Code. This section now requires nonresidential and hotel/motel buildings to have air filtration systems that use forced air ducts to supply air to occupiable spaces to have air filters. Further, the air filter efficiency must be either MERV 13 or use a particle size efficiency rating specific in the Energy Code AND be equipped with air filters with a minimum 2-inch depth or minimum 1-inch depth if sized according to the equation 120.1-A. If natural ventilation is to be used the space must also use mechanical unless ventilation openings are either permanently open or controlled to stay open during occupied times.

New regulations were also adopted under Section 130.1 Indoor Lighting Controls. These included new exceptions being added for restrooms, the exception for classrooms being removed, as well as exceptions in regard to sunlight provided through skylights and overhangs.

All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow the 2019 standards. The 2016 residential standards were estimated to be approximately 28 percent more efficient than the 2013 standards, whereas the 2019 residential standards are estimated to be approximately 7 percent more efficient than the 2016 standards. Furthermore, once rooftop solar electricity generation is factored in, 2019 residential standards are estimated to be approximately 53 percent more efficient than the 2016 standards. Under the 2019 standards, nonresidential buildings are estimated to be approximately 30 percent more efficient than the 2016 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

The 2022 Building Energy Efficiency Standards became effective on January 1, 2023.[40] The core focus of the building standards has been efficiency, but the 2019 Energy Code ventured into onsite generation by requiring solar PV on new homes, providing significant GHG savings. The 2022 update builds off this progress with expanded solar standards and the move to onsite energy storage that will help Californians save on utility bills while bolstering the grid. The 2022 Energy Code update focuses on four key areas in new construction of homes and businesses:

- Encouraging electric heat pump technology and use, which consumes less energy and produces fewer emissions than traditional HVACs and water heaters.
- Establishing electric-ready requirements when natural gas is installed, which positions owners to use cleaner electric heating, cooking and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available onsite and complement the state's progress toward a 100 percent clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

The 2022 Energy Code affects homes by establishing energy budgets based on efficient heat pumps for space or water heating to encourage builders to install heat pumps over gas-fueled HVAC units; requiring homes to

[40] California Energy Commission (CEC). 2022. Building Energy Efficiency Standards. https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency.

be electric-ready, with dedicated 240-volt outlets and space (with plumbing for water heaters) so electric appliances can eventually replace installed gas appliances; increasing minimum kitchen ventilation requirements so that fans over cooktops have higher airflow or capture efficiency to better exhaust pollution from gas cooking and improve indoor air quality; and allowing exceptions to existing solar PV standards when roof area is not available (such as for smaller homes). In addition, the effect on businesses includes establishing combined solar PV and battery standards for select businesses with systems being sized to maximize onsite use of solar energy and avoid electricity demand during times when the grid must use gas-powered plants; establishing new efficiency standards for commercial greenhouses (primarily cannabis growing); and improving efficiency standards for building envelope, various internal systems, and grid integration equipment, such as demand-responsive controls to buoy grid stability.[41,42]

California Building Energy Efficiency Standards (Title 24, Part 11)

The 2019 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, went into effect on January 1, 2020. The 2019 CALGreen Code includes mandatory measures for non-residential development related to site development; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

As previously discussed in Section 4 of this report, the Department of Housing and Community Development (HCD) updated CALGreen through the 2019 Triennial Code Adoption Cycle. HCD modified the best management practices for stormwater pollution prevention adding Section 5.106.2 for projects that disturb one or more acres of land. This section requires projects that disturb one acre or more of land or less than one acre of land but are part of a larger common plan of development or sale must comply with the postconstruction requirement detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board. The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff pre-project hydrology) with installation of postconstruction stormwater management measures.

HCD added sections 5.106.4.1.3 and 5.106.4.1.5 in regard to bicycle parking. Section 5.106.4.1.3 requires new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility. In addition, Section 5.106.4.1.5 states that acceptable bicycle parking facility for Sections 5.106.4.1.2 through 5.106.4.1.4 shall be convenient from the street and shall meeting one of the following: (1) covered, lockable enclosures with permanently anchored racks for bicycles; (2) lockable bicycle rooms with permanently anchored racks; or (3) lockable, permanently anchored bicycle lockers.

HCD amended section 5.106.5.3.5 allowing future charging spaces to qualify as designated parking for clean air vehicles.

HCD amended section 5.304.1 for outdoor potable water use in landscape areas and repealed sections 5.304.2 and 5.304.3. The update requires nonresidential developments to comply with a local water efficient landscape ordinance or the current California Department of Water Resource's' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. Some updates were also made in regard to the outdoor potable water use in landscape areas for public schools and community colleges.

HCD updated Section 5.504.5.3 in regard to the use of MERV filters in mechanically ventilated buildings. This update changed the filter use from MERV 8 to MERV 13. MERV 13 filters are to be installed prior to

[41] https://www.lightnowblog.com/2021/08/california-energy-commission-adopts-2022-building-energy-efficiency-standards/

[42] State of California Energy Commission. 2022 Building Energy Efficiency Standards Summary. https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf

occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

The 2022 California Green Building Standards Code became effective on January 1, 2023.[43]

HCD amended Section 5.106.5.3 in regard to increasing the EV capable space percentages and adding a new requirement for installed Level 2 DCFC chargers.

HCD under Section 5.106.5.4 added new regulation for electric vehicle charging readiness requirements for new construction of warehouse, grocery stores, and retail stores with planned off-street loading spaces. [44]

Senate Bill 100

Senate Bill 100 (SB 100) requires 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045. SB 100 was adopted September 2018.

The interim thresholds from prior Senate Bills and Executive Orders would also remain in effect. These include Senate Bill 1078 (SB 1078), which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) which changed the target date to 2010. Executive Order S-14-08, which was signed on November 2008 and expanded the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed the CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

Senate Bill 350

As previously discussed in Section 4 of this report, Senate Bill 350 (SB 350) was signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Assembly Bill 32

As discussed in Section 4 of this report, in 2006 the California State Legislature adopted Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020 through an enforceable statewide emission cap which will be phased in starting in 2012. Emission reductions shall include carbon sequestration projects that would remove carbon from the atmosphere and best management practices that are technologically feasible and cost effective. Please see Section 4 for further detail on AB 32.

Assembly Bill 1493/Pavley Regulations

As discussed in Section 4 of this report, California Assembly Bill 1493 enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a "waiver" request to the EPA from a portion of the federal Clean Air Act in

[43] California Building Standards Commission (CBSC). 2022. California Green Building Standards. Website: https://codes.iccsafe.org/content/CAGBC2022P1.

[44] https://www.dgs.ca.gov/BSC/Resources/2022-Title-24-California-Code-Changes

order to allow the State to set more stringent tailpipe emission standards for CO_2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the "waiver" request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State's request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

Executive Order S-1-07/Low Carbon Fuel Standard

As discussed in Section 4 of this report, Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent by 2020. This Order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 CARB approved the proposed regulation to implement the low carbon fuel standard. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The low carbon fuel standard is designed to provide a framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

California Air Resources Board

CARB's Advanced Clean Cars Program

Closely associated with the Pavley regulations, the Advanced Clean Cars emissions control program was approved by CARB in 2012. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles for model years 2015–2025.15 The components of the Advanced Clean Cars program include the Low-Emission Vehicle (LEV) regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years.[45]

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (Title 13, California Code of Regulations, Division 3, Chapter 10, Section 2435) was adopted to reduce public exposure to diesel particulate matter and other air contaminants by limiting the idling of diesel-fueled commercial motor vehicles. This section applies to diesel-fueled commercial motor vehicles with gross vehicular weight ratings

[45] California Air Resources Board, California's Advanced Clean Cars Program, January 18, 2017. www.arb.ca.gov/msprog/acc/acc.htm.

of greater than 10,000 pounds that are or must be licensed for operation on highways. Reducing idling of diesel-fueled commercial motor vehicles reduces the amount of petroleum-based fuel used by the vehicle.

Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and other Criteria Pollutants, form In-Use Heavy-Duty Diesel-Fueled Vehicles

The Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles (Title 13, California Code of Regulations, Division 3, Chapter 1, Section 2025) was adopted to reduce emissions of diesel particulate matter, oxides of nitrogen (NOX) and other criteria pollutants from in-use diesel-fueled vehicles. This regulation is phased, with full implementation by 2023. The regulation aims to reduce emissions by requiring the installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. The newer emission-controlled models would use petroleum-based fuel in a more efficient manner.

Sustainable Communities Strategy

The Sustainable Communities and Climate Protection Act of 2008, or Senate Bill 375 (SB 375), coordinates land use planning, regional transportation plans, and funding priorities to help California meet the GHG reduction mandates established in AB 32.

As previously stated in Section 4 of this report, Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Southern California Association of Governments (SCAG) jurisdiction, which has authority to develop the SCS or APS. For the SCAG region, the targets set by CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 19 percent below 2005 per capita GHG emissions levels by 2035. These reduction targets became effective October 2018.

PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

Evaluation Criteria

In compliance with Appendix G of the State CEQA Guidelines, this report analyzes the project's anticipated energy use to determine if the project would:

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

In addition, Appendix F of the State CEQA Guidelines states that the means of achieving the goal of energy conservation includes the following:

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

- Increasing reliance on renewable energy sources.

Construction Energy Demands

As stated previously, the proposed project is the buildout of the Housing Opportunity Sites identified in the *City of Perris General Plan Housing Element* (August 17, 2022) General Plan. Therefore, specific dates of construction of the proposed project would be speculative at this time; however, the buildout year for the General Plan is anticipated to be 2030. As construction specifics are not currently known, a qualitative discussion of construction energy demands is provided.

Electrical service for construction of the proposed project will be provided by Southern California Edison. Energy consumed during construction of the proposed project would be that of on-site electricity consumption and fuel consumed by construction equipment and worker vehicle trips. Fuel consumed by construction equipment would be the primary energy resource expended over the course of project construction. However, project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction equipment used over the course of construction of the proposed project would conform to CARB regulations and California emissions standards and is evidence of related fuel efficiencies. There are no unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in the construction of the project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with these measures would result in a more efficient use of construction-related energy and would minimize or eliminate wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, as required by California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby minimizing or eliminating unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Enforcement of idling limitations is realized through periodic site inspections conducted by City building officials, and/or in response to citizen complaints.

Operational Energy Demands

Information from the CalEEMod 2022.1.1.16 Output contained in Appendix B, utilized for air quality and greenhouse gas analyses in Sections 2 and 4 of this report, was also utilized for this analysis. Energy consumption in support of or related to project operations would include transportation energy demands (energy consumed by employee and patron vehicles accessing the project site) and facilities energy demands (energy consumed by building operations and site maintenance activities).

Transportation Fuel Consumption

Using the CalEEMod output from the air quality and greenhouse gas analyses (Sections 2 and 4 of this report), it is assumed that an average trip for autos and light trucks was assumed to be 4.4 miles and light-heavy trucks and 3- 4-axle trucks were assumed to travel an average of 19.2 miles.[46] As the project includes the

[46] CalEEMod default distance for H-O (home-other) is 4.41 miles and for H-W (home-work) is 19.2 miles.

development of the site with residential uses in order to present a worst-case scenario, it was assumed that vehicles would operate 365 days per year. Table 13 shows the estimated annual fuel consumption for all classes of vehicles from autos to heavy-heavy trucks.[47]

The proposed project would generate 36,524 trips per day. The vehicle fleet mix was used from the CalEEMod output. Table 13 shows that an estimated 4,737,246 gallons of fuel would be consumed per year for the operation of the proposed project.

Trip generation and VMT generated by the proposed project are consistent with other similar residential uses of similar scale and configuration as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021). That is, the proposed project does not propose uses or operations that would inherently result in excessive and wasteful vehicle trips and VMT, nor associated excess and wasteful vehicle energy consumption. Furthermore, the state of California consumed approximately 4.2 billion gallons of diesel and 15.1 billion gallons of gasoline in 2015.[48,49] Therefore, the increase in fuel consumption from the proposed project is insignificant in comparison to the State's demand. Therefore, project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

Facility Energy Demands (Electricity and Natural Gas)

Building operation and site maintenance (including landscape maintenance) would result in the consumption of electricity (provided by Southern California Edison) and natural gas (provided by Southern California Gas Company). The annual natural gas and electricity demands were provided per the CalEEMod output from the air quality and greenhouse gas analyses (Sections 2 and 4 of this report) and are provided in Table 14.

As shown in Table 14, the estimated electricity demand for the proposed project is approximately 37,102,758 kWh per year. In 2021, the residential sector of the County of Riverside consumed approximately 8,510 million kWh of electricity.[50] In addition, the estimated natural gas consumption for the proposed project is approximately 91,961,638 kBTU per year. In 2021, the residential sector of the County of Riverside consumed approximately 287 million therms of gas.[51] Therefore, the increase in both electricity and natural gas demand from the proposed project is insignificant compared to the County's 2021 residential sector demand.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, the California Building Standards Code Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, appliances, etc.).

Furthermore, the proposed project energy demands in total would be comparable to other residential projects of similar scale and configuration. Therefore, the project facilities' energy demands and energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

Renewable Energy and Energy Efficiency Plan Consistency

Regarding federal transportation regulations, the project site is located in an already developed area. Access to/from the project site is from existing roads. The project would not interfere with, nor otherwise obstruct

[47] Average fuel economy based on aggregate mileage calculated in EMFAC 2021 for opening year (2030). See Appendix B for EMFAC output.

[48] https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics

[49] https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/diesel-fuel-data-facts-and-statistics

[50] California Energy Commission, Electricity Consumption by County. https://ecdms.energy.ca.gov/elecbycounty.aspx

[51] California Energy Commission, Gas Consumption by County. http://ecdms.energy.ca.gov/gasbycounty.aspx

intermodal transportation plans or projects that may be proposed pursuant to the ISTEA because SCAG is not planning for intermodal facilities in the project area.

