4.2 Air Quality

This section describes the existing air quality conditions, identifies associated regulatory requirements, evaluates potential impacts, and establishes mitigation measures related to implementation of the Pacifica Project (proposed project or project). The following analysis is based on the Air Quality and Greenhouse Gas Emissions Technical Report prepared by Dudek in April 2023, which is included as Appendix C to this environmental impact report (EIR).

4.2.1 Existing Conditions

Environmental Setting

The project site is located within the San Diego Air Basin (SDAB) and is subject to San Diego Air Pollution Control District (SDAPCD) guidelines and regulations. The SDAB is 1 of 15 air basins that geographically divide California. The SDAB lies in the southwest corner of California. The SDAB comprises the entire San Diego region and covers approximately 4,260 square miles (Appendix C).

Climate and Topography

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted. Meteorological and topographical conditions, however, are also important. Factors such as wind speed and direction, air temperature gradients and sunlight, and precipitation and humidity interact with physical landscape features to determine the movement and dispersal of air pollutants. Meteorological and topographical factors that affect air quality in the SDAB are described below.

Climate within the SDAB area often varies dramatically over short geographical distances, with cooler temperatures on the western coast gradually warming to the east as prevailing winds from the west heats up. Most of Southern California is dominated by high-pressure systems for much of the year, which keeps San Diego County (County) mostly sunny and warm. Typically, during the winter months, the high-pressure system drops to the south and brings cooler, moister weather from the north. It is common for inversion layers to develop within high-pressure areas, which mostly define pressure patterns over the SDAB. These inversions are caused when a thin layer of atmosphere increases in temperature with height. An inversion acts like a lid preventing vertical mixing of air through convective overturning.

The topography in the San Diego region varies greatly, from beaches on the west to mountains and desert on the east; along with local weather, the topography influences the dispersal and movement of pollutants in the SDAB. The mountains to the east prevent dispersal of pollutants in that direction and help trap them in inversion layers.

The interaction of ocean, land, and the Pacific High-Pressure Zone maintains clear skies for much of the year and influences the direction of prevailing winds (westerly to northwesterly). Local terrain is often the dominant factor inland, and winds in inland mountainous areas tend to blow through the valleys during the day and down the hills and valleys at night.

Site-Specific Meteorological Conditions

The average temperature ranges from mid-40°F to high 90°F. Most of the region's precipitation falls from November to April, with infrequent (approximately 10%) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches; the amount increases with elevation as moist air is lifted over the mountains (Appendix C).

Air Pollution Climatology

The SDAB is currently classified as a federal nonattainment area for 8-hour ozone (O_3) and a state nonattainment area for coarse particulate matter (particulate matter less than or equal to 10 microns in diameter; PM_{10}), fine particulate matter (particulate matter less than or equal to 2.5 microns in diameter; $PM_{2.5}$), and O_3.

The SDAB lies in the southwest corner of California, comprises the entire San Diego region, covers 4,260 square miles, and is an area of high air pollution potential. The SDAB experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The SDAB experiences frequent temperature inversions. Subsidence inversions occur during the warmer months as descending air associated with the Pacific High-Pressure Zone meets cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. Another type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce O_3, commonly known as smog.

Light daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to carbon monoxide (CO) and oxides of nitrogen (NO_x) emissions. CO concentrations are generally higher in the morning and late evening. In the morning, CO levels are elevated due to cold temperatures and the large number of motor vehicles traveling. Higher CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the SDAB are associated with heavy traffic. Nitrogen dioxide (NO_2) levels are also generally higher during fall and winter days.

Under certain conditions, atmospheric oscillation results in the offshore transport of air from the Los Angeles region to San Diego County. This often produces high O_3 concentrations, as measured at air pollutant monitoring stations within the County. The transport of air pollutants from Los Angeles to San Diego County has also occurred within the stable layer of the elevated subsidence inversion, where high levels of O_3 are transported.

Sensitive Receptors

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems arise when the rate of pollutant emissions exceeds the rate of dispersion.

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution, as identified by the California Air Resources Board (CARB), include children, older adults, and people with cardiovascular and chronic respiratory diseases. According to SDAPCD, sensitive receptors are those who are especially susceptible to adverse health effects from exposure to toxic air contaminants, such as children, the elderly, and the ill. Sensitive receptors include residences, schools (grades kindergarten through 12), libraries, day care centers, nursing homes, retirement homes, health clinics, and hospitals within 2 kilometers of the facility. The closest sensitive receptors to the project site are single-family residences immediately adjacent on the northern and southern boundaries of the site (Appendix C).

