4.2 AIR QUALITY

This section evaluates the potential air quality impacts associated with implementation of the proposed Sustainable Santee Plan: The City's Roadmap to Greenhouse Gas reductions ("Sustainable Santee Plan" or "proposed project"). This analysis evaluates the proposed project's consistency with applicable air quality plans. This section is based on information provided in the proposed project's Air Quality Analysis Memo provided in Appendix C.

4.2.1 Scope Process

The Initial Study (IS) prepared for the proposed project indicated that implementation of the proposed project could conflict with or obstruct implementation of the applicable air quality plan. Therefore, this topic is analyzed further in this EIR.

The IS determined implementation of the proposed project would decrease emissions, thereby improving air quality, which would result in a less than significant impact in relation to the following thresholds:

1. The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard.

2. The proposed project would not expose sensitive receptors to substantial pollutant concentrations.
3. The proposed project would not result in other emissions (such as those leading to objectionable odors) adversely affecting a substantial number of people.

Therefore, these topics are not analyzed further in this EIR. Please refer to Appendix A, IS/NOP, for additional discussion.

The City distributed the NOP for the EIR from August 17 to October 2, 2017. Fifteen comment letters were received in response to the NOP. No issues related to air quality were raised in those comment letters.

4.2.2 Methodology

The Air Quality Analysis for the proposed project (Appendix C) includes an estimate of emissions associated with short-term construction and long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by stationary and mobile sources involving any project-related changes. Energy usage and VMT data were obtained from the proposed project, and the current models, California Emissions Estimator Model (CalEEMod) Version 2016.3.2 and OFFROAD2007, were used to estimate the project-related mobile and stationary source emissions in this air quality assessment.

The net increase in pollutant emissions determines the significance and impact on regional air quality as a result of a proposed project. The results also allow the local government to determine

whether the proposed project would deter the region from achieving the goal of reducing pollutants in accordance with the Air Quality Management Plan (AQMP) in order to comply with the federal and State Ambient Air Quality Standard (AAQS).

4.2.3 Existing Environmental Setting

The project site is in the City of Santee, which is in the San Diego Air Basin (SDAB) and is under the jurisdiction of the San Diego Air Pollution Control District (SDAPCD), the California Air Resources Board (ARB), and the United States Environmental Protection Agency (EPA).

4.2.3.1 Regional Air Quality

The State of California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 4.2.A, these pollutants are ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with a diameter of 10 microns or less (PM_{10}), fine particulate matter with a diameter of less than 2.5 microns ($PM_{2.5}$), and lead (Pb). In addition, the State has set AAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These AAQS are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 4.2.A: Federal and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM_{10})[9]	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter ($PM_{2.5}$)[9]	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm(40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[10]	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence

Table 4.2.A: Federal and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
	1-Hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3)	—	
Sulfur Dioxide (SO_2)[11]	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (for certain areas)[11]	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	3-Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	—	
Lead[12,13]	30-Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average[11]	—		0.15 µg/m^3		
Visibility-Reducing Particles[14]	8-Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Footnotes to Table 4.2.A:

1 California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$ and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measure at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24 hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[8] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[10] To attain the 1-hour national standard, the 3-year average of the 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[11] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13] The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[14] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basins, respectively.

°C = degrees Celsius ARB=California Air Resources Board EPA = United States Environmental Protection Agency
µg/m^3 = micrograms per cubic meter mg/m^3 = milligrams per cubic meter ppm = parts per million
ppb = parts per billion

In addition to identifying these primary and secondary AAQS, the State has established a set of episode criteria for O_3, CO, NO_2, SO_2, and PM_{10}. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage 1 to Stage 3. An alert will be declared when any one of the pollutant alert levels is reached at any monitoring site and meteorological conditions are such that the pollutant concentrations can be expected to remain at these levels for 12 or more hours or to increase, or as in the case of oxidants, the situation is likely to recur within the next 24 hours unless control actions are taken.

Stage 1 pollutant alert levels[1] are as follows:

- O_3: 392 micrograms per cubic meter (µg/m^3) (0.20 parts per million [ppm]), 1-hour average.