Regarding the State's Energy Plan and compliance with Title 24 CCR energy efficiency standards, the applicant is required to comply with the California Green Building Standard Code requirements for energy efficient buildings and appliances as well as utility energy efficiency programs implemented by Southern California Edison and Southern California Gas Company.

Regarding Pavley (AB 1493) regulations, an individual project does not have the ability to comply or conflict with these regulations because they are intended for agencies and their adoption of procedures and protocols for reporting and certifying GHG emission reductions from mobile sources.

Regarding the State's Renewable Energy Portfolio Standards, the project would be required to meet or exceed the energy standards established in the California Green Building Standards Code, Title 24, Part 11 (CALGreen). CALGreen Standards require that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low pollutant-emitting finish materials.

As shown in Section 4 above, the proposed project would be consistent with the applicable strategies of the City of Perris CAP.

Conclusions

As supported by the preceding analyses, project construction and operations would not result in the inefficient, wasteful or unnecessary consumption of energy. The proposed project does not include any unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities and is a residential project that is not proposing any additional features that would require a larger energy demand than other residential projects of similar scale and configuration. The energy demands of the project are anticipated to be accommodated within the context of available resources and energy delivery systems. The project would therefore not cause or result in the need for additional energy producing or transmission facilities. The project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California. Notwithstanding, the project proposes residential uses and will not have any long-term effects on an energy provider's future energy development or future energy conservation strategies.

Table 11
Total Electricity System Power (California 2021)

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Percent of Imports	Total California Energy Mix (GWh)	Total California Power Mix
Coal	303	0.20%	181	7,788	7,969	9.50%	8,272	3.00%
Natural Gas	97,431	50.20%	45	7,880	7,925	9.50%	105,356	37.90%
Oil	37	0.00%	-	-	-	0.00%	37	0.00%
Other (Waste Heat/Petroleum Coke)	382	0.20%	68	15	83	0.10%	465	0.20%
Nuclear	16,477	8.50%	524	8756	9281	11.10%	25,758	9.30%
Large Hydro	12,036	6.20%	12,042	1,578	13,620	16.30%	25,656	9.20%
Unspecified Sources of Power	-	0.00%	8,156	10,731	18,887	22.60%	18,887	6.80%
Renewables	67,461	34.80%	11,555	14,317	25,872	30.90%	93,333	33.60%
Biomass	5,381	2.80%	864	26	890	1.10%	6,271	2.30%
Geothermal	11,116	5.70%	192	1,906	2,098	2.50%	13,214	4.80%
Small Hydro	2,531	1.30%	304	1	304	0.40%	2,835	1.00%
Solar	33,260	17.10%	220	5,979	6,199	7.40%	39,458	14.20%
Wind	15,173	7.80%	9,976	6,405	16,381	19.60%	31,555	11.40%
Total	194,127	100%	32,572	51,064	83,636	100%	277,764	100%

Notes:

(1) Source: California Energy Commission. 2021 Total System Electric Generation. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation

Table 12
SCE 2021 Power Content Mix

Energy Resources	2021 SCE Power Mix
Eligible Renewable	31.4%
Biomass & Biowaste	*0.1%*
Geothermal	*5.7%*
Eligible Hydroelectric	*0.5%*
Solar	*14.9%*
Wind	*10.2%*
Coal	0.0%
Large Hydroelectric	2.3%
Natural Gas	22.3%
Nuclear	9.2%
Other	0.2%
Unspecified Sources of power*	34.6%
Total	100%

Notes:

(1) https://www.energy.ca.gov/filebrowser/download/4676

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

Table 13
Estimated Vehicle Operations Fuel Consumption

Vehicle Type	Vehicle Mix	Number of Vehicles	Average Trip (miles)[1]	Daily VMT	Average Fuel Economy (mpg)[2]	Total Gallons per Day	Total Annual Fuel Consumption (gallons)
Light Auto	Automobile	18,013	4.4	79,437	36.8	2158.60	787,890
Light Truck	Automobile	1,262	4.4	5,565	27.65	201.27	73,463
Light Truck	Automobile	7,982	4.4	35,201	27.87	1263.05	461,014
Light Heavy Truck	2-Axle Truck	1,079	19.2	20,710	18.79	1102.16	402,287
Light Heavy Truck 10,000 lbs +	2-Axle Truck	309	19.2	5,936	17.6	337.28	123,107
Motorcycle	Automobile	801	4.4	3,533	42.13	83.85	30,607
Medium Truck	Automobile	5,632	19.2	108,135	23.03	4695.39	1,713,816
Motor Home	--	176	4.4	777	5.86	132.52	48,370
Medium Heavy Truck	3-Axle Truck	566	19.2	10,849	8.97	1209.50	441,467
Other Bus	--	21	4.4	91	6.89	13.26	4,840
School Bus	--	48	4.4	211	6.84	30.85	11,260
Urban Bus	--	14	4.4	60	4.65	12.93	4,718
Heavy Heavy Truck	4-Axle Truck	622	19.2	11,923	6.86	1738.10	634,407
Total		36,524	--	282,428	-	12,978.76	--
Total Annual Fuel Consumption							4,737,246

Notes:

(1) Based on the size of the site and relative location, trips were assumed to be local rather than regional.

(2) Based on EMFAC2021 emission rates for Buildout Year 2030.

Table 14
Project Annual Operational Energy Demand Summary

Natural Gas Demand	kBTU/year[1]
Apartments Low Rise	91,961,638
Total	91,961,638

Electricity Demand	kWh/year
Apartments Low Rise	37,102,758
Total	37,102,758

Notes:

(1) Taken from the CalEEMod Version 2022.1.1.16 output (Appendix B of this report).

6. EXISTING GENERAL PLAN BUILDOUT IMPACT ANALYSIS

As discussed previously, the proposed project is the creation of an overlay zone for the housing opportunity sites identified in the recently adopted *City of Perris General Plan Housing Element* (August 17, 2022) that would continue to permit development in accordance with existing zoning regulations or allow activation of the overlay zoning for development of up to 5,419 high-density, multi-family residential dwelling units distributed over 12 Housing Opportunity Areas. This section of the report models and analyzes the buildout of the identified housing opportunity sites under the existing general plan zoning designations in order to provide a side-by-side comparison to the proposed project.

The land uses associated with the existing general plan buildout for the proposed housing opportunity sites were calculated based on the development characteristics of the existing zoning designations provided in the existing general plan. Further details regarding these calculations and the modeled land uses of the Existing General Plan Buildout scenario are provided in Appendix C of this report.

AIR QUALITY IMPACTS

Short-Term Construction Impacts

As construction is speculative at this time, a qualitative discussion of the potential short-term air quality impacts due to regional air quality and local air quality impacts associated with the construction of the existing General Plan zoning designation of the housing opportunity sites is provided.

The construction of the housing opportunity sites under the existing general plan buildout designations would be anticipated to potentially occur over the course of the buildout of the General Plan and be separated into multiple individual project developments. Some of the potential individual development projects may be small and generate construction emissions that do not exceed the SCAQMD's recommended thresholds of significance; however, others could be large enough to generate construction emissions that exceed these thresholds. Through the environmental review process, the city evaluates individual development projects to identify site-specific air quality impacts and requires mitigation measures as may be required to reduce emissions and potential impacts.

Furthermore, the construction of the existing general plan buildout will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, managing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 acres or more of soil or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD.

SCAQMD's Rule 403 minimum requirements require that the application of the best available dust control measures is used for all grading operations and include the application of water or other soil stabilizers in sufficient quantity to prevent the generation of visible dust plumes. Compliance with Rule 403 would require the use of water trucks during all phases where earth-moving operations would occur.

Construction of the housing opportunity sites under the existing general plan buildout designations would also be required to adhere to SCAQMD Rule 1113, as amended on June 3, 2011, which requires architectural coatings applied after January 1, 2014 be limited to an average of 50 grams per liter or less of VOCs for building coatings and 100 grams per liter or less of VOCs for traffic coatings.

Furthermore, construction of the existing general plan buildout is also required to comply with the construction-related mitigation measures identified in the City's General Plan Environmental Impact Report (EIR) (October 2004). These measures include AQ-1 through AQ-6 as provided below.

AQ-1 Project applicants shall provide construction site electrical hook ups for electric hand tools such as saws, drills, and compressors, to eliminate the need for diesel powered electric generators or provide evidence that electrical hook ups at construction sites are not practical or prohibitively expensive.

AQ-2 All development projects greater than 19 single-family residential units, 40 multifamily residential units, or retail/commercial/industrial land uses greater than 45,000 square feet of floor space shall apply paints using either high volume low pressure (HVLP) spray equipment or by hand application.

AQ-3 Prior to issuance of any area grading permits, all applicants shall submit a traffic control plan that will describe in detail safe detours and provide temporary traffic control during construction activities.

AQ-4 For all development projects, all applicants must abide by the South Coast Air Quality Management District's Rule 404 concerning Best Management Practices for construction sites in order to reduce emissions during the construction phase. Measures may include:

- Development of construction traffic management program that includes, but is not limited to, rerouting construction related traffic off congested streets, consolidating truck deliveries, and providing temporary dedicated turn lanes for movement of construction traffic to and from site;
- Sweep streets at the end of the day if visible soil material is carried onto adjacent paved public roads;
- Wash off trucks and other equipment leaving the site;
- Replace ground cover in disturbed areas immediately after construction;
- Keep disturbed/loose soil moist at all times;
- Suspend grading activities when wind speeds exceed 25 miles per hour;
- Enforce a 15 miles per hour speed limit on unpaved portions of the construction site.

AQ-5 Prior to issuance of any grading permits, all Applicants shall submit evidence to the City of Perris that construction equipment is and will be properly maintained, including proper tuning and timing of engines.

AQ-6 Building and grading permits shall include a restriction to limit idling of construction equipment on site to no more than ten minutes.

Furthermore, potential sources that may emit odors during construction activities include the application of materials such as asphalt pavement. The objectionable odors that may be produced during the construction process are short-term in nature and the odor emissions are expected cease upon the drying or hardening of the odor producing materials. Due to the short-term nature and limited amounts of odor producing materials being utilized, no significant impact related to odors would occur during construction of the housing opportunity sites under the existing general plan buildout designations. Diesel exhaust and VOCs would be emitted during construction of the housing opportunity sites under the existing general plan buildout designations, which are objectionable to some; however, emissions would disperse rapidly from the housing opportunity sites and therefore should not reach an objectionable level at the nearest sensitive receptors.

Therefore, with incorporation of the General Plan mitigation measures stated above and considering that all future individual developments of the housing opportunity sites would be subject to City environmental review, construction of the proposed project would create a less than significant regional air quality impact.

Long-Term Air Quality Operational Impacts

An analysis of the potential long-term air quality impacts due to operations of the existing General Plan zoning designation for the Housing Opportunity Sites identified in the *City of Perris General Plan Housing* Element has been completed. The operations-related criteria air quality impacts have been analyzed through use of the CalEEMod model. The operating emissions were based on the year 2030, as this is the buildout year for the General Plan. CalEEMod output is shown in Appendix C. The CalEEMod analyzes operational emissions from area sources, energy usage, and mobile sources, which are discussed below.

Methodology

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the existing general plan buildout have been analyzed inputting the trip generation rates provided in either the Transportation Study prepared by Ganddini Group, Inc. (May 12, 2023) and the Institute of Traffic Engineers (ITE) Trip Generation Manual 11th Edition (2021), into the CalEEMod Model. The Transportation Study found that the proposed project would generate 6.74 trips per dwelling unit per day; therefore, to be conservative and consistent, the multi-family residential uses associated with the existing general plan buildout were also assumed to generate 6.74 trips per dwelling unit per day. The trip generation rates for the single-family residential and commercial uses associated with the existing general plan buildout were taken from the ITE Trip Generation Manual 11th Edition (2021). Per the ITE Trip Generation Manual, the commercial uses have trip generation rates of 37.01 trips per thousand square feet per weekday, 46.6 trips per thousand square feet per Saturday, and 18.97 trips per thousand square feet per Sunday. [52] In addition, single-family residential uses were modeled with trip generation rates of 9.43 trips per dwelling unit per weekday, 9.48 trips per dwelling unit per Saturday, and 8.48 trips per dwelling unit per Sunday. The program then applies the emission factors for each trip which is provided by the EMFAC2021 model to determine the vehicular traffic pollutant emissions. The CalEEMod default trip lengths were used in this analysis.

Area Sources

Area sources include emissions from hearths, consumer products, landscape equipment and architectural coatings. No changes were made to the default area source parameters.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Operational-Related Regional Air Quality Impacts

The worst-case summer or winter VOC, NOx, CO, SO_2, PM10, and PM2.5 emissions of the long-term operations generated by the housing opportunity sites under the existing general plan buildout have been calculated and are summarized below in Table 15. Table 15 shows that the SCAQMD regional thresholds would not be exceeded for SO2, but would be exceeded for ROG, NOx, CO, PM10, and PM2.5. Therefore, a potential significant regional air quality impact would occur from operation of the housing opportunity sites under the existing general plan buildout.

[52] As the specific land commercial uses to be developed are unknown at this time, all of the commercial square footage was modeled under the land use designation of Regional Shopping Center (ITE 820) as this land use was the most conservative in regard to vehicle trips per day.

Local Air Quality Impacts from On-Site Operations

Project-related air emissions from on-site sources such as architectural coatings, landscaping equipment, on-site usage of natural gas appliances as well as the operation of vehicles on-site may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. As discussed in detail in Section 1, Introduction, the nearest sensitive receptors that may be impacted by the proposed project are located adjacent to some of the housing opportunity site areas.

According to SCAQMD LST methodology, LSTs would apply to the operational phase of a project, if the project includes stationary sources, or attracts mobile sources (such as heavy-duty trucks) that may spend long periods queuing and idling at the site; such as industrial warehouse/transfer facilities. The existing general plan zoning designations for the housing opportunity sites include that of residential and commercial uses and do not include such uses. Therefore, due the lack of stationary source emissions, no long-term localized significance threshold analysis is warranted.