Pollutants and Effects

"Criteria air pollutants" are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, NO_2, CO, sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead. These pollutants are discussed in this section. In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly NO_x and volatile organic compounds (VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric O_3) and at the earth's surface in the troposphere.[1] The O_3 that the U.S. Environmental Protection Agency (EPA) and the CARB regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good," O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

Inhalation of O_3 causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms. Exposure to O_3 can reduce the volume of air that the lungs breathe in, thereby causing shortness of breath. O_3 in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. The occurrence and severity of health effects from O_3 exposure vary widely among individuals, even when the dose and the duration of exposure are the same. Research shows adults and children who spend more time outdoors participating in vigorous physical activities are at greater risk from the harmful health effects of O_3 exposure. While there are relatively few studies on the effects of O_3 on children, the available studies show that children are no more or less likely to suffer harmful effects than adults. However, there are a number of reasons why children may be more susceptible to O_3 and other pollutants. Children and teens spend nearly twice as much time outdoors and engaged in vigorous activities as adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults. Also, children are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults. Children, adolescents, and adults who exercise or work outdoors, where O_3 concentrations are the highest, are at the greatest risk of harm from this pollutant.

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO),

1 The troposphere is the layer of the earth's atmosphere nearest to the surface of the earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

which is a colorless, odorless gas. NO_x plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. A large body of health science literature indicates that exposure to NO_2 can induce adverse health effects. The strongest health evidence, and the health basis for the ambient air quality standards for NO_2, results from controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics. In addition, a number of epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO_2 exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher levels of exposure compared to children with lower exposure levels. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease.

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

CO is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen. This interferes with oxygen delivery to the body's organs. The most common effects of CO exposure are fatigue, headaches, confusion and reduced mental alertness, light-headedness, and dizziness due to inadequate oxygen delivery to the brain. For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress. Inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance. Unborn babies whose mothers experience high levels of CO exposure during pregnancy are at risk of adverse developmental effects. Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

Controlled human exposure and epidemiological studies show that children and adults with asthma are more likely to experience adverse responses with SO_2 exposure, compared with the non-asthmatic population. Effects at levels near the 1-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity. Also, exposure at elevated levels of SO_2 (above 1 part per million [ppm]) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality. Older people and people with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most likely to experience these adverse effects.

SO_2 is of concern both because it is a direct respiratory irritant and because it contributes to the formation of sulfate and sulfuric acid in particulate matter. People with asthma are of particular concern, both because they have increased baseline airflow resistance and because their SO_2-induced increase in airflow resistance is greater than in healthy people, and it increases with the severity of their asthma. SO_2 is thought to induce airway constriction via neural reflexes involving irritant receptors in the airways.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) consists of particulate matter that is 10 microns or less in diameter and is about 1/7th the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) consists of particulate matter that is 2.5 microns or less in diameter and is roughly 1/28th the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOCs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

A number of adverse health effects have been associated with exposure to both $PM_{2.5}$ and PM_{10}. For $PM_{2.5}$, short-term exposures (up to 24-hour duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all of the common air pollutants, $PM_{2.5}$ is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide based on the World Health Organization's Global Burden of Disease Project. Short-term exposures to PM_{10} have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits.

Long-term exposure (months to years) to $PM_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. The effects of long-term exposure to PM_{10} are less clear, although several studies suggest a link between long-term PM_{10} exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer.

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including IQ performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Volatile Organic Compounds (VOCs). Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry-cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered toxic air contaminants (TACs).

Sulfates. Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere and can result in respiratory impairment, as well as reduced visibility.

Vinyl Chloride. Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide. Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

Visibility-Reducing Particles. Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$.

Non-Criteria Pollutants

Toxic Air Contaminants (TACs). A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources and locations of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter (DPM). DPM is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$. DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) as a TAC in August 1998 (17 CCR 93000). DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM. To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000. Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies. Those most vulnerable to non-cancer health effects are children whose lungs are still developing and the elderly who often have chronic health problems.