[1] San Diego County Air Pollution Control District. 1991. Rule 127: Episode Criteria Levels. Website: http://www.sdapcd.org/content/dam/sdc/apcd/PDF/Rules_and_Regulations/Air_Pollution_Emergency_Plan/APCD_R126-127.pdf (accessed September 19, 2017).

- CO: 17 milligrams per cubic meter (mg/m^3) (15 ppm), 8-hour average.
- NO_2: 1,130 $\mu g/m^3$ (0.6 ppm) 1-hour average; 282 $\mu g/m^3$ (0.15 ppm) 24-hour average.
- SO_2: 800 $\mu g/m^3$ (0.3 ppm), 24-hour average.
- Particulates, measured as PM_{10}: 350 $\mu g/m^3$, 24-hour average

Table 4.2.B lists the primary health effects and sources of common air pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (EPA), these health effects will not occur unless the standards are exceeded by a large margin or for a prolonged period of time. State AAQS (CAAQS) are more stringent than federal AAQS (NAAQS). Among the pollutants, O_3 and particulate matter ($PM_{2.5}$, and PM_{10}) are considered regional pollutants, while the others have more localized effects.

Table 4.2.B: Summary of Health Effects of the Major Criteria Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate Matter ($PM_{2.5}$ and PM_{10}: less than or equal to 2.5 or 10 microns, respectively)	• Hospitalizations for worsened heart diseases • Emergency room visits for asthma • Premature death	• Cars and trucks, especially diesels • Fireplaces, wood stoves • Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	• Cough, chest tightness • Difficulty taking a deep breath • Worsened asthma symptoms • Lung inflammation	• Formed by chemical reactions of air pollutants in the presence of sunlight; common sources are motor vehicles, industries, and consumer products
Carbon Monoxide (CO)	• Chest pain in heart patients • Headaches, nausea • Reduced mental alertness • Death at very high levels	• Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen Dioxide (NO_2)	• Increased response to allergens	• See CO sources
Toxic Air Contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks, especially diesels • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

The California Clean Air Act (CCAA) provides SDAPCD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. Examples of this would be motor vehicles at an intersection, a mall, and on highways. The SDAPCD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the ARB.

4.2.3.2 Climate and Meteorology

Air quality in the SDAB is affected by various emissions sources (e.g., mobile, industry) and by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall. Climate in the SDAB is determined by its terrain and geographical location. The boundaries of the SDAB are contiguous with the political boundaries of San Diego County. The County of San Diego encompasses

approximately 4,260 square miles and is bounded on the north by Orange and Riverside Counties, on the east by Imperial County, on the west by the Pacific Ocean, and on the south by the Mexican State of Baja California. The County is divided by the Laguna Mountain Range which runs approximately parallel to the coast about 45 miles inland and separates the coastal area from the desert portion of the County. The Laguna Mountains have peaks reaching over 6,000 feet, with the highest point in the County being Hot Springs Mountain rising to 6,533 feet. The coastal region is made up of coastal terraces that rise from the ocean into wide mesas, which then, moving farther east, transition into the Laguna Foothills. Farther east, the topography gradually rises to the rugged mountains. On the east side, the mountains drop off rapidly to the Anza-Borrego Desert, which is characterized by several broken mountain ranges with desert valleys in between. To the north of the County are the Santa Ana Mountains, which run along the coast of Orange County, turning east to join with the Laguna Mountains near the San Diego-Orange County border.

The climate of the SDAB, as with all of Southern California, is largely dominated by the strength and position of the semi-permanent high-pressure system over the Pacific Ocean, known as the Pacific High. This high-pressure ridge over the West Coast often creates a pattern of late-night and early-morning low clouds, hazy afternoon sunshine, daytime onshore breezes, and little temperature variation year round. The climatic classification for San Diego is a Mediterranean climate, with warm, dry summers and mild, wet winters. Average annual precipitation ranges from approximately 10 inches on the coast to over 30 inches in the mountains to the east (the desert regions of San Diego County generally receive between 4 and 6 inches per year).

The annual average temperature varies little throughout the SDAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the project site is the El Cajon Station.[2] The monthly average maximum temperature recorded at this station from November 1979 to June 2016 ranged from 69.3°F in December to 88.9°F in August, with an annual average maximum of 77.9°F. The monthly average minimum temperature recorded at this station ranged from 41.3°F in December to 64.2°F in August, with an annual average minimum of 52.4°F. December is typically the coldest month, and August is typically the warmest month in this area of the SDAB.