GLOBAL CLIMATE CHANGE IMPACTS

The housing opportunity sites under the existing general plan zoning designations are anticipated to generate GHG emissions from operational and construction activities. The following provides the methodology used to calculate the GHG emissions and discusses the impacts.

Methodology

The CalEEMod Version 2022.1.1.16 was used to calculate the GHG emissions from the housing opportunity sites under the existing general plan zoning designations. In order to make a comparison to the proposed project's emissions, the emissions were also compared to the interpolated 2030 SCAQMD tier 4 screening threshold of 4.93 $MTCO_2e$ per service population per year for plans.[53]

The CalEEMod Output for year 2030 is available in Appendix C. Each source of GHG emissions is described in greater detail below.

Area Sources

Area sources include emissions from hearths, consumer products, landscape equipment and architectural coatings. No changes were made to the default area source parameters.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the housing opportunity sites under the existing general plan zoning designations. The vehicle trips associated with the housing opportunity sites under the existing general plan zoning designations have been analyzed based on the project trip generation estimates as detailed above.

[53] The year 2030 screening threshold of 4.93 MTCO2e/SP/year for plans was interpolated using the SCAQMD draft tier 4 screening thresholds for plans of 6.6 MTCO2e/SP/year for year 2020 and 4.1 MTCO2e/SP/year for year 2035.

Waste

Waste includes the GHG emissions generated from the processing of waste from the proposed project as well as the GHG emissions from the waste once it is interred into a landfill. No changes were made to the CalEEMod default value for waste generated.

Water

Water includes the water used for the interior of the building as well as for landscaping and is based on the GHG emissions associated with the energy used to transport and filter the water. No changes were made to CalEEMod default values for waste generated.

Greenhouse Gas Emissions

The GHG emissions from the housing opportunity sites under the existing general plan zoning designations have been calculated with the CalEEMod model based on the parameters detailed above. A summary of the results is shown below in Table 16 and CalEEMod model run is provided in Appendix C. Per the CalEEMod output, the estimated population for the modeled residential uses is 4,677 residents. Appendix E-1, Socioeconomic Build-Out Assumptions and Methodology, of the County of Riverside General Plan (April 11, 2017) estimates approximately one employee for every 500 square foot of commercial retail use. Therefore, the estimated number of employees for the modeled commercial use is 3,051 employees.

The total service population of the existing general plan buildout is anticipated to be approximately 7,728 residents and employees. This population value was used to calculate the emissions per service population for comparison against the interpolated year 2030 SCAQMD draft tier 4 screening thresholds for plans.

The data provided in Table 16 shows that at a level of 44,773 $MTCO_2e$ per year resulting in 5.79 $MTCO_2e$ per service population per year, the emissions generated by the housing opportunity sites under the existing general plan zoning designations exceeds the interpolated 2030 SCAQMD draft tier 4 screening threshold of 4.93 $MTCO_2e$/SP/year for plans. Therefore, the emissions generated by the housing opportunity sites under the existing general plan zoning designations are considered to be significant and unavoidable.

Greenhouse Gas Plan Consistency

As stated previously, the City of Perris has a Climate Action Plan; therefore, GHG emissions associated with the existing general plan buildout have been compared to the goals of the City of Perris CAP.

The City of Perris CAP includes local GHG reduction measures. The existing general plan buildout's consistency with these measures has been provided in Table 17. As shown in Table 17, the existing general plan buildout is consistent with the local GHG reduction measures provided in the City's CAP.

At a level of 44,773 $MTCO_2e$ per year resulting in 5.79 $MTCO_2e$ per service population per year, the existing general plan buildout's GHG emissions exceed the interpolated year 2030 SCAQMD draft tier 4 screening threshold of 4.93 $MTCO_2e$/SP/year for plans.[54] However, as shown in Table 17, the existing general plan buildout would be in compliance with the reduction goals of the City of Perris' CAP, AB-32 and SB-32. Furthermore, the project will comply with applicable Green Building Standards and City of Perris' policies regarding sustainability (as dictated by the City's General Plan and CAP). Therefore, impacts are considered to be less than significant.

[54] The year 2030 screening threshold of 4.93 MTCO2e/SP/year for plans was interpolated using the SCAQMD draft tier 4 screening thresholds for plans of 6.6 MTCO2e/SP/year for year 2020 and 4.1 MTCO2e/SP/year for year 2035.

ENERGY IMPACTS

Methodology

Information from the CalEEMod 2022.1.1.16 Output contained in Appendix C, utilized for air quality and greenhouse gas analyses above, was also utilized for this analysis. The CalEEMod output details construction equipment, transportation energy demands, and facility energy demands.

Construction Energy Demands

Specific dates of construction for the existing general plan buildout would be speculative at this time; however, the buildout year for the General Plan is anticipated to be 2030. As construction specifics are not known currently, a qualitative discussion of construction energy demands is provided.

Electrical service for construction of the existing general plan buildout will be provided by Southern California Edison. Energy consumed during construction of the existing general plan buildout would be that of on-site electricity consumption and fuel consumed by construction equipment and worker vehicle trips. Fuel consumed by construction equipment would be the primary energy resource expended over the course of project construction. However, construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction equipment used over the course of construction of the existing general plan buildout would conform to CARB regulations and California emissions standards and is evidence of related fuel efficiencies. There are no unusual project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in the construction of the existing general plan buildout would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

Construction would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with these measures would result in a more efficient use of construction-related energy and would minimize or eliminate wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, as required by California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby minimizing or eliminating unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Enforcement of idling limitations is realized through periodic site inspections conducted by City building officials, and/or in response to citizen complaints.

Operational Energy Demands

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

Transportation Fuel Consumption

Using the CalEEMod output from the air quality and greenhouse gas analysis conducted for the housing opportunity sites under the existing general plan zoning designations (Appendix C), it is assumed that an average trip for autos and light trucks was assumed to be 3 miles and light-heavy trucks and 3- 4-axle trucks

were assumed to travel an average of 19.2 miles.[55] As the existing general plan designations includes the development of the site with residential and commercial uses, in order to present a worst-case scenario, it was assumed that vehicles would operate 365 days per year. Table 18 shows the estimated annual fuel consumption for all classes of vehicles from autos to heavy-heavy trucks.[56]

The housing opportunity sites under the existing general plan zoning designations would generate approximately 66,921 vehicle trips per weekday. The vehicle fleet mix was used from the CalEEMod output. Table 18 shows that an estimated 5,219,819 gallons of fuel would be consumed per year for the operation of the housing opportunity sites under the existing general plan zoning designations.

Trip generation and VMT generated by the housing opportunity sites under the existing general plan zoning designations are consistent with other similar commercial and residential uses of similar scale and configuration as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021). That is, the proposed project does not propose uses or operations that would inherently result in excessive and wasteful vehicle trips and VMT, nor associated excess and wasteful vehicle energy consumption. Furthermore, the state of California consumed approximately 4.2 billion gallons of diesel and 15.1 billion gallons of gasoline in 2015.[57,58] Therefore, the increase in fuel consumption from the proposed project is insignificant in comparison to the State's demand. Therefore, project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

Facility Energy Demands (Electricity and Natural Gas)

Building operation and site maintenance (including landscape maintenance) would result in the consumption of electricity (provided by Southern California Edison) and natural gas (provided by Southern California Gas Company). The annual natural gas and electricity demands were provided per the CalEEMod output (see Appendix C) and are provided in Table 19.

As shown in Table 19, the estimated electricity demand for the housing opportunity sites under the existing general plan zoning designations is approximately 25,456,658 kWh per year. In 2021, the residential and non-residential sectors of the County of Riverside consumed approximately 16,767 million kWh of electricity.[59] In addition, the estimated natural gas consumption for the housing opportunity sites under the existing general plan zoning designations is approximately 38,514,822 kBTU per year. In 2021, the residential and non-residential sectors of the County of Riverside consumed approximately 430 million therms of gas.[60] Therefore, the increase in both electricity and natural gas demand from the housing opportunity sites under the existing general plan zoning designations is insignificant compared to the County's 2021 residential and non-residential sector demands.

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, the California Building Standards Code Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, appliances, etc.).

Furthermore, the energy demands in total would be comparable to other residential and non-residential projects of similar scale and configuration. Therefore, the facilities' energy demands, and energy consumption

[55] CalEEMod default distance for O-O (other-other) is 3 miles and 19.2 miles for H-W (home-work).

[56] Average fuel economy based on aggregate mileage calculated in EMFAC 2021 for buildout (2030). See Appendix B for EMFAC output.

[57] https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics

[58] https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/diesel-fuel-data-facts-and-statistics

[59] California Energy Commission, Electricity Consumption by County. https://ecdms.energy.ca.gov/elecbycounty.aspx

[60] California Energy Commission, Gas Consumption by County. http://ecdms.energy.ca.gov/gasbycounty.aspx

associated with the existing general plan buildout would not be considered inefficient, wasteful, or otherwise unnecessary.

COMPARISON OF THE EXISTING GENERAL PLAN AND THE PROPOSED PROJECT

The proposed project consists of the creation of an overlay zone for the housing opportunity sites identified in the recently adopted *City of Perris General Plan Housing Element* (August 17, 2022) that would continue to permit development in accordance with existing zoning regulations or allow activation of the overlay zoning for development of up to 5,419 high-density, multi-family residential dwelling units distributed over 12 Housing Opportunity Areas. As shown in Table 20, buildout of the sites under the existing general plan zoning designations would create significant impacts in relation to regional operational air quality impacts and greenhouse gas emissions impacts. Whereas the proposed project (i.e., general plan buildout with the housing element update overlay zoning) would only create regional operational air quality significant impacts.

Furthermore, as shown in Table 21, when the emissions for the proposed project are substituted in the place of the emissions for the existing general plan buildout of the housing opportunity sites, the overall daily regional operational emissions would decrease for the majority of the modeled criteria pollutants over those anticipated in the existing general plan buildout. As shown in Table 21, the only modeled criteria pollutant that would result in an increase in emissions from those of the existing general plan is NOx, with an increase of approximately 17 pounds per day over the existing general plan buildout of the housing opportunity sites.

However, as shown in Tables 7 and 15, emissions of criteria pollutants associated with both the proposed project and the existing general plan buildout would exceed the SCAQMD thresholds for ROG, NOx, CO, PM10, and PM2.5. Neither scenario exceeds the SCAQMD thresholds for SO_2. Therefore, viewed independently, the regional operational emissions for the proposed project would be considered to be cumulatively significant; however, the existing general plan buildout is also considered cumulatively significant. Therefore, the proposed project would not change the findings of significance in relation to operational emissions. In addition, as construction would occur over the same area, the construction impacts of the proposed project would not be anticipated to generate more emissions than that of the existing general plan buildout.

For the comparison of GHG emissions between the existing general plan buildout of the housing opportunity sites versus the proposed project, the proposed project would increase the GHG emissions by 3,763 $MTCO_2e$/year. However, as shown in Table 21, the emissions for the existing general plan buildout of the housing opportunity sites exceeds the interpolated 2030 SCAQMD draft tier 4 screening threshold of 4.93 $MTCO_2e$/SP/year for plans whereas the proposed project does not exceed the SCAQMD threshold. Therefore, the GHG emissions for proposed project would still not be considered cumulatively considerable.

Regarding Energy, as shown in Tables 14 and 19, the proposed project is anticipated to have a larger consumption of both electricity and natural gas than the existing general plan buildout of the housing opportunity sites. However, both the proposed project's energy demands, and the existing general plan energy demands would be comparable to other projects of similar scale and configuration. Furthermore, as shown in Tables 13 and 18, the fuel consumption from vehicle operations of the prosed project is anticipated to be lower than that of the existing general plan buildout of the housing opportunity sites. The anticipated trip generation and VMT generated by the proposed project and existing general plan buildout would be consistent with other residential and commercial uses of similar scale and configuration as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021). Therefore, the proposed uses and operations would not inherently result in excessive and wasteful vehicle trips and VMT, nor associated excess and wasteful vehicle energy consumption. Therefore, the energy demands, and energy consumption of the proposed project and the existing general plan buildout of the housing opportunity sites would both not be considered inefficient, wasteful, or otherwise unnecessary.

Table 15
Regional Operational Pollutant Emissions for the Existing General Plan Buildout

Activity	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO2	PM10	PM2.5
Maximum Daily Emissions	336.00	178.00	1,369.00	3.03	261.00	69.70
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	Yes	Yes	Yes	No	Yes	Yes

Notes:

Source: CalEEMod Version 2022.1.1.16; the higher of either summer or winter emissions.

Table 16
Project-Related Greenhouse Gas Emissions for the Existing General Plan Buildout

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Maximum Annual Operations	297.00	42,985.00	43,282.00	32.50	2.14	44,773.00
Total Emissions Per Service Population Per Year[1]						5.79
Exceeds Interpolated 2030 SCAQMD Tier 4 Screening Threshold for Plans of 4.93 $MTCO_2e$/SP/year[2]						**Yes**

Notes:

Source: CalEEMod Version 2022.1.1.16 for Buildout Year 2030.

(1) Per the CalEEMod output, the estimated population for the modeled residential uses is 4,677 residents. Appendix E-1, Socioeconomic Build-Out Assumptions and Methodology, of the County of Riverside General Plan (April 11, 2017) estimates approximately one employee for every 500 square foot of commercial retail use. Therefore, the estimated number of employees for the modeled commercial use is 3,051 employees. Therefore, the total service population of the existing general plan buildout is anticipated to be approximately 7,728 residents and employees.

(2) The year 2030 screening threshold of 4.93 $MTCO_2e$/SP/year for plans was interpolated using the SCAQMD draft tier 4 screening thresholds for plans of 6.6 $MTCO_2e$/SP/year for year 2020 and 4.1 MTCO2e/SP/year for year 2035.