Odorous Compounds. Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Valley Fever. Coccidioidomycosis, more commonly known as "Valley Fever," is an infection caused by inhalation of the spores of the *Coccidioides immitis* fungus, which grows in the soils of the southwestern United States. The fungus is very prevalent in the soils of California's San Joaquin Valley, particularly in Kern County. Kern County is considered a highly endemic county (i.e., more than 20 cases annually of Valley Fever per 100,000 people) based on the incidence rates reported through 2016. The ecologic factors that appear to be most conducive to survival and replication of the spores are high summer temperatures, mild winters, sparse rainfall, and alkaline, sandy soils.

San Diego County (County) is not considered a highly endemic region for Valley Fever, as the latest report from the County of San Diego Health and Human Services Agency Public Health Services indicated the County has 8.3 cases per 100,000 people. In the zip code area of the project site, the case rate is reported as 3.5 cases per 100,000 people.

4.2.2 Regulatory Setting

Federal

The federal air quality standards were developed per the requirements of the federal Clean Air Act, which is a law that was passed in 1970 and further amended in 1990. This law provides the basis for the national air pollution control effort. An important element of the act included the development of National Ambient Air Quality Standards (NAAQS) for major air pollutants.

The Clean Air Act established two types of air quality standards otherwise known as primary and secondary standards. Primary standards set limits for the intention of protecting public health, which includes sensitive populations such as people with asthma, children, and the elderly. Secondary standards set limits to protect public welfare to include the protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan (SIP) that demonstrates how those areas will attain the standards within mandated time frames.

State

The California Clean Air Act was adopted in 1988 and establishes the state's air quality goals, planning mechanisms, regulatory strategies, and standards of progress.

Under the California Clean Air Act, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB is responsible for ensuring implementation of the California Clean Air Act, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products. Pursuant to the authority granted to it, CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. Table 4.2-1 identifies both the NAAQS and CAAQS.

Table 4.2-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard[f]
	8 hours	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)[f]	
NO_2[g]	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[h]	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$[i]	24 hours	—	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[j,k]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[k]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 μg/m³)	—	—
Sulfates	24- hours	25 μg/m³	—	—
Visibility reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%	—	—

Source: CARB 2016.

Notes: O_3 = ozone; ppm = parts per million; μg/m³ = micrograms per cubic meter; — = not available or applicable; NO_2 = nitrogen dioxide; CO = carbon monoxide; SO_2 = sulfur dioxide; mg/m³ = milligrams per cubic meter; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; PST = Pacific Standard Time.

[a] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended 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. The California Ambient Air Quality Standards (CAAQS) are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 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/m³ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] 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.

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

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

[f] On October 1, 2015, the primary and secondary NAAQS for O_3 were lowered from 0.075 ppm to 0.070 ppm.

[g] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of 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.

[h] 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 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[i] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/m³ to 12.0 μg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/m³, as was the annual secondary standard of 15 μg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[j] CARB has identified lead and vinyl chloride as toxic air contaminants (TACs) 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.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m³ as a quarterly average) remains in effect until 1 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 standard are approved.

Ambient Air Quality Monitoring Data

SDAPCD operates a network of ambient air monitoring stations throughout the County, which measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. SDAPCD monitors air quality conditions at 10 locations throughout the basin. The Marine Corps Base Camp Pendleton (Camp Pendleton) monitoring station represents the closest monitoring station to the project site for concentrations for O_3, $PM_{2.5}$, and NO_2. The Escondido monitoring station is the closest monitoring station for CO. The closest monitoring station for SO_2 and PM_{10} is the El Cajon monitoring station. Ambient concentrations of pollutants from 2019 through 2021 are presented in Table 4.2-2.

Table 4.2-2. Local Ambient Air Quality Data

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2019	2020	2021	2019	2020	2021
Ozone (O_3)										
Camp Pendleton	ppm	Maximum 1-hour concentration	State	0.09	0.075	0.094	0.074	0	0	0
	ppm	Maximum 8-hour concentration	State	0.070	0.065	0.074	0.059	0	3	0
			Federal	0.070	0.064	0.074	0.059	0	3	0
Nitrogen Dioxide (NO_2)										
Camp Pendleton	ppm	Maximum 1-hour concentration	State	0.18	0.053	0.058	0.059	*0*	*0*	*0*
			Federal	0.100	0.053	0.058	0.059	*0*	*0*	*0*
	ppm	Annual concentration	State	0.030	0.004	0.005	0.005	0	0	0
			Federal	0.053	0.004	0.005	0.005	0	0	0
Carbon Monoxide (CO)										
Escondido-Rancho Carmel Drive	ppm	Maximum 1-hour concentration	State	20	4.1	3.3	3.0	0	0	0
			Federal	35	4.1	3.3	3.0	0	0	0
	ppm	Maximum 8-hour concentration	State	9.0	2.5	1.7	1.8	0	0	0
			Federal	9	2.5	1.7	1.8	0	0	0
Sulfur Dioxide (SO_2)										
El Cajon	ppm	Maximum 1-hour concentration	Federal	0.075	0.001	0.002	0.002	0	0	0
	ppm	Maximum 24-hour concentration	State	0.04	0.000	0.000	0.000	0	0	0
			Federal	0.140	0.000	0.000	0.000	0	0	0
	ppm	Annual concentration	Federal	0.030	0.000	0.000	0.000	0	0	0
Coarse Particulate Matter (PM_{10})[a]										
El Cajon	μg/m³	Maximum 24-hour concentration	State	50	38	55	40	0	0	0
			Federal	150	38	55	40	0	0	0
	μg/m³	Annual concentration	State	20	19.3	23.5	22.0	—	—	—