The majority of annual rainfall in the SDAB occurs between November and March. Summer rainfall is minimal and is generally limited to scattered thunder showers in coastal regions and slightly heavier showers in the eastern portion of the SDAB and along the coastal side of the mountains. The El Cajon climatological station monitored precipitation from November 1979 to June 2016. Average monthly rainfall measured in El Cajon during that period varied from 0.63 inch or less between May and October to 2.75 inches in February, with an annual total of 12.40 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The favorable climate of San Diego also works to create air pollution problems. Sinking, or subsiding air, from the Pacific high pressure creates a temperature inversion, known as a subsidence inversion, which acts as a lid to vertical dispersion of pollutants. Weak summertime pressure

[2] Western Regional Climate Center. El Cajon, California (042706). Website: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2706 (accessed September 19, 2017).

gradients further limit horizontal dispersion of pollutants in the mixed layer below the subsidence inversion. Poorly dispersed anthropogenic emissions combined with strong sunshine leads to photochemical reactions, which results in the creation of ozone at this surface layer.

Daytime onshore flow (i.e., sea breeze) and nighttime offshore flow (i.e., land breeze) are quite common in Southern California. This leads to emissions being blown out to sea at night and returning to land the following day. Under certain conditions, this atmospheric oscillation results in the offshore transport of air from the Los Angeles region to San Diego County, which often results in high ozone concentrations being measured at San Diego County air pollution monitoring stations. Transport of air pollutants from Los Angeles to San Diego has also been shown to occur aloft within the stable layer of the elevated subsidence inversion. In this layer, removed from fresh emissions of oxides of nitrogen, that would scavenge and reduce ozone concentrations, high levels of ozone are transported into San Diego County. The prevailing wind direction in the City is westerly for 11 months of the year; in August, the prevailing wind is southeasterly to east-southeasterly.

4.2.3.3 Air Pollution Constituents and Attainment Status

The ARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The ARB has divided the State into 15 air basins, based on meteorological and topographical factors of air pollution. Data collected at these stations are used by the ARB and EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified, based on air quality data for the most recent three calendar years compared with the AAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards. The four designations are defined as follows:

- Nonattainment: Assigned to areas where monitored pollutant concentrations consistently violate the standard in question, and are imposed with additional restrictions as required by the EPA.
- Maintenance: Assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- Attainment: Assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- Unclassified: Assigned to areas where data are insufficient to determine whether a pollutant is violating the standard in question.

Table 4.2.C lists the attainment status for criteria pollutants in the SDAB.

Ozone. O_3 (smog) is formed by photochemical reactions between oxides of nitrogen and reactive organic gases. Ozone is a pungent, colorless gas typical of Southern California smog. Elevated ozone concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. Ozone levels peak during summer and early fall. The entire SDAB is designated as a nonattainment area for the State 1-hour and 8-hour ozone standards. The EPA has officially

designated the status for the Basin regarding the 8-hour ozone standard as "Extreme," which means the SDAB has until 2024 to attain the federal 8-hour O_3 standard.

Table 4.2.C: Attainment Status of Criteria Pollutants in the San Diego Air Basin

Pollutant	State	Federal
O_3 1-hour	Serious Nonattainment	N/A
O_3 8-hour	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment/Unclassified
$PM_{2.5}$	Nonattainment	Attainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Unclassified
SO_2	Attainment	Attainment
All others	Attainment/Unclassified	Attainment/Unclassified

Source: Air Pollution Control District (2017), Website: http://www.sdapcd.org/content/sdc/apcd/en/air-quality-planning/attainment-status.html

ARB = California Air Resources Board
CO = carbon monoxide
N/A = not applicable
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matte less than 2.5 microns in diameter
SO_2 = sulfur dioxide

Carbon Monoxide. CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairment to central nervous system functions. The entire SDAB is in attainment for the State standards for CO. The SDAB is designated as an "Attainment/Maintenance" area under the federal CO standards.