Table 17
Existing General Plan Buildout Consistency with City of Perris Climate Action Plan Local GHG Reduction Measures

CAP Measure[1]		Consistency Analysis
Energy		
E-1 Energy Action Plan	Improve municipal and community-wide energy efficiency and reduce energy consumption through the adoption of the local Energy Action Plans (EAP).	No Conflict. The existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would not affect the ability of the City to adopt local EAPs. Furthermore, any future development of the housing opportunity sites would be required to be consistent with all applicable measures of an adopted local EAP.
Transportation		
T-1 Bicycle Infrastructure Improvements	Expand on-street and off-street bicycle infrastructure, including bicycle lanes and bicycle trails.	No Conflict. Any future development based on the general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would be required to follow the City's regulations on the inclusion of bicycle infrastructure, bicycle lanes, and bicycle trails.
T-2 Bicycle Parking	Provide additional options for bicycle parking.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would be required to provide bicycle parking per the City's regulations.
T-3 End of Trip Facilities	Encourage use of non-motorized transporation modes by providing appropriate facilities and amenities for commuters.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would not affect the City's ability to provide facilities for commuters.
T-4 Transit Frequency Expansion	Collaborate with local and regional transit providers to provide more frequent transit in the subregion.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would not affect the City's abililty to collaborate with transit providers.
T-5 Traffic Signal Coordination	Incorporate technology to synchonize and coordinate traffic signals along local arterial.	No Applicable. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element wouldo not affect the traffic signal technology.
T-6 Density	Improve jobs-housing balance and reduce vehicle miles traveled by increasing household and employment densities.	No Conflict. The existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element include a mix of housing and commercial uses.
T-7 Mixed-Use Development	Provide for a variety of development types and uses.	No Applicable. The existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element include a mix of housing and commercial uses.
T-8 Design/Site Planning	Design neighborhoods and sites to reduce VMT.	No Conflict. The Housing Opportunity Sites identifed in the City's latest Housing Element are located in multiple areas throughout the City and are surrounded by existing residential and commercial development.
T-10 Limit Parking Requirements for New Developments	Reduce requirements for vehicle parking in new development projects.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would not affect the ability of the City to reduce requirements for vehicle parking.
T-11 Voluntary Transporation Demand Management	Reduce demand for roadway travel through incentives for alternative modes of transportation and disincentives for driving.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would not affect the ability of the City to provide incentives for alternative modes of transportation.
T-12 Accelerated Bike Plan Implementation	Accelerate the implementation of all or specified components of a jurisdiction's adopted bike plan.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would not affect the ability of the City to accelerate the implementation of an adopted bike plan.
Solid Waste		
SW-1 Yard Waste Collection	Provide green waste collection bins community-wide.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element would not affect the ability of the City to provide green waste bins throughout the community. Furthermore, any future development is required to have recycling programs that reduce waste to landfills by a minimum of 75 percent (per AB 341).
SW-2 Food Scrap and Compostable Paper Division	Divert food and paper waste from landfills byimplementing collection systems.	No Conflict. Any future development based on the existing general plan buildout of the Housing Opportunity Sites identifed in the City's latest Housing Element is required to have recycling programs that reduce waste to landfills by a minimum of 75 percent (per AB 341).

Notes:
Source: City of Perris Climate Action Plan adopted February 23, 2016.

Table 18
Estimated Vehicle Operations Fuel Consumption for the Existing General Plan Buildout

Vehicle Type	Vehicle Mix	Number of Vehicles	Average Trip (miles)[1]	Daily VMT	Average Fuel Economy (mpg)[2]	Total Gallons per Day	Total Annual Fuel Consumption (gallons)
Light Auto	Automobile	33,004	3.0	100,002	36.8	2717.45	991,868
Light Truck	Automobile	2,312	3.0	7,006	27.65	253.38	92,482
Light Truck	Automobile	14,625	3.0	44,315	27.87	1590.04	580,366
Light Heavy Truck	2-Axle Truck	1,976	19.2	37,945	18.79	2019.42	737,090
Light Heavy Truck 10,000 lbs +	2-Axle Truck	566	19.2	10,876	17.6	617.98	225,562
Motorcycle	Automobile	1,468	3.0	4,447	42.13	105.56	38,530
Medium Truck	Automobile	10,319	3.0	31,267	23.03	1357.68	495,552
Motor Home	--	323	3.0	978	5.86	166.83	60,893
Medium Heavy Truck	3-Axle Truck	1,037	19.2	19,878	8.97	2216.10	808,877
Other Bus	--	38	3.0	115	6.89	16.69	6,094
School Bus	--	88	3.0	266	6.84	38.84	14,175
Urban Bus	--	25	3.0	76	4.65	16.27	5,939
Heavy Heavy Truck	4-Axle Truck	1,140	19.2	21,847	6.86	3184.63	1,162,391
Total		66,921	--	279,017	-	14,300.87	--
Total Annual Fuel Consumption							5,219,819

Notes:

(1) Based on the size of the site and relative location, trips were assumed to be local rather than regional.

(2) Based on EMFAC2021 emission rates for Buildout Year 2030.

Table 19
Annual Operational Energy Demand Summary for the Existing General Plan Buildout

Natural Gas Demand	kBTU/year[1]
Apartments Low Rise	20,092,744
Regional Shopping Center	9,033,099
Single-Family Housing	9,388,979
Total	38,514,822

Electricity Demand	kWh/year
Apartments Low Rise	8,106,600
Regional Shopping Center	14,884,498
Single-Family Housing	2,465,560
Total	25,456,658

Notes:
(1) Taken from the CalEEMod Version 2022.1.1.16 output (Appendix C of this report).

Table 20
Impact Summary - Proposed Project and Existing General Plan Buildout

Descriptor	Potential Significant Impact?	
	Existing General Plan Buildout	Proposed Project
Air Quality Impacts:		
Short-Term Construction Impacts		
Regional Air Quality Impacts	No - with mitigation[1]	No - with mitigation[1]
Long-Term Operational Impact		
Regional Air Quality Impacts	Yes	Yes
Global Climate Change Impacts:		
Greenhouse Gas Emissions	Yes	No
Greenhouse Gas Plan Consistency	No	No

Notes:
(1) Construction-related mitigation measures as identified in the City's General Plan Environmental Impact Report (EIR) (October 2004).

Table 21
Comparison of Total Operational Emissions from the Existing General Plan Buildout Versus Proposed Project

Regional Daily Operational Pollutant Emissions[1]

Activity	Pollutant Emissions (pounds/day)					
	ROG	NOx	CO	SO2	PM10	PM2.5
Existing General Plan Buildout	336.00	178.00	1369.00	3.03	261.00	69.70
Proposed Project	298.00	195.00	1279.00	2.84	211.00	61.10
Difference in Emissions Over Current General Plan	**-38.00**	**17.00**	**-90.00**	**-0.19**	**-50.00**	**-8.60**
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No

Notes:

(1) Source: Tables 7 and 10

Project-Related Annual Greenhouse Gas Emissions[2]

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Existing General Plan Buildout	297.00	42,985.00	43,282.00	32.50	2.14	44,773.00
Proposed Project	427.00	46,406.00	46,833.00	45.30	1.78	48,536.00
Difference in Emissions Over Current General Plan	**130.00**	**3,421.00**	**3,551.00**	**12.80**	**-0.36**	**3,763.00**

Total Emissions Per Service Population Per Year - Existing General Plan Buildout[3]	**5.79**
Exceeds Interpolated 2030 SCAQMD Tier 4 Screening Threshold for Plans of 4.93 MTCO2e/SP/year[4]	**Yes**
Total Emissions Per Service Population Per Year - Proposed Project[3]	**2.77**
Exceeds Interpolated 2030 SCAQMD Tier 4 Screening Threshold for Plans of 4.93 MTCO2e/SP/year[4]	**No**

Notes:

(1) Sources: Tables 7 and 15

(1) Sources: Tables 9 and 16

(2) Per the CalEEMod output, the estimated population for the modeled residential uses is 4,677 residents. Appendix E-1, Socioeconomic Build-Out Assumptions and Methodology, of the County of Riverside General Plan (April 11, 2017) estimates approximately one employee for every 500 square foot of commercial retail use. Therefore, the estimated number of employees for the modeled commercial use is 3,051 employees. Therefore, the total service population of the existing general plan buildout is anticipated to be approximately 7,728 residents and employees.

(3) The year 2030 screening threshold of 4.93 MTCO2e/SP/year for plans was interpolated using the SCAQMD draft tier 4 screening thresholds for plans of 6.6 MTCO2e/SP/year for year 2020 and 4.1 MTCO2e/SP/year for year 2035.

7. EMISSIONS REDUCTION MEASURES

CONSTRUCTION MEASURES

Adherence to SCAQMD Rule 403 is required.

Construction of the proposed project will be required to include the construction-related mitigation measures identified in the City's General Plan. These measures include AQ-1 through AQ-6 as provided below.

AQ-1 Project applicants shall provide construction site electrical hook ups for electric hand tools such as saws, drills, and compressors, to eliminate the need for diesel powered electric generators or provide evidence that electrical hook ups at construction sites are not practical or prohibitively expensive.

AQ-2 All development projects greater than 19 single-family residential units, 40 multifamily residential units, or retail/commercial/industrial land uses greater than 45,000 square feet of floor space shall apply paints using either high volume low pressure (HVLP) spray equipment or by hand application.

AQ-3 Prior to issuance of any area grading permits, all applicants shall submit a traffic control plan that will describe in detail safe detours and provide temporary traffic control during construction activities.

AQ-4 For all development projects, all applicants must abide by the South Coast Air Quality Management District's Rule 404 concerning Best Management Practices for construction sites in order to reduce emissions during the construction phase. Measures may include:

- Development of construction traffic management program that includes, but is not limited to, rerouting construction related traffic off congested streets, consolidating truck deliveries, and providing temporary dedicated turn lanes for movement of construction traffic to and from site;
- Sweep streets at the end of the day if visible soil material is carried onto adjacent paved public roads;
- Wash off trucks and other equipment leaving the site;
- Replace ground cover in disturbed areas immediately after construction;
- Keep disturbed/loose soil moist at all times;
- Suspend grading activities when wind speeds exceed 25 miles per hour;
- Enforce a 15 miles per hour speed limit on unpaved portions of the construction site.

AQ-5 Prior to issuance of any grading permits, all Applicants shall submit evidence to the City of Perris that construction equipment is and will be properly maintained, including proper tuning and timing of engines.

AQ-6 Building and grading permits shall include a restriction to limit idling of construction equipment on site to no more than ten minutes.

HEALTH RISK ASSESSMENT MEASURES

1. Future development of housing opportunity sites within 500 feet of the Interstate 215 Freeway will include a Health Risk Assessment that addresses freeway-related emissions impacts to the proposed residents.

8. REFERENCES

California Air Pollution Control Officers Association

2009 Health Risk Assessments for Proposed Land Use Projects

California Air Resources Board

2008 Resolution 08-43

2008 Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act

2008 ARB Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk – Frequently Asked Questions

2008 Climate Change Scoping Plan, a framework for change.

2011 Supplement to the AB 32 Scoping Plan Functional Equivalent Document

2013 Almanac of Emissions and Air Quality.
Source: https://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm

2014 First Update to the Climate Change Scoping Plan, Building on the Framework Pursuant to AB32, the California Global Warming Solutions Act of 2006. May.

2017 California's 2017 Climate Change Scoping Plan. November.

2022 2022 Scoping Plan for Achieving Carbon Neutrality. November 16.

2022 Historical Air Quality, Top 4 Summary

City of Perris

2005 City of Perris General Plan Conservation Element. July 12.

2015 City of Perris General Plan Healthy Community Element. June 9.

2016 City of Perris Climate Action Plan. February 23.

2022 City of Perris Housing Element. August 17.

Ganddini Group, Inc.

2023 City of Perris Housing Implementation Measures Transportation Study. May 12.

Governor's Office of Planning and Research

2008 CEQA and Climate: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review

2018 CEQA Guideline Sections to be Added or Amended

Intergovernmental Panel on Climate Change (IPCC)

2014 IPCC Fifth Assessment Report, Climate Change 2014: Synthesis Report

Office of Environmental Health Hazard Assessment

2015 Air Toxics Hot Spots Program Risk Assessment Guidelines

South Coast Air Quality Management District

1993 CEQA Air Quality Handbook

2003 Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis

2005 Rule 403 Fugitive Dust

2007 2007 Air Quality Management Plan

2008 Final Localized Significance Threshold Methodology, Revised

2012 Final 2012 Air Quality Management Plan

2016 2016 Air Quality Management Plan

2021 MATES-V Multiple Air Toxics Exposure Study in the South Coast Air Basin. August.

2022 2022 Air Quality Management Plan. December 2.