Table 4.2-2. Local Ambient Air Quality Data

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2019	2020	2021	2019	2020	2021
Fine Particulate Matter ($PM_{2.5}$)[a]										
Camp Pendleton	μg/m³	Maximum 24-hour concentration	Federal	35	13.8	61.1	20.7	0 (0)	0 (0)	0 (0)
	μg/m³	Annual concentration	State	12	—	—	—	—	—	—
			Federal	12.0	—	—	9.5	—	—	—

Sources: CARB 2022; EPA 2022.

Notes: ppm = parts per million; μg/m³ = micrograms per cubic meter; — = not available or applicable; .

Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.

Exceedances of federal and state standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour O_3, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.

The Camp Pendleton monitoring station is located at 21441-W B Street, Oceanside, California.

The Escondido monitoring station is located at 600 East Valley Parkway, Escondido, California.

The El Cajon monitoring station is located at 10537 Floyd Smith Drive, El Cajon, California.

The San Diego – Rancho Carmel Drive monitoring station is located at 11403 Rancho Carmel Drive, San Diego, California.

[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

SDAB Attainment Designation

Pursuant to the 1990 Clean Air Act Amendments, EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. As previously discussed, these standards are set by EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable."

The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on the CAAQS rather than the NAAQS.

Table 4.2-3 summarizes SDAB's federal and state attainment designations for each of the criteria pollutants.

Table 4.2-3. SDAB Attainment Designation

Pollutant	Federal Designation	State Designation
O_3 (8-hour)	**Nonattainment**	**Nonattainment**
O_3 (1-hour)	Attainment[a]	**Nonattainment**
CO	Attainment	Attainment
PM_{10}	Unclassifiable[b]	**Nonattainment**
$PM_{2.5}$	Attainment	**Nonattainment**[c]
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen sulfide	(No federal standard)	Unclassified
Visibility-reducing particles	(No federal standard)	Unclassified
Vinyl chloride	(No federal standard)	No designation

Sources: SDAPCD 2022.
Notes: SDAB = San Diego Air Basin; O_3 = ozone; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide.
Attainment = meets the standards.
Nonattainment = does not meet the standards.
Unclassified or unclassifiable = insufficient data to classify.

[a] The federal 1-hour standard of 0.12 parts per million (ppm) was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in state implementation plans.

[b] At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

[c] The California Air Resources Board (CARB) has not reclassified the region to attainment yet due to (1) incomplete data, and (2) the use of non-California Approved Samplers (CAS). While data collected does meet the requirements for designation of attainment with federal $PM_{2.5}$ standards, the data completeness requirements for state $PM_{2.5}$ standards substantially exceed federal requirements and mandates and have historically not been feasible for most air districts to adhere to given local resources. The San Diego Air Pollution Control District (SDAPCD) has begun replacing most regional filter-based $PM_{2.5}$ monitors as they reach the end of their useful life with continuous $PM_{2.5}$ air monitors to ensure collected data meets stringent completeness requirements in the future. SDAPCD anticipates these new monitors will be approved as "CAS" monitors once CARB reviews the list of approved monitors, which has not been updated since 2013.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) hazardous air pollutants. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. TAC emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment (HRA) and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

DPM is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases—gas and particle—both of which contribute to health risks. DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM; 17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars, and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000).