Nitrogen Oxides. Nitrogen dioxide (NO_2), a reddish-brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NOx. NOx is a primary component of the photochemical smog reaction. It also contributes to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire Basin is designated as Attainment for the State NO_2 standard and as an "Attainment/Maintenance" area under the federal NO_2 standard.

Sulfur Dioxide. SO_2 is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire SDAB is in attainment for both federal and State SO_2 standards.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead.

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles, PM_{10}, derive from a variety of sources, including

windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle ($PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The entire SDAB is a nonattainment area for both federal and State $PM_{2.5}$ standards. The SDAB is also a nonattainment area for State PM_{10} standards, and Attainment/Maintenance for federal PM_{10} standards.

Reactive Organic Compounds. Reactive organic compounds (ROCs), also known as reactive organic gases (ROGs) and volatile organic compounds (VOCs), are formed from combustion of fuels and evaporation of organic solvents. ROCs are not defined criteria pollutants but are a prime component of the photochemical smog reaction. Consequently, ROCs accumulate in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower.

Sulfates. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The entire SDAB is in attainment for the State standard for sulfates.

Hydrogen Sulfide. Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance. The entire SDAB is in attainment for the State standard for H_2S.

Visibility-Reducing Particles. Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consist of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition and can be made up of many different materials such as metals, soot, soil, dust, and salt. The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. The entire SDAB is unclassified for the State standard for visibility-reducing particles.

4.2.3.4 Local Air Quality

The SDAPCD, together with the ARB, maintains ambient air quality monitoring stations in the SDAB. The air quality monitoring station closest to the project site is the El Cajon-Floyd Smith station, and its air quality trends are representative of the ambient air quality in the project area. The pollutants monitored at this station are O_3, PM_{10}, $PM_{2.5}$, and NO_2 and are shown in Table 4.2.D. CO and SO_2 are not monitored at this station. Values for CO are from 2011–2012 at the El Cajon-Redwood Avenue Station, and values for SO_2 are from 2011–2013 at the El Cajon-Redwood Avenue Station. The ambient air quality data in Table 4.2.D show that SO_2, CO, NO_2, and PM_{10} levels stay below the relevant State standards, and CO, PM_{10}, and NO_2 stay below relevant federal standards. O_3 and $PM_{2.5}$ levels occasionally exceed both State and federal standards.

4.2.4 Regulatory Setting

4.2.4.1 Federal Policies and Regulations

Federal Clean Air Act. Pursuant to the Federal Clean Air Act (CAA) of 1970, the EPA established national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA.

The EPA has designated the San Diego Association of Governments (SANDAG) as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the SDAB.

The EPA established new national air quality standards for ground-level ozone and fine particulate matter in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the CAA, as applied in setting the new public health standards for ozone and particulate matter, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the United States Supreme Court upheld the way the government sets air quality standards under the CAA. The Court unanimously rejected industry arguments that the EPA must consider financial costs as well as health benefits in writing standards. The justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for ozone and soot in 1997. Nevertheless, the court threw out the EPA's policy for implementing new ozone rules, saying that the agency ignored a section of the law that restricts its authority to enforce such rules.