Southern California Association of Governments

2020 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy

U.S. Environmental Protection Agency (EPA)

2017 Understanding Global Warming Potentials
(Source: https://www.epa.gov/ghgemissions/understanding-global-warming-potentials)

U.S. Geological Survey

2011 Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California

APPENDICES

Appendix A Glossary

Appendix B CalEEMod Model Detailed Report & EMFAC Data

Appendix C CalEEMod Model Detailed Report & Land Use Calculations for the Existing General Plan Designations

APPENDIX A

GLOSSARY

AQMP	Air Quality Management Plan
BACT	Best Available Control Technologies
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CH_4	Methane
CNG	Compressed natural gas
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse gas
GWP	Global warming potential
HIDPM	Hazard Index Diesel Particulate Matter
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LST	Localized Significant Thresholds
$MTCO_2e$	Metric tons of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides
NO_2	Nitrogen dioxide
N_2O	Nitrous oxide
O_3	Ozone
OPR	Governor's Office of Planning and Research
PFCs	Perfluorocarbons
PM	Particle matter
PM10	Particles that are less than 10 micrometers in diameter
PM2.5	Particles that are less than 2.5 micrometers in diameter
PMI	Point of maximum impact
PPM	Parts per million
PPB	Parts per billion
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
SANBAG	San Bernardino Association of Governments
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SSAB	Salton Sea Air Basin
SF_6	Sulfur hexafluoride
SIP	State Implementation Plan
SOx	Sulfur Oxides
TAC	Toxic air contaminants
VOC	Volatile organic compounds

APPENDIX B

CALEEMOD MODEL DETAILED REPORT & EMFAC DATA

19598 City of Perris Housing Implementation Measures - Proposed Project (OPERATIONAL ANALYSIS ONLY) Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	19598 City of Perris Housing Implementation Measures - Proposed Project (OPERATIONAL ANALYSIS ONLY)
Operational Year	2030
Lead Agency	—
Land Use Scale	Plan/community
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	0.20
Location	Perris, CA, USA
County	Riverside-South Coast
City	Perris
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5579
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.16

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 Low Rise	5,419	Dwelling Unit	134	5,744,140	1,463,616	—	17,503	—
Other Asphalt Surfaces	56.0	Acre	56.0	2,439,360	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	182	298	193	1,279	2.84	10.1	201	211	10.1	51.0	61.1	2,582	410,127	412,709	276	11.6	551	423,636
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	129	247	195	748	2.69	9.83	201	211	9.74	51.0	60.8	2,582	395,626	398,208	277	11.9	54.4	408,737
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	139	260	114	946	2.02	3.76	180	183	3.73	45.5	49.3	2,582	280,294	282,876	274	10.7	238	293,162
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	25.3	47.5	20.7	173	0.37	0.69	32.8	33.4	0.68	8.31	8.99	427	46,406	46,833	45.3	1.78	39.3	48,536

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	123	115	84.8	820	2.15	1.41	201	203	1.32	51.0	52.4	—	220,222	220,222	9.03	9.93	510	223,916
Area	56.5	182	84.7	449	0.54	6.79	—	6.79	6.87	—	6.87	0.00	103,950	103,950	1.99	0.20	—	104,060
Energy	2.72	1.36	23.2	9.88	0.15	1.88	—	1.88	1.88	—	1.88	—	83,549	83,549	5.96	0.46	—	83,836
Water	—	—	—	—	—	—	—	—	—	—	—	422	2,406	2,829	43.5	1.05	—	4,227
Waste	—	—	—	—	—	—	—	—	—	—	—	2,160	0.00	2,160	216	0.00	—	7,556
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	41.1
Total	182	298	193	1,279	2.84	10.1	201	211	10.1	51.0	61.1	2,582	410,127	412,709	276	11.6	551	423,636
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	117	108	90.8	704	2.02	1.41	201	203	1.33	51.0	52.4	—	206,979	206,979	9.46	10.2	13.2	210,279
Area	9.47	138	80.9	34.4	0.52	6.54	—	6.54	6.54	—	6.54	0.00	102,692	102,692	1.93	0.19	—	102,798
Energy	2.72	1.36	23.2	9.88	0.15	1.88	—	1.88	1.88	—	1.88	—	83,549	83,549	5.96	0.46	—	83,836
Water	—	—	—	—	—	—	—	—	—	—	—	422	2,406	2,829	43.5	1.05	—	4,227
Waste	—	—	—	—	—	—	—	—	—	—	—	2,160	0.00	2,160	216	0.00	—	7,556
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	41.1
Total	129	247	195	748	2.69	9.83	201	211	9.74	51.0	60.8	2,582	395,626	398,208	277	11.9	54.4	408,737
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	103	95.2	82.2	649	1.82	1.26	180	181	1.18	45.5	46.7	—	186,443	186,443	8.46	9.21	196	189,596
Area	32.8	164	8.12	286	0.05	0.62	—	0.62	0.67	—	0.67	0.00	7,896	7,896	0.17	0.02	—	7,906
Energy	2.72	1.36	23.2	9.88	0.15	1.88	—	1.88	1.88	—	1.88	—	83,549	83,549	5.96	0.46	—	83,836
Water	—	—	—	—	—	—	—	—	—	—	—	422	2,406	2,829	43.5	1.05	—	4,227
Waste	—	—	—	—	—	—	—	—	—	—	—	2,160	0.00	2,160	216	0.00	—	7,556
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	41.1

Total	139	260	114	946	2.02	3.76	180	183	3.73	45.5	49.3	2,582	280,294	282,876	274	10.7	238	293,162
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	18.8	17.4	15.0	119	0.33	0.23	32.8	33.0	0.22	8.31	8.53	—	30,868	30,868	1.40	1.53	32.5	31,390
Area	5.99	29.9	1.48	52.3	0.01	0.11	—	0.11	0.12	—	0.12	0.00	1,307	1,307	0.03	< 0.005	—	1,309
Energy	0.50	0.25	4.24	1.80	0.03	0.34	—	0.34	0.34	—	0.34	—	13,833	13,833	0.99	0.08	—	13,880
Water	—	—	—	—	—	—	—	—	—	—	—	69.9	398	468	7.19	0.17	—	700
Waste	—	—	—	—	—	—	—	—	—	—	—	358	0.00	358	35.7	0.00	—	1,251
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.81	6.81
Total	25.3	47.5	20.7	173	0.37	0.69	32.8	33.4	0.68	8.31	8.99	427	46,406	46,833	45.3	1.78	39.3	48,536

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 Low Rise	123	115	84.8	820	2.15	1.41	201	203	1.32	51.0	52.4	—	220,222	220,222	9.03	9.93	510	223,916
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	123	115	84.8	820	2.15	1.41	201	203	1.32	51.0	52.4	—	220,222	220,222	9.03	9.93	510	223,916
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartme Low Rise	117	108	90.8	704	2.02	1.41	201	203	1.33	51.0	52.4	—	206,979	206,979	9.46	10.2	13.2	210,279
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	117	108	90.8	704	2.02	1.41	201	203	1.33	51.0	52.4	—	206,979	206,979	9.46	10.2	13.2	210,279
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	18.8	17.4	15.0	119	0.33	0.23	32.8	33.0	0.22	8.31	8.53	—	30,868	30,868	1.40	1.53	32.5	31,390
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	18.8	17.4	15.0	119	0.33	0.23	32.8	33.0	0.22	8.31	8.53	—	30,868	30,868	1.40	1.53	32.5	31,390

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	54,077	54,077	3.35	0.41	—	54,282
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	54,077	54,077	3.35	0.41	—	54,282

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	54,077	54,077	3.35	0.41	—	54,282
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	54,077	54,077	3.35	0.41	—	54,282
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	8,953	8,953	0.56	0.07	—	8,987
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	8,953	8,953	0.56	0.07	—	8,987

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 Low Rise	2.72	1.36	23.2	9.88	0.15	1.88	—	1.88	1.88	—	1.88	—	29,472	29,472	2.61	0.06	—	29,554
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	2.72	1.36	23.2	9.88	0.15	1.88	—	1.88	1.88	—	1.88	—	29,472	29,472	2.61	0.06	—	29,554

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	2.72	1.36	23.2	9.88	0.15	1.88	—	1.88	1.88	—	1.88	—	29,472	29,472	2.61	0.06	—	29,554
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	2.72	1.36	23.2	9.88	0.15	1.88	—	1.88	1.88	—	1.88	—	29,472	29,472	2.61	0.06	—	29,554
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.50	0.25	4.24	1.80	0.03	0.34	—	0.34	0.34	—	0.34	—	4,879	4,879	0.43	0.01	—	4,893
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.50	0.25	4.24	1.80	0.03	0.34	—	0.34	0.34	—	0.34	—	4,879	4,879	0.43	0.01	—	4,893

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	9.47	4.73	80.9	34.4	0.52	6.54	—	6.54	6.54	—	6.54	0.00	102,692	102,692	1.93	0.19	—	102,798
Consumer Products	—	123	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coatings	—	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	47.0	44.0	3.76	415	0.02	0.25	—	0.25	0.33	—	0.33	—	1,258	1,258	0.05	0.01	—	1,263
Total	56.5	182	84.7	449	0.54	6.79	—	6.79	6.87	—	6.87	0.00	103,950	103,950	1.99	0.20	—	104,060
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	9.47	4.73	80.9	34.4	0.52	6.54	—	6.54	6.54	—	6.54	0.00	102,692	102,692	1.93	0.19	—	102,798
Consumer Products	—	123	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	9.47	138	80.9	34.4	0.52	6.54	—	6.54	6.54	—	6.54	0.00	102,692	102,692	1.93	0.19	—	102,798
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.12	0.06	1.01	0.43	0.01	0.08	—	0.08	0.08	—	0.08	0.00	1,165	1,165	0.02	< 0.005	—	1,166
Consumer Products	—	22.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	1.83	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	5.87	5.50	0.47	51.8	< 0.005	0.03	—	0.03	0.04	—	0.04	—	143	143	0.01	< 0.005	—	143
Total	5.99	29.9	1.48	52.3	0.01	0.11	—	0.11	0.12	—	0.12	0.00	1,307	1,307	0.03	< 0.005	—	1,309

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	422	2,406	2,829	43.5	1.05	—	4,227
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	422	2,406	2,829	43.5	1.05	—	4,227
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	422	2,406	2,829	43.5	1.05	—	4,227
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	422	2,406	2,829	43.5	1.05	—	4,227
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	69.9	398	468	7.19	0.17	—	700
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	69.9	398	468	7.19	0.17	—	700

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	2,160	0.00	2,160	216	0.00	—	7,556
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	2,160	0.00	2,160	216	0.00	—	7,556
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2,160	0.00	2,160	216	0.00	—	7,556
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	2,160	0.00	2,160	216	0.00	—	7,556
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	358	0.00	358	35.7	0.00	—	1,251
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	358	0.00	358	35.7	0.00	—	1,251

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	41.1
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	41.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	41.1
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41.1	41.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.81	6.81
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.81	6.81

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

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

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

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

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

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

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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 Low Rise	36,524	24,656	20,917	11,898,692	284,217	191,868	162,771	92,591,391
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	4877
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	542
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)
11631883.5	3,877,295	0.00	0.00	146,362

5.10.3. Landscape Equipment

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	37,102,758	532	0.0330	0.0040	91,961,638
Other Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	220,411,187	28,363,710
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	4,007	—
Other Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
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

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

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

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	29.5	annual days of extreme heat
Extreme Precipitation	2.30	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	6.30	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

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

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A

Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

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

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	95.3
AQ-PM	53.4
AQ-DPM	83.3
Drinking Water	19.5
Lead Risk Housing	82.8
Pesticides	70.3
Toxic Releases	30.5
Traffic	76.5
Effect Indicators	—

CleanUp Sites	58.2
Groundwater	71.1
Haz Waste Facilities/Generators	28.3
Impaired Water Bodies	0.00
Solid Waste	93.2
Sensitive Population	—
Asthma	61.7
Cardio-vascular	87.1
Low Birth Weights	56.9
Socioeconomic Factor Indicators	—
Education	92.9
Housing	76.0
Linguistic	76.9
Poverty	93.6
Unemployment	88.1

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	7.04478378
Employed	9.264724753
Median HI	13.37097395
Education	—
Bachelor's or higher	1.963300398
High school enrollment	100
Preschool enrollment	11.35634544

Transportation	—
Auto Access	28.94905685
Active commuting	35.01860644
Social	—
2-parent households	17.60554344
Voting	1.270370846
Neighborhood	—
Alcohol availability	44.00102656
Park access	20.42858976
Retail density	58.38573078
Supermarket access	53.04760683
Tree canopy	3.156679071
Housing	—
Homeownership	32.22122418
Housing habitability	17.10509432
Low-inc homeowner severe housing cost burden	13.85859104
Low-inc renter severe housing cost burden	31.8747594
Uncrowded housing	10.22712691
Health Outcomes	—
Insured adults	6.557166688
Arthritis	48.2
Asthma ER Admissions	41.6
High Blood Pressure	36.7
Cancer (excluding skin)	87.6
Asthma	6.7
Coronary Heart Disease	47.4
Chronic Obstructive Pulmonary Disease	19.2

Diagnosed Diabetes	21.5
Life Expectancy at Birth	14.2
Cognitively Disabled	10.7
Physically Disabled	49.3
Heart Attack ER Admissions	10.4
Mental Health Not Good	6.5
Chronic Kidney Disease	27.1
Obesity	3.4
Pedestrian Injuries	76.6
Physical Health Not Good	9.8
Stroke	26.0
Health Risk Behaviors	—
Binge Drinking	68.3
Current Smoker	6.3
No Leisure Time for Physical Activity	6.3
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	35.2
Elderly	93.7
English Speaking	32.7
Foreign-born	61.0
Outdoor Workers	5.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	78.2
Traffic Density	60.6
Traffic Access	23.0

Other Indices	—
Hardship	96.1
Other Decision Support	—
2016 Voting	5.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	94.0
Healthy Places Index Score for Project Location (b)	3.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification

Land Use	5,419 MF dwelling units. Per Apx B of 2022 Housing Element, housing opportunity sites cover ~299 acres of land; however, those sites with mixed-use zoning were assumed only 50% residential. Therefore, taking this into account, total residential acreage for housing opportunity sites is ~224 acres. Assumed ~25% of total acreage for on-site roads/paving (~56 ac), 15% of total acreage for landscaping (~33.6 ac or 1,463,616 sf) & remaining acreage under the residential use (~134.4 ac).
Operations: Vehicle Data	Per Transportation Study, 6.74 trips/DU/weekday. Saturday rate of 4.55 trips/DU and Sunday rate of 3.86 trips/DU taken from the ITE 11th Ed Manual for ITE 220.
Operations: Hearths	SCAQMD Rule 445 (as well as City of Perris General Plan Mitigation Measure AQ-7) prohibits the installation of wood burning devices in new developments.