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

HRAs are used to estimate health risk impacts to existing sensitive receptors from exposure to TAC emissions from construction of a project. HRAs also predict the potential exposure to future residents of the project from TAC emissions related to motor vehicles. HRA analyses use air dispersion modeling and Hotspots Analysis and Reporting Program Version 2 (HARP2) to evaluate potential health risks associated with a particular project.

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

Local

San Diego Air Pollution Control District

The State of California has 35 specific air districts, which are each responsible for ensuring that the criteria pollutants are below the NAAQS and CAAQS. Air basins that exceed either the NAAQS or the CAAQS for any criteria pollutants are designated as "nonattainment areas" for that pollutant. Currently, there are 15 nonattainment areas for the federal O_3 standard and two nonattainment areas for the $PM_{2.5}$ standard; many areas are in nonattainment for PM_{10} as well. Therefore, California created the California SIP, which is designed to provide control measures needed to attain ambient air quality standards.

SDAPCD is the government agency that regulates sources of air pollution within the County and all cities within. Therefore, SDAPCD developed a Regional Air Quality Strategy (RAQS) to provide control measures to try to achieve attainment status for state O_3 standards, with control measures focused on VOCs and NO_x. Currently, San Diego is in "nonattainment" status for federal and state O_3, and state PM_{10} and $PM_{2.5}$. An attainment plan is available for O_3. The RAQS was adopted in 1992 and was updated in 2016, which was the latest update incorporating minor changes to the prior 2009 update.

The 2016 update mostly summarizes how the 2009 update has lowered NO_x and VOCs emissions, which reduces O_3 and clarifies and enhances emission reductions by introducing for discussion three new VOC and four new NO_x reduction measures. NO_x and VOCs are precursors to the formation of O_3 in the atmosphere. The criteria pollutant standards are generally attained when each monitor within the region has had no exceedances during the previous 3 calendar years.

The RAQS is largely based on population predictions by the San Diego Association of Governments (SANDAG). Projects that produce less growth than predicted by SANDAG would generally conform to the RAQS. Projects that create more growth than projected by SANDAG may create a significant impact if the project produces unmitigable air quality emissions or if the project produces cumulative impacts

In December 2005, SDAPCD prepared a report titled Measures to Reduce Particulate Matter in San Diego County to address implementation of Senate Bill 656 in San Diego County, which required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$ (SDAPCD 2005). In the report, SDAPCD evaluated the implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion; various construction activities including earthmoving, demolition, and grading; bulk material storage and handling; carryout and trackout removal and cleanup methods; inactive disturbed land; disturbed open areas; unpaved parking lots/staging areas; unpaved roads; and windblown dust.

As stated previously, SDAPCD is responsible for planning, implementing, and enforcing the CAAQS and NAAQS in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

Federal Attainment Plans

In December 2016, SDAPCD adopted an update to the Eight-Hour Ozone Attainment Plan for San Diego County (2008 O_3 NAAQS). The 2016 Final Eight-Hour Ozone Attainment Plan for San Diego County indicates that local controls and state programs would allow the region to reach attainment of the federal 8-hour O_3 standard (1997 O_3 NAAQS) by 2018. In this plan, SDAPCD relies on the RAQS to demonstrate how the region will comply with the federal O_3 standard. The RAQS details how the region will manage and reduce O_3 precursors (NO_x and VOCs) by identifying measures and regulations intended to reduce these pollutants. The control measures identified in the RAQS generally focus on stationary sources; however, the emissions inventories and projections in the RAQS address all potential sources, including those under the authority of CARB and EPA. Incentive programs for reduction of emissions from heavy-duty diesel vehicles, off-road equipment, and school buses are also established in the RAQS.

Currently, the County is designated as moderate nonattainment for the 2008 O_3 NAAQS and maintenance for the 1997 O_3 NAAQS. As documented in the 2016 Final Eight-Hour Ozone Attainment Plan for San Diego County, the County has a likely chance of obtaining attainment due to the transition to low emission cars, stricter new source review rules, and continuing the requirement of general conformity for military growth and the San Diego International Airport. SDAPCD will also continue emission control measures including ongoing implementation of existing regulations in O_3 precursor reduction to stationary and area-wide sources, subsequent inspections of facilities and sources, and the adoption of laws requiring Best Available Retrofit Control Technology for control of emissions.

State Attainment Plans

SDAPCD and SANDAG are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The RAQS for the SDAB was initially adopted in 1991 and is updated every 3 years. The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County and the cities in the County, to forecast future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. The CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the County and the cities in the County as part of the development of their General Plans.