Table 4.2.D: Ambient Air Quality Monitored at the El Cajon-Floyd Smith Station

Pollutant	Standard	2014	2015	2016
Carbon Monoxide (CO)[a]				
Maximum 8-hour concentration (ppm)		1.46[b]	1.86[c]	*
Number of days exceeded:	State: ≥ 9.0 ppm	0[b]	0[c]	*
	Federal: ≥ 9 ppm	0[b]	0[c]	*
Ozone (O_3)				
Maximum 1-hour concentration (ppm)		0.083	0.082	0.096
Number of days exceeded:	State: > 0.09 ppm	0	0	1
Maximum 8-hour concentration (ppm)		0.075	0.067	0.077
Number of days exceeded:	State: > 0.07 ppm	2	0	3
	Federal: > 0.07 ppm	2	0	3
Coarse Particulates (PM_{10})				
Maximum 24-hour concentration (µg/m^3)		33	48	39
Number of days exceeded:	State: > 50 µg/m^3	0	0	0
	Federal: > 150 µg/m^3	0	0	0
Annual arithmetic average concentration (µg/m^3)		18.3	22.3	20.0
Exceeded for the year:	State: > 20 µg/m^3	No	Yes	No
Fine Particulates ($PM_{2.5}$)				
Maximum 24-hour concentration (µg/m^3)		13.9	24.7	19.3
Number of days exceeded:	Federal: > 35 µg/m^3	0	0	0
Annual arithmetic average concentration (µg/m^3)		*	*	*
Exceeded for the year:	State: > 12 µg/m^3	Yes	Yes	Yes
	Federal: > 15 µg/m^3	*	Yes	Yes
Nitrogen Dioxide (NO_2)				
Maximum 1-hour concentration (ppm)		0.057	0.059	0.057
Number of days exceeded:	State: > 0.18 ppm	0	0	0
	Federal: > 0.10 ppm	0	0	0
Annual arithmetic average concentration (ppm)		*	*	*
Exceeded for the year:	State: > 0.030 ppm	*	*	*
	Federal: > 0.053 ppm	*	*	*
Sulfur Dioxide (SO_2)[a]				
Maximum 24-hour concentration (ppm)		0.001[b]	0.001[c]	0.001[d]
Number of days exceeded:	State: > 0.04 ppm	0[b]	0[c]	0[d]

Sources: EPA and ARB websites: http://www.epa.gov/airdata/ad_maps.html and www.arb.ca.gov/adam/welcome.html. Also https://www.arb.ca.gov/adam/topfour/topfourdisplay.php.

µg/m^3 = micrograms per cubic meter
EPA = United States Environmental Protection Agency
ppm = parts per million
ARB = California Air Resources Board
N/A = data not available

* = insufficient data available to determine the value.
[a] values from El Cajon- Redwood Ave Station
[b] values for 2011
[c] values for 2012
[d] values for 2013

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level ozone standard. The EPA issued the proposed rule implementing the 8-hour ozone standard in April 2003. The EPA completed final 8-hour nonattainment status on April 15, 2004. The EPA revoked the 1-hour ozone standard on June 15, 2005, and lowered the 8-hour O_3 standard from 0.08 ppm to 0.075 ppm on April 1, 2008.

The EPA issued the final $PM_{2.5}$ implementation rule in fall 2004. The EPA lowered the 24-hour $PM_{2.5}$ standard from 65 to 35 µg/m^3 and revoked the annual PM_{10} standard on December 17, 2006. The EPA issued final designations for the 2006 24-hour $PM_{2.5}$ standard on December 12, 2008.

4.2.4.2 State Policies and Regulations

California Clean Air Act. In 1988, the CCAA required that all air districts in the State endeavor to achieve and maintain CAAQS for carbon monoxide, ozone, sulfur dioxide, and nitrogen dioxide by the earliest practical date. The CCAA provides air districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emissions sources. Each nonattainment air district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how an air district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

California Air Resources Board. The ARB is part of the California Environmental Protection Agency (CalEPA) and is responsible for coordination and administration of State and federal air quality programs in California. The main goals of the ARB include protecting the public from toxic air contaminants, providing solutions for complying with air pollution rules and regulations, and attaining and maintaining healthy air quality for the State. The ARB also works with both the federal government and local air quality districts to develop California's State Implementation Plan (SIP).

4.2.4.3 Local and Regional Policies and Regulations

San Diego County Air Pollution Control District. The SDAPCD is the local agency responsible for the administration and enforcement of air quality regulations for the SDAB, which includes all of San Diego County. The SDAPCD regulates most air pollutant sources, except for motor vehicles, marine vessels, aircraft, and agricultural equipment, which are regulated by the ARB or EPA. State and local government projects, as well as projects proposed by the private sector, are subject to SDAPCD requirements if the sources are regulated by the SDAPCD. Additionally, the SDAPCD, along with the ARB, maintains and operates ambient air quality monitoring stations at numerous locations throughout San Diego County. These stations are used to measure and monitor ambient criteria and toxic air pollutant levels.

San Diego Association of Governments. SANDAG is the San Diego region's primary public planning, transportation, and research agency, providing the public forum for regional policy decisions about growth, transportation planning and construction, environmental management, housing, open space, energy, public safety, and binational topics. The SDAPCD and SANDAG are responsible for developing and implementing the clean air plan for attainment and maintenance of the AAQS in the SDAB.