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Air Basin
Region: South Coast
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Trips	Energy Consumption	Fuel Consumption	Fuel Consumption	Total Fuel Consumption	Total VMT	Total VMT	Miles Per Gallon	Vehicle Class
South Coast	2030	HHDT	Aggregate	Aggregate	Gasoline	28.96050174	579.4417	0	0.629077746	629.0777462	2022815.572	2918.252932	13875312.4	**6.86**	**HHDT**
South Coast	2030	HHDT	Aggregate	Aggregate	Diesel	103216.8834	1595624	0	1904.339454	1904339.454		12535980.82			
South Coast	2030	HHDT	Aggregate	Aggregate	Electricity	5486.829402	70607.03	1055168.153	0	0		587962.6739			
South Coast	2030	HHDT	Aggregate	Aggregate	Natural Gas	12203.72081	79598.52	0	117.8470402	117847.0402		748450.6546			
South Coast	2030	LDA	Aggregate	Aggregate	Gasoline	5024990.19	23330360	0	6064.703576	6064703.576	6205698.566	198988303.1	228339549.9	**36.80**	**LDA**
South Coast	2030	LDA	Aggregate	Aggregate	Diesel	7607.526865	32917.8	0	5.406910051	5406.910051		243503.2962			
South Coast	2030	LDA	Aggregate	Aggregate	Electricity	455084.7963	2221459	7931792.732	0	0		20544293.05			
South Coast	2030	LDA	Aggregate	Aggregate	Plug-in Hybrid	196450.44	812322.6	1435581.23	135.5880799	135588.0799		8563450.478			
South Coast	2030	LDT1	Aggregate	Aggregate	Gasoline	452746.0307	2000834	0	601.792829	601792.829	604037.5929	16361396.1	16702661.12	**27.65**	**LDT1**
South Coast	2030	LDT1	Aggregate	Aggregate	Diesel	6.854463795	24.20917	0	0.007309318	7.309318105		193.9175241			
South Coast	2030	LDT1	Aggregate	Aggregate	Electricity	4018.987234	19856.66	73317.10491	0	0		189900.0819			
South Coast	2030	LDT1	Aggregate	Aggregate	Plug-in Hybrid	3158.657132	13061.05	26793.24094	2.237454603	2237.454603		151171.0241			
South Coast	2030	LDT2	Aggregate	Aggregate	Gasoline	2767379.555	12969187	0	4122.691002	4122691.002	4165862.47	111904873.3	116114778.9	**27.87**	**LDT2**
South Coast	2030	LDT2	Aggregate	Aggregate	Diesel	9931.792576	47169.33	0	11.56581954	11565.81954		409814.9155			
South Coast	2030	LDT2	Aggregate	Aggregate	Electricity	52045.39665	259623.4	670520.5872	0	0		1736728.62			
South Coast	2030	LDT2	Aggregate	Aggregate	Plug-in Hybrid	45627.20742	188668.5	357711.9675	31.60564801	31605.64801		2063362.033			
South Coast	2030	LHDT1	Aggregate	Aggregate	Gasoline	193955.3358	2889646	0	497.9799654	497979.9654	726819.6036	7557721.102	13658702.71	**18.79**	**LHDT1**
South Coast	2030	LHDT1	Aggregate	Aggregate	Diesel	119296.6037	1500601	0	228.8396382	228839.6382		4811852.794			
South Coast	2030	LHDT1	Aggregate	Aggregate	Electricity	21584.60168	301735.2	722667.6405	0	0		1289128.813			
South Coast	2030	LHDT2	Aggregate	Aggregate	Gasoline	29075.79497	433186	0	80.0549331	80054.9331	201821.8103	1055111.751	3551938.474	**17.60**	**LHDT2**
South Coast	2030	LHDT2	Aggregate	Aggregate	Diesel	55326.69282	695940.2	0	121.7668772	121766.8772		2176568.724			
South Coast	2030	LHDT2	Aggregate	Aggregate	Electricity	5628.085726	74636.37	179643.8648	0	0		320257.9998			
South Coast	2030	MCY	Aggregate	Aggregate	Gasoline	265539.3004	531078.6	0	39.2490665	39249.0665	39249.0665	1653651.616	1653651.616	**42.13**	**MCY**
South Coast	2030	MDV	Aggregate	Aggregate	Gasoline	1650722.046	7647943	0	2856.403823	2856403.823	2904080.538	63183783.95	66886011.18	**23.03**	**MDV**
South Coast	2030	MDV	Aggregate	Aggregate	Diesel	20006.4611	92640.11	0	28.75029833	28750.29833		756257.3			
South Coast	2030	MDV	Aggregate	Aggregate	Electricity	52164.68967	259676.4	667566.2006	0	0		1729076.405			
South Coast	2030	MDV	Aggregate	Aggregate	Plug-in Hybrid	28346.84719	117214.2	210475.2778	18.92641577	18926.41577		1216893.523			
South Coast	2030	MH	Aggregate	Aggregate	Gasoline	24254.33107	2426.403	0	50.23612384	50236.12384	62212.9611	244094.7386	364594.5737	**5.86**	**MH**
South Coast	2030	MH	Aggregate	Aggregate	Diesel	12405.01414	1240.501	0	11.97683726	11976.83726		120499.8352			
South Coast	2030	MHDT	Aggregate	Aggregate	Gasoline	21049.25626	421153.5	0	194.3518548	194351.8548	730648.2234	1058445.97	6554591.147	**8.97**	**MHDT**
South Coast	2030	MHDT	Aggregate	Aggregate	Diesel	121766.9563	1501679	0	526.3656998	526365.6998		4825086.037			
South Coast	2030	MHDT	Aggregate	Aggregate	Electricity	11275.96824	148469	616531.8221	0	0		588087.0348			
South Coast	2030	MHDT	Aggregate	Aggregate	Natural Gas	1940.383735	17349.34	0	9.930668727	9930.668727		82972.10518			
South Coast	2030	OBUS	Aggregate	Aggregate	Gasoline	4368.091399	87396.77	0	28.6514135	28651.4135	63965.42465	153765.8379	440669.3981	**6.89**	**OBUS**
South Coast	2030	OBUS	Aggregate	Aggregate	Diesel	3347.446741	43581.01	0	31.8258417	31825.8417		236850.5078			
South Coast	2030	OBUS	Aggregate	Aggregate	Electricity	252.1557545	5045.132	18341.27919	0	0		17459.89278			
South Coast	2030	OBUS	Aggregate	Aggregate	Natural Gas	587.7089811	5230.61	0	3.488169446	3488.169446		32593.1597			
South Coast	2030	SBUS	Aggregate	Aggregate	Gasoline	2959.258653	11837.03	0	14.14720058	14147.20058	40677.44082	128662.2685	278064.3323	**6.84**	**SBUS**
South Coast	2030	SBUS	Aggregate	Aggregate	Diesel	2508.406371	36321.72	0	6.695559304	6695.559304		50230.03336			
South Coast	2030	SBUS	Aggregate	Aggregate	Electricity	429.542623	4932.593	15373.88613	0	0		13295.74357			
South Coast	2030	SBUS	Aggregate	Aggregate	Natural Gas	3699.626353	53570.59	0	19.83468093	19834.68093		85876.2869			
South Coast	2030	UBUS	Aggregate	Aggregate	Gasoline	846.4341271	3385.737	0	11.65276825	11652.76825	151540.389	89901.07065	704649.1023	**4.65**	**UBUS**
South Coast	2030	UBUS	Aggregate	Aggregate	Diesel	3.645249012	14.581	0	0.037306979	37.30697875		367.6219985			
South Coast	2030	UBUS	Aggregate	Aggregate	Electricity	1331.736651	5326.947	330001.1723	0	0		158390.4511			
South Coast	2030	UBUS	Aggregate	Aggregate	Natural Gas	3826.652238	15306.61	0	139.8503137	139850.3137		455989.9586			

APPENDIX C
CALEEMOD MODEL DETAILED REPORT & LAND USE CALCULATIONS FOR THE EXISTING GENERAL PLAN DESIGNATIONS

19598 City of Perris Housing Implementation Measures - Existing GP Buildout Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	19598 City of Perris Housing Implementation Measures - Existing GP Buildout
Operational Year	2030
Lead Agency	—
Land Use Scale	Plan/community
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	0.20
Location	Perris, CA, USA
County	Riverside-South Coast
City	Perris
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5579
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.16

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 Low Rise	1,184	Dwelling Unit	45.0	1,255,040	490,050	—	3,824	—

Regional Shopping Center	1,525	1000sqft	39.0	1,525,302	424,710	—	—	—
Other Asphalt Surfaces	56.0	Acre	56.0	0.00	0.00	—	—	—
Single Family Housing	264	Dwelling Unit	50.4	514,800	548,856	—	853	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	275	336	171	1,369	3.03	4.93	256	261	4.77	64.9	69.7	1,795	370,564	372,358	200	16.1	668	382,804
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	241	303	178	1,099	2.86	4.77	256	261	4.65	64.9	69.6	1,795	353,298	355,093	201	16.5	36.8	365,070
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	198	264	124	963	2.09	2.49	193	196	2.38	49.0	51.4	1,795	259,631	261,425	197	13.0	231	270,431
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	36.1	48.1	22.6	176	0.38	0.45	35.3	35.7	0.43	8.94	9.38	297	42,985	43,282	32.5	2.14	38.3	44,773

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	251	238	134	1,204	2.80	1.92	256	258	1.80	64.9	66.7	—	286,269	286,269	15.4	14.9	648	291,733
Area	22.3	97.3	26.9	160	0.17	2.22	—	2.22	2.18	—	2.18	0.00	32,935	32,935	0.63	0.07	—	32,971
Energy	1.14	0.57	9.87	5.21	0.06	0.79	—	0.79	0.79	—	0.79	—	49,446	49,446	3.39	0.30	—	49,621
Water	—	—	—	—	—	—	—	—	—	—	—	329	1,913	2,242	33.9	0.82	—	3,333
Waste	—	—	—	—	—	—	—	—	—	—	—	1,465	0.00	1,465	146	0.00	—	5,127
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.0	20.0
Total	275	336	171	1,369	3.03	4.93	256	261	4.77	64.9	69.7	1,795	370,564	372,358	200	16.1	668	382,804
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	237	223	143	1,083	2.63	1.92	256	258	1.80	64.9	66.7	—	269,496	269,496	16.5	15.3	16.8	274,493
Area	2.99	79.3	25.6	10.9	0.16	2.07	—	2.07	2.07	—	2.07	0.00	32,443	32,443	0.61	0.06	—	32,476
Energy	1.14	0.57	9.87	5.21	0.06	0.79	—	0.79	0.79	—	0.79	—	49,446	49,446	3.39	0.30	—	49,621
Water	—	—	—	—	—	—	—	—	—	—	—	329	1,913	2,242	33.9	0.82	—	3,333
Waste	—	—	—	—	—	—	—	—	—	—	—	1,465	0.00	1,465	146	0.00	—	5,127
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.0	20.0
Total	241	303	178	1,099	2.86	4.77	256	261	4.65	64.9	69.6	1,795	353,298	355,093	201	16.5	36.8	365,070
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	183	173	111	855	2.01	1.46	193	195	1.37	49.0	50.4	—	205,712	205,712	12.8	11.8	211	209,768
Area	13.4	90.2	2.66	103	0.02	0.25	—	0.25	0.22	—	0.22	0.00	2,559	2,559	0.06	0.01	—	2,563
Energy	1.14	0.57	9.87	5.21	0.06	0.79	—	0.79	0.79	—	0.79	—	49,446	49,446	3.39	0.30	—	49,621
Water	—	—	—	—	—	—	—	—	—Apx-45	—	—	329	1,913	2,242	33.9	0.82	—	3,333

Waste	—	—	—	—	—	—	—	—	—	—	—	1,465	0.00	1,465	146	0.00	—	5,127
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.0	20.0
Total	198	264	124	963	2.09	2.49	193	196	2.38	49.0	51.4	1,795	259,631	261,425	197	13.0	231	270,431
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	33.4	31.6	20.3	156	0.37	0.27	35.3	35.5	0.25	8.94	9.19	—	34,058	34,058	2.12	1.96	35.0	34,729
Area	2.45	16.5	0.49	18.7	< 0.005	0.05	—	0.05	0.04	—	0.04	0.00	424	424	0.01	< 0.005	—	424
Energy	0.21	0.10	1.80	0.95	0.01	0.14	—	0.14	0.14	—	0.14	—	8,186	8,186	0.56	0.05	—	8,215
Water	—	—	—	—	—	—	—	—	—	—	—	54.5	317	371	5.61	0.14	—	552
Waste	—	—	—	—	—	—	—	—	—	—	—	243	0.00	243	24.2	0.00	—	849
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.31	3.31
Total	36.1	48.1	22.6	176	0.38	0.45	35.3	35.7	0.43	8.94	9.38	297	42,985	43,282	32.5	2.14	38.3	44,773

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 Low Rise	26.9	25.0	18.5	179	0.47	0.31	43.9	44.3	0.29	11.2	11.4	—	48,116	48,116	1.97	2.17	111	48,924
Regional Shopping Center	216	205	110	968	2.18	1.51	198	200	1.42	50.3	51.7	—	223,063	223,063	12.8	12.0	502	227,466

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	8.44	7.85	5.81	56.2	0.15	0.10	13.8	13.9	0.09	3.50	3.59	—	15,090	15,090	0.62	0.68	34.9	15,343
Total	251	238	134	1,204	2.80	1.92	256	258	1.80	64.9	66.7	—	286,269	286,269	15.4	14.9	648	291,733
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	25.5	23.6	19.8	154	0.44	0.31	43.9	44.3	0.29	11.2	11.4	—	45,223	45,223	2.07	2.24	2.89	45,944
Regional Shopping Center	203	193	117	881	2.05	1.52	198	200	1.42	50.3	51.7	—	210,090	210,090	13.7	12.4	13.0	214,140
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	7.99	7.39	6.22	48.2	0.14	0.10	13.8	13.9	0.09	3.50	3.59	—	14,183	14,183	0.65	0.70	0.91	14,409
Total	237	223	143	1,083	2.63	1.92	256	258	1.80	64.9	66.7	—	269,496	269,496	16.5	15.3	16.8	274,493
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	4.11	3.80	3.28	25.9	0.07	0.05	7.16	7.21	0.05	1.82	1.86	—	6,744	6,744	0.31	0.33	7.10	6,858
Regional Shopping Center	27.9	26.5	15.9	121	0.27	0.20	25.6	25.8	0.19	6.50	6.69	—	24,989	24,989	1.70	1.51	25.4	25,507
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	1.42	1.31	1.13	8.93	0.03	0.02	2.47	2.48	0.02	0.63	0.64	—	2,325	2,325	0.11	0.11	2.45	2,364