On March 9, 2023, SDAPCD adopted the 2022 RAQS. The RAQS plan demonstrates how the San Diego region will further reduce air pollution emissions to meet state health-based standards for ground-level O_3. The 2022 RAQS guides SDAPCD in deploying tools, strategies, and resources to continue reducing pollutants that are precursors to ground-level O_3, including NO_x and VOCs. The 2022 RAQS emphasizes O_3 control measures but also identifies complementary measures and strategies that can reduce emissions of greenhouse gases (GHGs) and particulate matter. It also includes new analyses exploring O_3 and its relationship to public health, mobile sources, under-resourced communities, and GHGs and climate change. Further, the 2022 RAQS identifies strategies to expand SDAPCD regional partnerships, identify more opportunities to engage the public and communities of concern, and integrate environmental justice and equity across all proposed measures and strategies.

In regard to particulate matter emissions reduction efforts, in December 2005, SDAPCD prepared a report titled Measures to Reduce Particulate Matter in San Diego County to address implementation of Senate Bill 656 in San Diego County (Senate Bill 656 required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$). In the report, SDAPCD evaluated the implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion; various construction activities including earthmoving, demolition, and grading; bulk material storage and handling; carryout and trackout removal and cleanup methods; inactive disturbed land; disturbed open areas; unpaved parking lots/staging areas; unpaved roads; and windblown dust.

SDAPCD Rules and Regulations

As stated above, SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD and would apply to the proposed project.

SDAPCD Regulation IV: Prohibitions, Rule 50: Visible Emissions. Prohibits any activity causing air contaminant emissions darker than 20% opacity for more than an aggregate of 3 minutes in any consecutive 60-minute period. In addition, Rule 50 prohibits any diesel pile-driving hammer activity causing air contaminant emissions for a period or periods aggregating more than 4 minutes during the driving of a single pile.

SDAPCD Regulation IV: Prohibitions, Rule 51: Nuisance. Prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property.

SDAPCD Regulation IV: Prohibitions, Rule 55: Fugitive Dust. Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as trackout and carryout onto paved roads beyond a project site.

SDAPCD Regulation IV: Prohibitions, Rule 67.0.1: Architectural Coatings. Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

Oceanside General Plan

The City of Oceanside (City) General Plan Circulation Element (City of Oceanside 2012a) and Land Use Element (City of Oceanside 2002) include various policies related to improving air quality (both directly and indirectly). Applicable policies are discussed below.

Circulation Element

Policy 2.5: The City will strive to incorporate complete streets throughout the Oceanside transportation network which are designed and constructed to serve all users of streets, roads and highways, regardless of their age or ability, or whether they are driving, walking, bicycling, or using transit.

Pedestrian Facilities

Goal 5: Support walking as a primary means of transportation that in turn supports transit and bike options. A positive walking environment is essential for supporting smart growth, mixed land uses, transit-oriented development, traffic calming and reducing traffic congestion and greenhouse gas (GHG) emissions.

Intelligent Transportation System Technologies

Policy 4.1: The City shall encourage the reduction of vehicle miles traveled, reduction of the total number of daily and peak hour vehicle trips, and provide better utilization of the circulation system through development and implementation of TDM [transportation demand management] strategies. These may include, but not limited to, implementation of peak hour trip reduction, encourage staggered work hours, telework programs, increased development of employment centers where transit usage is highly viable, encouragement of ridesharing options in the public and private sector, provision for park-and-ride facilities adjacent to the regional transportation system, and provision for transit subsidies.

Transportation Demand Management

Policy 4.9: The City shall look for opportunities to incorporate TDM [transportation demand management] programs into their Energy Roadmap that contributes to state and regional goals for saving energy and reducing greenhouse gas emissions.

Land Use Element

Bicycle Facilities

Policy A: Development shall provide Class II Bikeways (Bike Lanes) on all secondary, major, and prime arterials.

Policy D: The use of land shall integrate the Bicycle Circulation System with auto, pedestrian, and transit systems:

1. Development shall provide short-term bicycle parking and long-term bicycle storage facilities such as bicycle racks, pedestal posts, and rental bicycle lockers.
2. Development shall provide safe and convenient bicycle access to high activity land uses, such as schools, parks, shopping, employment, and entertainment centers.

Pedestrian

Policy A: The construction of five (5) foot wide sidewalks adjacent to the curb shall be required in all new developments and street improvements.

Energy

Policy A: The City shall encourage the design, installation, and use of passive and active solar collection systems.