Regional Air Quality Strategy. The Regional Air Quality Strategy (RAQS) was adopted by the SDAPCD Board in 1992, and was most recently revised in 2016. The RAQS rely on information from the ARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County, to project future emissions and then establish the strategies necessary for the reduction of emissions through regulatory controls. The ARB mobile source emissions projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the development of their general plans. As such, projects that propose development consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development that is less dense than anticipated within the general plan, the project would likewise be consistent with the RAQS. If the project proposes development that is greater than that anticipated in the general plan and SANDAG's growth projections, the project might be in conflict with the RAQS and might have a potentially significant impact related to air quality.

Air Quality Management Plan. The applicable air quality plans are the SIP and RAQS. As discussed above, the SIP includes strategies and tactics to be used to attain and maintain acceptable air quality in the SDAB. The RAQS is a separate document that contains a list of strategies to maintain acceptable air quality. The SIP relies on the same information from SANDAG to develop emissions inventories and emission reduction strategies that are included in the attainment demonstration for the SDAB. The SIP also includes rules and regulations that have been adopted by the SDAPCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project's emissions would have the potential to conflict with the SIP and thereby hinder attainment of the NAAQS for O_3.

Measures to Reduce Particulate Matter in San Diego County Report. This report is based on particulate matter reduction measures adopted by the ARB. The SDAPCD evaluated the ARB's list of measures and found the majority were already being implemented in the County. As a result of the evaluation, the SDAPCD proposed measures for further evaluation to reduce particulate matter emissions from residential wood combustion and from fugitive dust from construction sites and unpaved roads.

4.2.4.4 Proposed Sustainable Santee Plan Goals and Measures

The following proposed Goals and Measures are applicable to the analysis of Air Quality.

- *Community GHG Reduction Strategies and Emission Reductions*
  - Goal 1: Increase Energy Efficiency in Existing Residential Units
    - 1.1: Energy Efficiency Education and Best Practices
    - 1.2: Increase Community Participation in Existing Energy Efficiency Opportunities
    - 1.3: Home Energy Evaluations (Supporting Measure)
    - 1.4: Residential Home Energy Renovations
  - Goal 2: Increase Energy Efficiency in New Residential Units
    - 2.1: Exceed Energy Efficiency Standards

- Goal 3: Increase Energy Efficiency in Existing Commercial Units
  - 3.1: Energy Efficiency Training, Education, and Recognition in the Commercial Sector
  - 3.2: Increase Business Participation in Existing Energy Efficiency Programs
  - 3.3: Non-Residential Energy Audits
  - 3.4: Non-Residential Retrofits.
- Goal 4: Increase Energy Efficiency in New Commercial Units
  - 4.1: Exceed Energy Efficiency Standards
- Goal 5: Increase Energy Efficiency through Water Efficiency
  - 5.1: Support Water Efficiency through Enhanced Implementation of SB X7-7
  - 5.2: Exceed Water Efficiency Standards
- Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect
  - 6.1: Tree Planting for Shading and Energy Efficiency
  - 6.2: Light-reflecting Surfaces for Energy Efficiency
  - 6.3: Carbon Sequestration through Preservation of Natural Lands
- Goal 7: Decrease Greenhouse Gas Emissions through Reducing Vehicle Miles Traveled
  - 7.1: Encourage Non-Motorized Transportation Options
  - 7.2: Create Bicycle Master Plan to Expand Bike Routes around the City
  - 7.3: Promote Ride Sharing Programs within Businesses
  - 7.4: Electrify the Fleet
  - 7.5: Complete Streets and Safe Routes to Schools Programs
  - 7.6: School Bus Program
- Goal 8: Decrease Greenhouse Gas Emissions through Reducing Solid Waste Generation
  - 8.1: Reduce Waste to Landfills
- Goal 9: Decrease Greenhouse Gas Emissions through Increasing Clean Energy Use
  - 9.1: Promote Clean Energy
  - 9.2: Community Choice Aggregation Program
- Goal 10: Decrease GHG Emissions from New Development through Performance Standards
  - 10.1: Screening Tables