Total	33.4	31.6	20.3	156	0.37	0.27	35.3	35.5	0.25	8.94	9.19	—	34,058	34,058	2.12	1.96	35.0	34,729

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	11,815	11,815	0.73	0.09	—	11,860
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	21,694	21,694	1.35	0.16	—	21,776
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	3,594	3,594	0.22	0.03	—	3,607
Total	—	—	—	—	—	—	—	—	—	—	—	—	37,103	37,103	2.30	0.28	—	37,243
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	11,815	11,815	0.73	0.09	—	11,860
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	21,694	21,694	1.35	0.16	—	21,776

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	3,594	3,594	0.22	0.03	—	3,607
Total	—	—	—	—	—	—	—	—	—	—	—	—	37,103	37,103	2.30	0.28	—	37,243
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,956	1,956	0.12	0.01	—	1,964
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	3,592	3,592	0.22	0.03	—	3,605
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	595	595	0.04	< 0.005	—	597
Total	—	—	—	—	—	—	—	—	—	—	—	—	6,143	6,143	0.38	0.05	—	6,166

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 Low Rise	0.59	0.30	5.07	2.16	0.03	0.41	—	0.41	0.41	—	0.41	—	6,439	6,439	0.57	0.01	—	6,457

Regional Shopping Center	0.27	0.13	2.43	2.04	0.01	0.18	—	0.18	0.18	—	0.18	—	2,895	2,895	0.26	0.01	—	2,903
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	0.28	0.14	2.37	1.01	0.02	0.19	—	0.19	0.19	—	0.19	—	3,009	3,009	0.27	0.01	—	3,017
Total	1.14	0.57	9.87	5.21	0.06	0.79	—	0.79	0.79	—	0.79	—	12,343	12,343	1.09	0.02	—	12,378
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.59	0.30	5.07	2.16	0.03	0.41	—	0.41	0.41	—	0.41	—	6,439	6,439	0.57	0.01	—	6,457
Regional Shopping Center	0.27	0.13	2.43	2.04	0.01	0.18	—	0.18	0.18	—	0.18	—	2,895	2,895	0.26	0.01	—	2,903
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	0.28	0.14	2.37	1.01	0.02	0.19	—	0.19	0.19	—	0.19	—	3,009	3,009	0.27	0.01	—	3,017
Total	1.14	0.57	9.87	5.21	0.06	0.79	—	0.79	0.79	—	0.79	—	12,343	12,343	1.09	0.02	—	12,378
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.11	0.05	0.93	0.39	0.01	0.07	—	0.07	0.07	—	0.07	—	1,066	1,066	0.09	< 0.005	—	1,069
Regional Shopping Center	0.05	0.02	0.44	0.37	< 0.005	0.03	—	0.03	0.03	—	0.03	—	479	479	0.04	< 0.005	—	481
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Single Family Housing	0.05	0.03	0.43	0.18	< 0.005	0.03	—	0.03	0.03	—	0.03	—	498	498	0.04	< 0.005	—	500
Total	0.21	0.10	1.80	0.95	0.01	0.14	—	0.14	0.14	—	0.14	—	2,044	2,044	0.18	< 0.005	—	2,049

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	2.99	1.50	25.6	10.9	0.16	2.07	—	2.07	2.07	—	2.07	0.00	32,443	32,443	0.61	0.06	—	32,476
Consumer Products	—	70.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	7.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	19.3	18.0	1.33	149	0.01	0.16	—	0.16	0.12	—	0.12	—	492	492	0.02	< 0.005	—	494
Total	22.3	97.3	26.9	160	0.17	2.22	—	2.22	2.18	—	2.18	0.00	32,935	32,935	0.63	0.07	—	32,971
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	2.99	1.50	25.6	10.9	0.16	2.07	—	2.07	2.07	—	2.07	0.00	32,443	32,443	0.61	0.06	—	32,476
Consumer Products	—	70.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	—	7.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	2.99	79.3	25.6	10.9	0.16	2.07	—	2.07	2.07	—	2.07	0.00	32,443	32,443	0.61	0.06	—	32,476
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.04	0.02	0.32	0.14	< 0.005	0.03	—	0.03	0.03	—	0.03	0.00	368	368	0.01	< 0.005	—	368
Consumer Products	—	12.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	1.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.41	2.25	0.17	18.6	< 0.005	0.02	—	0.02	0.01	—	0.01	—	55.8	55.8	< 0.005	< 0.005	—	56.0
Total	2.45	16.5	0.49	18.7	< 0.005	0.05	—	0.05	0.04	—	0.04	0.00	424	424	0.01	< 0.005	—	424

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	92.3	551	644	9.50	0.23	—	949
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	217	1,173	1,390	22.3	0.54	—	2,106

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	20.6	189	209	2.12	0.05	—	278
Total	—	—	—	—	—	—	—	—	—	—	—	329	1,913	2,242	33.9	0.82	—	3,333
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	92.3	551	644	9.50	0.23	—	949
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	217	1,173	1,390	22.3	0.54	—	2,106
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	20.6	189	209	2.12	0.05	—	278
Total	—	—	—	—	—	—	—	—	—	—	—	329	1,913	2,242	33.9	0.82	—	3,333
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	15.3	91.3	107	1.57	0.04	—	157
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	35.8	194	230	3.69	0.09	—	349
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	3.41	31.3	34.7	0.35	0.01	—	46.0

Total	—	—	—	—	—	—	—	—	—	—	—	54.5	317	371	5.61	0.14	—	552

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	472	0.00	472	47.2	0.00	—	1,651
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	863	0.00	863	86.3	0.00	—	3,020
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	130	0.00	130	13.0	0.00	—	456
Total	—	—	—	—	—	—	—	—	—	—	—	1,465	0.00	1,465	146	0.00	—	5,127
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	472	0.00	472	47.2	0.00	—	1,651
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	863	0.00	863	86.3	0.00	—	3,020

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	130	0.00	130	13.0	0.00	—	456
Total	—	—	—	—	—	—	—	—	—	—	—	1,465	0.00	1,465	146	0.00	—	5,127
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	78.1	0.00	78.1	7.81	0.00	—	273
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	143	0.00	143	14.3	0.00	—	500
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	21.6	0.00	21.6	2.16	0.00	—	75.5
Total	—	—	—	—	—	—	—	—	—	—	—	243	0.00	243	24.2	0.00	—	849

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 Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.99	8.99

Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.32	7.32
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.69	3.69
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.0	20.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.99	8.99
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.32	7.32
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.69	3.69
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.0	20.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.49	1.49
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.21	1.21
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.61	0.61
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.31	3.31

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

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

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

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

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

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

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

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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 Low Rise	7,980	5,387	4,570	2,599,751	62,099	41,921	35,564	20,230,339
Regional Shopping Center	56,451	71,079	28,935	19,932,712	199,007	280,058	114,007	72,431,554
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Single Family Housing	2,490	2,503	2,239	896,286	19,373	19,475	17,421	6,974,576

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	1303
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	145
Conventional Wood Stoves	0
Catalytic Wood Stoves	0

Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	238
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	26
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)
3583926	1,194,642	2,287,953	762,651	146,362

5.10.3. Landscape Equipment

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	8,106,600	532	0.0330	0.0040	20,092,744
Regional Shopping Center	14,884,498	532	0.0330	0.0040	9,033,099
Other Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00
Single Family Housing	2,465,560	532	0.0330	0.0040	9,388,979

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	48,157,750	9,496,778
Regional Shopping Center	112,982,965	6,734,079
Other Asphalt Surfaces	0.00	0.00
Single Family Housing	10,737,877	10,636,391

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	875	—
Regional Shopping Center	1,602	—
Other Asphalt Surfaces	0.00	—
Single Family Housing	242	—

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 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
Regional Shopping Center	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Regional Shopping Center	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

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

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit

Temperature and Extreme Heat	29.5	annual days of extreme heat
Extreme Precipitation	2.30	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	6.30	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

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

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

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

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	95.3
AQ-PM	53.4
AQ-DPM	83.3
Drinking Water	19.5
Lead Risk Housing	82.8

Pesticides	70.3
Toxic Releases	30.5
Traffic	76.5
Effect Indicators	—
CleanUp Sites	58.2
Groundwater	71.1
Haz Waste Facilities/Generators	28.3
Impaired Water Bodies	0.00
Solid Waste	93.2
Sensitive Population	—
Asthma	61.7
Cardio-vascular	87.1
Low Birth Weights	56.9
Socioeconomic Factor Indicators	—
Education	92.9
Housing	76.0
Linguistic	76.9
Poverty	93.6
Unemployment	88.1

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	7.04478378
Employed	9.264724753
Median HI	13.37097395

Education	—
Bachelor's or higher	1.963300398
High school enrollment	100
Preschool enrollment	11.35634544
Transportation	—
Auto Access	28.94905685
Active commuting	35.01860644
Social	—
2-parent households	17.60554344
Voting	1.270370846
Neighborhood	—
Alcohol availability	44.00102656
Park access	20.42858976
Retail density	58.38573078
Supermarket access	53.04760683
Tree canopy	3.156679071
Housing	—
Homeownership	32.22122418
Housing habitability	17.10509432
Low-inc homeowner severe housing cost burden	13.85859104
Low-inc renter severe housing cost burden	31.8747594
Uncrowded housing	10.22712691
Health Outcomes	—
Insured adults	6.557166688
Arthritis	48.2
Asthma ER Admissions	41.6
High Blood Pressure	36.7

Cancer (excluding skin)	87.6
Asthma	6.7
Coronary Heart Disease	47.4
Chronic Obstructive Pulmonary Disease	19.2
Diagnosed Diabetes	21.5
Life Expectancy at Birth	14.2
Cognitively Disabled	10.7
Physically Disabled	49.3
Heart Attack ER Admissions	10.4
Mental Health Not Good	6.5
Chronic Kidney Disease	27.1
Obesity	3.4
Pedestrian Injuries	76.6
Physical Health Not Good	9.8
Stroke	26.0
Health Risk Behaviors	—
Binge Drinking	68.3
Current Smoker	6.3
No Leisure Time for Physical Activity	6.3
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	35.2
Elderly	93.7
English Speaking	32.7
Foreign-born	61.0
Outdoor Workers	5.5

Climate Change Adaptive Capacity	—
Impervious Surface Cover	78.2
Traffic Density	60.6
Traffic Access	23.0
Other Indices	—
Hardship	96.1
Other Decision Support	—
2016 Voting	5.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	94.0
Healthy Places Index Score for Project Location (b)	3.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Per Apx B of 2022 Housing Element, housing opportunity sites cover ~299 acres of land; however, those sites with mixed-use zoning were assumed only 50% residential. Therefore, taking this into account, total acreage for housing opportunity sites being modeled is ~224 acres. Based on existing zoning ~159 ac is residential (~84 ac single-family & ~75 ac multi-family) and ~65 ac is commercial. For single- family residential, assumed ~25% of total acreage for on-site roads/paving (~21 ac), 15% of total acreage for landscaping (~12.6 ac or 548,856 sf) & remaining acreage under the residential use (~50.4 ac). For multi- family residential, assumed ~25% of total acreage for on-site roads/paving (~18.75 ac), 15% of total acreage for landscaping (~11.25 ac or 490,050 sf) & remaining acreage under the residential use (~45 ac).For commercial, assumed ~25% of total acreage for on-site roads/paving (~16.25 ac), 15% of total acreage for landscaping (~9.75 ac or 424,710 sf) & remaining acreage under the residential use (~39 ac). Therefore, total assumed paved area is ~56 ac.
Operations: Vehicle Data	Per Transportation Study, the residential uses for the housing overly generate 6.74 trips/DU/weekday (multi-family). Saturday rate of 4.55 trips/DU and Sunday rate of 3.86 trips/DU taken from the ITE 11th Ed Manual for ITE 220 used for multi-family. To be conservative, it was assumed that the potential multi-family residential uses under existing GP zoning would have the same trip generation. Commercial and single-family residential trip generation based on ITE 11th Ed Manual. ITE 820 (commercial uses) 37.01 trips/TSF weekday, 46.6 trips/TSF Saturday, & 18.97 trips/TSF Sunday & ITE 210 (Single-family) 9.43 trips/DU weekday, 9.48 trips/DU Saturday, & 8.48 trips/DU Sunday.
Operations: Hearths	SCAQMD Rule 445 (as well as City of Perris General Plan Mitigation Measure AQ-7) prohibits the installation of wood burning devices in new developments.