Policy B: The City shall encourage the use of energy efficient design, structures, materials, and equipment in all land developments or uses.

Oceanside Climate Action Plan and Energy and Climate Action Element

The City adopted its Climate Action Plan (CAP) on May 8, 2019 (City of Oceanside 2019). The CAP acts as a roadmap to address challenges of climate change within the City and outlines measures the City will take to make progress towards meeting the state's GHG reduction goals. The CAP includes a baseline GHG emissions inventory for 2013; GHG emissions forecasts for 2020, 2030, 2035, 2040, and 2050; local GHG emissions reduction strategies and measures to help the City achieve the statewide targets; and implementation and monitoring mechanisms to ensure the City's measures and targets are achieved. The CAP established local GHG emissions reduction targets for future years as follows:

- By 2020, reduce GHG emissions levels to 5 metric tons carbon dioxide equivalent (MT CO_2e) per capita
- By 2030, reduce GHG emissions levels to 4 MT CO_2e per capita

- By 2040, reduce GHG emissions levels to 3 MT CO_2e per capita
- By 2050, reduce GHG emissions levels to 2 MT CO_2e per capita

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15183.5, the CAP Checklist provides for streamlined review of projects subject to environmental review, offering an alternative to project-specific analysis of GHG emissions impacts.

4.2.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to air quality are based on CEQA Guidelines Appendix G. According to Appendix G, a significant impact related to air quality would occur if the proposed project would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

CEQA Guidelines Appendix G (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or pollution control district may be relied upon to determine whether the proposed project would have a significant impact on air quality.

SDAPCD has not developed thresholds of significance for air quality and health risk; however, SDAPCD has provided emission levels under its permitting authority for new source review for which an air quality impact assessment is triggered. The County has reviewed SDAPCD's trigger levels, as well as EPA rulemaking, and CEQA thresholds adopted by the South Coast Air Quality Management District (SCAQMD) to develop screening level thresholds to assist lead agencies in determining the significance of project-level air quality impacts within the County. The City has chosen to apply the County's screening level thresholds for determining mass daily criteria air pollutant thresholds of significance. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds in Table 4.2-4 are exceeded. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 4.2-4 are exceeded.

Table 4.2-4. Air Quality Significance Thresholds

Construction Emissions	
Pollutant	**Total Emissions (Pounds per Day)**
Respirable Particulate Matter (PM_{10})	100
Fine Particulate Matter ($PM_{2.5}$)	55
Oxides of Nitrogen (NO_x)	250
Sulfur Oxides (SO_x)	250
Carbon Monoxide (CO)	550
Volatile Organic Compounds (VOC)	75*

Operational Emissions			
	Total Emissions		
Pollutant	Pounds per Hour	Pounds per Day	Tons per Year
Respirable Particulate Matter (PM_{10})	—	100	15
Fine Particulate Matter ($PM_{2.5}$)	—	55	10
Oxides of Nitrogen (NO_x)	25	250	40
Sulfur Oxides (SO_x)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	—	3.2	0.6
Volatile Organic Compounds (VOC)	—	75*	13.7

Sources: SDAPCD 2016.
Notes: — = not available or applicable.
* The VOC threshold is based on the threshold of significance for VOCs from the South Coast Air Quality Management District for the Coachella Valley as stated in the San Diego County Guidelines for Determining Significance.

The thresholds listed in Table 4.2-4 represent screening-level thresholds that can be used to evaluate whether project-related emissions could cause a significant impact on air quality. Emissions below the screening-level thresholds would not cause a significant impact. The emissions-based thresholds for O_3 precursors are intended to serve as a surrogate for an “O_3 significance threshold” (i.e., the potential for adverse O_3 impacts to occur). This approach is used because O_3 is not emitted directly, and O_3 levels in ambient air cannot be determined through air quality models or other quantitative methods. For nonattainment pollutants, if emissions exceed the thresholds shown in Table 4.2-4, the proposed project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality.

With respect to odors, SDAPCD Rule 51 (Public Nuisance) prohibits emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of any person. A project that includes a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of off-site receptors.

4.2.4 Impacts Analysis

Would the project conflict with or obstruct implementation of the applicable air quality plan?