- *Municipal GHG Reduction Strategies and Emission Reductions*
  - Goal M-1: Participate in Education, Outreach, and Planning Efforts for Energy Efficiency
    - M-1.1: Increase Energy Savings through the SDG&E Energy Efficiency Partnership

- Goal M-2: Increase Energy Efficiency in Municipal Buildings
  - M-2.1: Conduct Municipal Energy Audit
  - M-2.2: Procurement Policy for Energy Efficient Equipment
  - M-2.3: Install Cool Roofs
  - M-2.4: Retrofit HVAC and Water Pump Equipment
- Goal M-3: Increase Energy Efficiency in Community Buildings and Infrastructure
  - M-3.1: Traffic Signal and Outdoor Lighting Retrofits
  - M-3.2: Upgrade or Incorporate Water-Conserving Landscape
  - M-3.3: Plant Trees for Shade and Carbon Sequestration
- Goal M-4: On-Road Energy Efficiency Enhancements; Employee Commute and Vehicle Fleet
  - M-4.1: Employee Carpools
  - M-4.2: Purchase of Hybrid or Electric Vehicles
  - M-4.3: Replace or Supplement Vehicle Fleet with Hybrid/Electric Vehicles
  - M-4.4: Install E-Vehicle Chargers
- Goal M-5: Reduce Energy Consumption in the Long Term
  - M-5.1: Ongoing Actions and Projected Reductions

Potential Impacts

The Sustainable Santee Plan is a plan to reduce GHG emissions on Santee consistent with State legislation and regulation. The plan consists of 10 Goals with associated Measures designed to reduce Community-wide GHG emissions and 5 Goals and associated Measures designed to reduce Municipal GHG emissions (a subset of Community emission). GHG includes some of the Environmental Protection Agency (EPA) designated criteria air pollutants such as Nitrogen Dioxide, Sulfur Dioxide, and Carbon Monoxide. The plan with its Goals and Measures will reduce GHG emissions and thereby improve air quality.

4.2.5 Impact Significance Criteria

The following thresholds of significance are based on Appendix G of the *CEQA Guidelines*. Based on these thresholds, implementation of the proposed project would have a significant adverse impact with respect to air quality if it would:

Threshold 4.2.1: Conflict with or obstruct implementation of the applicable air quality plan.

Threshold 4.2.2: 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.

Threshold 4.2.3: Expose sensitive receptors to substantial pollutant concentrations.

Threshold 4.2.4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The IS, provided in Appendix A, has determined that the proposed project would not result in impacts associated with **Thresholds 4.2.2** through **Threshold 4.2.4**. As a result, these thresholds are not considered any further in the analyses of the potential impacts of the proposed project related to air quality.

4.2.6 Project Impacts

Threshold 4.2.1: *Conflict with or obstruct implementation of the applicable air quality plan?*

The applicable air quality plans are the SIP and RAQS. As discussed above, the SIP includes strategies and tactics to be used to attain and maintain acceptable air quality in the SDAB. The RAQS is a separate document that contains a list of strategies to maintain acceptable air quality. Consistency with the RAQS is typically determined by two standards. The first standard is whether the proposed project would exceed assumptions contained in the RAQS. The second standard is whether the proposed project would increase the frequency or severity of existing air quality violations, contribute to new violations, or delay the timely attainment of air quality standards or interim reductions as specified in the RAQS.

The RAQS and SIP are intended to address cumulative impacts in the SDAB based on future growth predicted by SANDAG in the 2030 Regional Growth Forecast Update. SANDAG uses growth projections from the local jurisdictions' adopted General Plans; therefore, development consistent with the applicable General Plan would be generally consistent with the growth projections in the air quality plans.

The proposed project would implement goals and measures designed to increase energy efficiency and reduce VMT. The Sustainable Santee Plan includes Community GHG Reduction Strategies and Emissions Reductions, and Municipal GHG Reduction Strategies and Emission Reductions. While these reduction strategies were formulated to reduce greenhouse gases, they also act to improve overall air quality by reducing emissions of criteria pollutants.

The following are potential short-term and long-term air quality impacts that would result from implementation of the Sustainable Santee Plan.