Housing Opportunity Area Development[1]

Area	Site	Total Acreage	Calculated Acreage per 80% Capacity	Residential Capacity	Existing Zoning[2]	Housing Update Buildout Potential (DU)[3]	Existing General Plan Zoning Buildout Potential[4]	
							Residential (DU)	Commercial (TSF)
Area 1	**Subtotal**	**13.37**	**10.70**	100%	MFR-22	**320**	**235**	**0.000**
Area 2	2.1	4.62	3.69	100%	MFR-14	109	51	-
	2.2	5.01	4.01	100%	MFR-14	120	56	-
	2.3	5.2	4.16	100%	MFR-14	123	58	-
	2.4	5.16	4.13	100%	MFR-14	120	57	-
	2.5	2	1.60	100%	MFR-14	46	22	-
	2.6	0.83	0.66	100%	MFR-14	19	9	-
	Subtotal	**22.82**	**18.25**	-	**-**	**537**	**253**	**0.000**
Area 3	3.1	4.34	3.47	100%	R-10,000	104	13	-
	3.2	5.11	4.09	100%	R-10,000	122	16	-
	3.3	1.11	0.89	100%	R-10,000	26	3	-
	3.4	4.82	3.86	100%	R-10,000	114	15	-
	3.5	6.52	5.21	100%	R-10,000	156	20	-
	3.6	3.06	2.45	50%	CC	36	-	40.020
	3.7	10.62	8.49	50%	CC	127	-	138.684
	Subtotal	**35.58**	**28.46**	**-**	**-**	**685**	**67**	**178.704**
Area 4	**Subtotal**	**37**	**29.39**	100%	MFR-14	**881**	**411**	**0.000**
Area 5	5.1	9.72	7.78	100%	R-10,000	233	31	-
	5.2	9.28	7.42	100%	R-10,000	222	29	-
	5.3	10.99	8.79	100%	R-10,000	263	35	-
	5.4	10.49	8.39	100%	R-10,000	251	33	-
	Subtotal	**40.48**	**32.38**	**-**	-	**969**	**128**	**0.000**
Area 6	6.1	19.95	15.96	50%	GV-SP (BPO)	239	0	173.804
	6.2	25.25	20.20	50%	GV-SP (BPO & C)	303	0	219.978
	Subtotal	**45.2**	**36.16**	**-**	-	**542**	**0**	**393.782**
Area 7	7.1	9.39	7.51	50%	CC	113	-	122.675
	7.2	14.89	11.91	50%	CC	179	-	194.549
	7.3	1.09	0.87	50%	CC	13	-	14.211
	7.4	5.73	4.59	50%	CC	69	-	74.977
	Subtotal	**31.1**	**24.88**	**-**	-	**374**	**0**	**406.412**
Area 8	8.1	1.99	1.59	50%	CC	24	-	25.972
	8.2	4.1	3.28	50%	CC	49	-	53.579
	8.3	9.29	7.43	50%	CC	111	-	121.369
	8.4	1.45	1.16	50%	CC	17	-	18.949
	Subtotal	**16.83**	**13.46**	**-**	-	**201**	**0**	**219.869**
Area 9	9.1	3.33	2.67	100%	R-6,000	79	18	-
	9.2	9.19	7.36	100%	R-6,000	220	51	-
	Subtotal	**12.52**	**10.03**	**-**	-	**299**	**69**	**0.000**
Area 10	10.1	5.9	4.72	50%	CC	70	-	77.101
	10.2	4.98	3.99	50%	CC	60	-	65.176
	Subtotal	**10.88**	**8.71**	**-**	-	**130**	**0**	**142.277**
Area 11	11.1	2.7	2.16	50%	CC	32	-	35.284
	11.2	7.75	6.20	50%	CC	93	-	101.277
	11.3	2.02	1.61	50%	CC	24	-	26.299
	Subtotal	**12.47**	**9.97**	**-**	-	**149**	**0**	**162.860**
Area 12	12.1	2.24	2.01	50%	DTSP - UV	35	35	-
	12.2	1.82	1.64	50%	DTSP - UV	28	28	-
	12.3	0.62	0.56	50%	DTSP - M	10	7	6.098
	12.4	3.12	2.81	50%	DTSP - G	49	5	15.300
	12.5	1.99	1.79	50%	DTSP - UV	31	31	-
	12.6	6.97	6.27	50%	DTSP - UV	109	109	-
	12.7	4.47	4.02	50%	DTSP - UV	70	70	-
	Subtotal	**21.23**	**19.10**	**50%**	-	**332**	**285**	**21.398**
Total		**299.48**	**241.49**	**-**	**-**	**5,419**	**1,448**	**1,525.302**

Notes:
CC = Commercial Community
DTSP - UV = Downtown Specific Plan zoned Urban Village.
DTSP - M = Downtown Specific Plan zoned Plaza Mercado.
DTSP - G = Downtown Specific Plan zoned 4th Street Gateway.
DU = Dwelling Units
GV-SP (BPO) = Green Valley Specific Plan - Business and Professional zoning.
GV-SP (BPO & C) = Green Valley Specific Plan - Business and Professional and Commercial zoning.
MFR-14 = Up to 14 dwelling units per acre
MFR-22 = Up to 22 dwelling units per acre
R-6,000 = Up to 7 dwelling units per acre
R-10,000 = Up to 4 dwelling units per acre
(1) Source: City of Perris Housing Element (August 17, 2022) Appendix B, unless otherwise noted.
(2) Specific zoning for areas within the Downtown Perris Speicfic Plan (DTSP) obtained from Figure 5-1 Regulating Plan of the Perris Downtown Specific Plan adopted January 10, 2012. In addition, specific zoning of the areas within the Green Valley Specific Plan (GV-SP) obtained from the Conceptual Land Use Plan in the Green Valley Specific Plan Amendment 2 21-05125 (April 2023).

(3) Calculated based on 30 du/ac for Areas 1-11 and 35 du/ac for Area 12 with incorporation of assumptions of land capacity (i.e., 80% land capacity for all sites to account for potential easements/sidewalks/street frontage etc.). In addition, to be conservative, the City assumed that 50 percent of the capacity of commercial and mixed-use sites will be developed with residential uses. These calculations/assumptions were taken from the City of Perris Housing Element (August 17, 2022) Appendix B and the City of Perris Housing Implementation Measurse Transportation Study prepared by Ganddini Group, Inc. (May 12, 2023).

(4) Commercial/Specific Plan Existing Zoning Maximum Buildout Capacity Calculations:

Calculated based on the potential maximum development allowed under the existing general plan zoning desginations for each site. To be consistent with the maximum buildout capacity calculated for the Housing Opportunity Overlay, it was assumed that maximum buildout would be at 80% land capacity. The total acreage for each site area and the acreage assumed for the 80% land capacity were obtained from the City of Perris Housing Element (August 17, 2022) Appendix B (as shown in the Table above). In addition, as all of the commercial/specific plan sites were assumed to only have 50% residential development in the Housing Opportunity Overlay buildout calculations, to provide a direct comparison, these calculations also take into consideration development on 50% of each site.

**Commercial Community (CC) Zone = No minimum size, however, the floor area ratio (FAR) can not exceed 0.75. Maximum height is 45 feet; therefore, to be conservative, assumed all areas were developed with one-story buildings (Table LU-21 of Land Use Element of GP & City of Perris Zoning Section 19.38.080).

Area 3.6:	3.06 total acres = 2.45 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~1.225 ac. 1.225 ac x.75 (FAR for CC zoning) = 0.91875 ac = 40,020 sf
Area 3.7	10.62 total acres = 8.49 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~4.245 ac. 4.245 ac x.75 (FAR for CC zoning) = 3.18375 ac =138,684 sf
Area 7.1	9.39 total acres = 7.51 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~3.755 ac. 3.755 ac x.75 (FAR for CC zoning) = 2.81625 ac = 122,675 sf
Area 7.2	14.89 total acres = 11.91 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~5.955 ac. 5.955 ac x.75 (FAR for CC zoning) = 4.46625 ac = 194,549 sf
Area 7.3	1.09 total acres = 0.87 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~0.435 ac. 0.435 ac x.75 (FAR for CC zoning) = 0.32625 ac = 14,211 sf
Area 7.4	5.73 total acres = 4.59 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~2.295 ac. 2.295 ac x.75 (FAR for CC zoning) = 1.72125 ac = 74,977 sf
Area 8.1	1.99 total acres = 1.59 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~0.795 ac. 0.795 ac x.75 (FAR for CC zoning) = 0.59625 ac = 25,972 sf
Area 8.2	4.1 total acres = 3.28 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~1.64 ac. 1.64 ac x.75 (FAR for CC zoning) = 1.23 ac = 53,579 sf
Area 8.3	9.29 total acres = 7.43 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~3.715 ac. 3.715 ac x.75 (FAR for CC zoning) = 2.78625 ac = 121,369 sf
Area 8.4	1.45 total acres = 1.16 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~0.58 ac. 0.58 ac x.75 (FAR for CC zoning) = 0.435 ac = 18,949 sf
Area 10.1	5.9 total acres = 4.72 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~2.36 ac. 2.36 ac x.75 (FAR for CC zoning) = 1.77 ac = 77,101 sf
Area 10.2	4.98 total acres = 3.99 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~1.995 ac. 1.995 ac x.75 (FAR for CC zoning) = 1.49625 ac = 65,176 sf
Area 11.1	2.7 total acres = 2.16 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~1.08 ac. 1.08 ac x.75 (FAR for CC zoning) = 0.81 ac = 35,284 sf
Area 11.2	7.75 total acres = 6.2 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~3.1 ac. 3.1 ac x.75 (FAR for CC zoning) = 2.325 ac = 101,277 sf
Area 11.3	2.02 total acres = 1.61 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~0.805 ac. 0.805 ac x.75 (FAR for CC zoning) = 0.60375 ac = 26,299 sf

**Green Valley Specific Plan (GV-SP) Zone

GV-SP (C) = Green Valley Specific Plan - Commercial. No minimum size, however, the lot coverage cannot exceed 50%. Maximum height is 75 feet or six stories; however, to be conservative, assumed all areas were developed with one-story buildings (Section 3.5 of the Green Valley Specific Plan (March 5, 1990)).

GV-SP (BPO) = Green Valley Specific Plan - Business and Professional. Maximum height is 75 feet or six stories; however, to be conservative, assumed all areas were developed with one-story buildings. No minimum size and no stated lot coverage. However, as all uses permitted under Commercial are also permitted uses under the BPO designaton, assumed a 50% lot coverage consistent with the Commercial lot coverage (Section 3.6 of the Green Valley Specific Plan (March 5, 1990)).

Area 6.1	19.95 total acres = 15.96 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~7.98 ac. 7.98 ac x .5 (lot coverage for commercial zoning) = 3.99 ac = 173,804 sf
Area 6.2	25.25 total acres = 20.20 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~10.1 ac. 10.1 ac x .5 (lot coverage for commercial zoning) = 5.05 ac = 219,978 sf

**Downtown Specific Plan (DTSP) Zone

DTSP - UV = Downtown Specifc Plan zoned Urban Village. UV zone allows the intent of the Urban Village is to allow for mixed-use and multi unit residential buildings with first floor ancillary commercial uses within walking distance of Downtown and the MetroLink Station. The Urban Village is envisioned to include an interior pedestrian paseo that provides access to Downtown and the adjacent commercial district. Building heights would range from three to five stories, with parking provided on the streets as well as in parking structures and surface lots behind buildings. (Source: Section 3.4 Vision Plan of the Perris Downtown Specific Plan adopted January 10, 2012). UV zone is anticipated to have ~35 average DU/acre (Source: Table 2 of the City of Perris Specific Plan Draft Water & Sweer Utility Study as provided in Appendix D of Perris Downtown Specific Plan adopted January 10, 2012).

DTSP - M = Downtown Specific Plan zoned Plaza Mercado. This area includes a mix of buildings from one to three stories surrounding a system of paseos and common public spaces with wide sidewalks and arcades. Retail, restaurants or entertainment on the ground floor with office or residential above provides an opportunity for a variety of businesses, including opportunities for local artisans. The public spaces will be used for a range of functions including festivals, outdoor markets, shopping, and dining. (Source: Section 3.4 Vision Plan of the Perris Downtown Specific Plan adopted January 10, 2012). M zone is anticipated to have ~26 average DU/acre, 0.50 FAR average for retail, and 0.15 FAR average for office (Source: Table 2 of the City of Perris Specific Plan Draft Water & Sweer Utility Study as provided in Appendix D of Perris Downtown Specific Plan adopted January 10, 2012). For those sites zoned M under DTSP, to estimate potential buildout under existing general plan zoning, it was assumed that the ground floor is retail use at 0.5 FAR and the upper floors were residential use at 26 du/ac.

DTSP - G = Downtown Specific Plan zoned 4th Street Gateway. The 4th Street Corridor will include new and existing buildings with heights ranging from one to three stories. New buildings will be built to the sidewalk to enhance the public realm and support pedestrian activity along the corridor. Primary uses will be retail, office, and commercial uses, with opportunities for mixed use buildings where appropriate. (Source: Section 3.4 Vision Plan of the Perris Downtown Specific Plan adopted January 10, 2012). G zone is anticipated to have ~4 average DU/acre, 0.25 FAR average for retail, and 0.15 FAR average for office (Source: Table 2 of the City of Perris Specific Plan Draft Water & Sweer Utility Study as provided in Appendix D of Perris Downtown Specific Plan adopted January 10, 2012). For those sites zoned G under DTSP, to estimate potential buildout under existing general plan zoning, it was assumed that the ground floor is retail use at 0.25 FAR and the upper floors were residential use at 4 du/ac.

Area 12.1	2.24 total acres = 2.01 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~1.005 ac. 1.005 ac x 35du/ac = 35 du.
Area 12.2	2.24 total acres = 1.64 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~0.82 ac. 0.82 ac x 35du/ac = 28 du.
Area 12.3	0.62 total acres = 0.56 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~0.28 ac. 0.28 ac x 0.5 FAR = 0.14 ac = 6,098 sf retail & 0.28 ac x 26 du/ac = 7 du.
Area 12.4	3.12 total acres = 2.81 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~1.405 ac. 1.405 ac x 0.25 FAR = 0.35125 ac = 15,300 sf retail & 1.405 ac x 4 du/ac = 5 du.
Area 12.5	1.99 total acres = 1.79 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~0.895 ac. 0.895 ac x 35du/ac = 31 du.
Area 12.6	6.97 total acres = 6.27 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~3.135 ac. 3.135 ac x 35du/ac = 109 du.
Area 12.7	4.47 total acres = 4.02 acres for 80% buildout capacity. Area is only 50% residential per overlay; therefore, 50% of calculated acreage is ~2.01 ac. 2.01 ac x 35du/ac = 70 du.

CalEEMod Modeling Note:

Total Acreage Modeled in CalEEMod for Project Buildout Scenario:

223.785 acres

*Total acreage, but includes only 50% of the acreage of those sites designated as only 50% residential.

Total Acreage Modeled in CalEEMod for Existing General Plan Buildout Scenario:

Residential Multi-Family Acreage =	83.805	Residential Single-Family Acreage =	74.9	Commercial Acreage =	65.08
Total Acreage =	223.785				

*Total acreage, but includes only 50% of the acreage of those sites designated as only 50% residential. Also, for the commercial zoning, assumes areas zones R-6,000 and R-10,000 are single-family whereas those zoned MFR-14, MFR-22, or DTSP are multi-family.

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