4.2.6.1 Short-Term Construction Air Quality Impacts

Implementation of the proposed project could result in construction of energy-generating facilities such as photovoltaic/solar arrays or installation of cool roofs that would primarily be installed on rooftops of new or existing buildings. It could also result in energy-efficiency retrofits in existing residential, commercial, and municipal buildings throughout the City. However, details of the potential construction activities are unknown. Each individual construction activity associated with future development projects will need to comply with the CEQA.

4.2.6.2 Long-Term Operational Air Quality Impacts

Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any changes related to the proposed project. The citywide energy usage (including electricity and natural gas) and VMT data were obtained from the proposed project and entered in CalEEMod under User Defined Industrial land use of one unit size. The countywide off-road emissions were calculated from OFFROAD2007 model and proportioned to citywide emissions based on relevant indicator data, as described in the Sustainable Santee Plan. Table 4.2.E presents a summary of the peak daily emissions for the Sustainable Santee Plan baseline year 2005, forecast year 2035, and changes in emissions between baseline year and forecast years. The CalEEMod and OFFROAD2007 model outputs and calculations are provided in Appendix C, Air Quality Analysis Memo.

Table 4.2.E: Regional Operational Emissions

Source	Pollutant Emissions, pounds per day					
	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Existing Land Use Emissions (2005)						
Energy	21.6	196.0	164.6	1.2	14.9	14.9
Mobile	1,278.3	3,711.0	6,974.2	12.9	764.1	215.0
Off-Road	729.4	2,220.8	5,293.5	18.3	145.0	—[1]
Total Existing Emissions	**2,029.3**	**6,127.8**	**12,432.4**	**32.4**	**924.0**	**229.9**
General Plan Emissions (2035)						
Energy	25.7	233.9	196.5	1.4	17.8	17.8
Mobile	965.5	4,638.5	5,569.5	16.3	1,329.6	361.9
Off-Road	688.9	268.3	5,946.7	7.5	23.2	—[1]
Total General Plan (2035) Emissions	**1,680.1**	**5,140.7**	**11,712.7**	**25.3**	**1,370.6**	**379.7**
Changes in Emissions with the Sustainable Santee Plan (2035)						
Energy	-8.05	-73.17	-61.46	-0.44	-5.56	-5.56
Mobile	-343.66	-1,651.11	-982.51	-5.81	-473.28	-128.83
Off-Road	0.00	0.00	0.00	0.00	0.00	—[1]
Changes to Emissions Totals	**-351.71**	**-1,724.28**	**-1,043.97**	**-6.25**	**-478.84**	**-134.40**
SDAPCD Thresholds	**75.0**	**250.0**	**550.0**	**250.0**	**100.0**	**55.0**
Significant?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (December 2018).

Note: [1] Assumes all particulate matter emissions from off-road equipment are PM_{10}.

CO = carbon monoxide
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gas
SOx = sulfur oxides

Table 4.2.E shows that the Sustainable Santee Plan would decrease all criteria air pollutants emissions from both baseline and buildout of General Plan and thus would not exceed the corresponding SDAPCD daily emission thresholds for any criteria pollutants.

The proposed project would reduce regional criteria air pollutants emissions and is not expected to result in any long-term regional air quality impacts. Therefore, the project will not conflict with the

RAQS or SIP, and no significant impact will result with respect to implementation of the air quality plan. The Sustainable Santee Plan is an implementation tool of the City's General Plan, does not change the City's population, is considered to be within the SANDAG growth projections, and thus would be consistent with the SIP and RAQS. Therefore, implementation of the Sustainable Santee Plan would not conflict with or obstruct implementation of the applicable air quality plan. Impacts would be less than significant.

4.2.7 Level of Significance Prior to Mitigation

All potential impacts related to air quality would be less than significant.

4.2.8 Mitigation Measures

The proposed project would not result in any significant adverse impacts related to air quality. No mitigation is required.

4.2.9 Level of Significance after Mitigation

There would be no significant unavoidable adverse impacts of the proposed project related to air quality.

4.2.10 Cumulative Impacts

The analysis of air quality is cumulative in nature and no separate analysis is required. Cumulative air quality impacts are less than significant.

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