SDAPCD and SANDAG are responsible for developing and implementing the clean air plans for attainment and maintenance of the ambient air quality standards in the SDAB—specifically, the SIP and RAQS.[2] The federal O_3 maintenance plan, which is part of the SIP, was last updated in 2020. The SIP includes a demonstration that current strategies and tactics will maintain acceptable air quality in the SDAB based on the NAAQS. The RAQS was initially adopted in 1991 and was most recently updated in 2022. The RAQS outlines SDAPCD’s plans and control measures designed to attain the state air quality standards for O_3. The SIP and RAQS rely on information from CARB and SANDAG, including mobile and area source emissions as well as information regarding projected growth in the County as a whole and the cities in the County, to project future emissions and determine the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the County and the cities in the County as part of

2 For the purpose of this discussion, the relevant federal air quality plan is the O_3 maintenance plan (SDAPCD 2012). The RAQS is the applicable plan for purposes of state air quality planning. Both plans reflect growth projections in the basin.

the development of their General Plans. The 2022 RAQS continues to build upon previous progress to reduce ground-level O_3 but also complements regional actions addressing GHGs and climate change.

If a project involves development that is greater than that anticipated in the local plan and SANDAG's growth projections, the project might be in conflict with the SIP and RAQS and may contribute to a potentially significant cumulative impact on air quality.

The City's General Plan identifies the site as Civic Institution (CI), and the project site is zoned Public/Semipublic (PS). The existing land use designation and zoning allows for few permitted uses, with most uses requiring a use permit. The type of use is focused on public uses, such as hospitals, government offices, and schools. The project approvals would include a General Plan Amendment to revise the land use designation from CI to Medium Density Residential-B (MDB-R). A Zoning Amendment is also proposed to revise the current zoning from PS to Planned Development (PD), with the Pacifica Planned Development Plan serving as the regulating document. The Pacifica Planned Development Plan would result in the development of 164 multifamily residential units.

One measure of determining development consistency is focused on development intensity and attributes such as vehicle trips and vehicle miles traveled, which directly correlate to increases in criteria air pollutants. Based on the City's development code, the CI designation would allow for greater development intensity based on the generation of more vehicle trips and vehicle miles traveled as shown in Table 4.2-5, below. As such, the project would result in less criteria air pollutant emissions, and thus less-intensive uses, than development allowed under the existing CI designation.

Table 4.2-5. Development Intensity Comparison

Development	Land Use Developed	Residents	Employees	Total Vehicle Trips Per Year	Vehicle Miles Traveled
Proposed Project	164 multifamily residential units	469	0	467,200	4,458,040
Existing General Plan Land Use Designation (CI) and Zoning (PS)	Hospital (100 beds)	0	125	720,823	5,644,989
	Government Office (150)	—	250	883,430	6,918,419
	Highschool (1,000 students)	0	91	572,529	4,483,650

Sources: Appendix C.
Note: — = not available or applicable.

Another measure for determining consistency with development is to evaluate whether the population or employment growth is within previous forecasts. As described above, the SIP and RAQS rely on these growth projections to develop control strategies to meet air quality standards.

SANDAG produces a Regional Growth Forecast, which is important for developing regional plans and strategies mandated by federal and state governments, such as the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), the Program EIR for the RTP/SCS, the Air Quality Management Plan, the Federal Transportation Improvement Program, and the Regional Housing Needs Assessment (RHNA). The most recent RTP/SCS was adopted in December 2021 with a planning horizon of 2016 through 2050. The growth forecasts are appended to the RTP/SCS. Appendix F of the 2021 Regional Plan describes the trends in population, housing, and employment. The San Diego region is expected to grow by nearly 437,000 people, and the growth in population will add about 440,000 jobs and more than 280,000 housing units (SANDAG 2021).

The forecast process includes two main phases. The first phase of the forecast is produced using California Department of Finance population projections and rates developed by SANDAG based on historic economic and demographic trends. The size and makeup of the working age population in the region and high labor force participation is used to project future job growth. The projected higher values in working age population, coupled with older residents staying in the labor force longer results in more jobs in the region by the end of the forecast period. Housing units and households in the region were forecasted based on rates developed from historical data as well as assumptions of housing unit development and household formation in the future. The second phase of the forecast allocates the forecasted growth down to the jurisdictions and smaller geographical areas. The subregional forecast distributes growth based on a variety of factors, including available capacity for housing and accessibility to jobs and transportation. SANDAG works with the region's 18 cities, the County, and other agencies that manage land use to understand local land use plans, such as General Plans, community plans, and Specific Plans, as well as constraints to development and already permitted projects to develop the subregional projections for housing and employment. Table 4.2-6 shows the population, housing units, and employment projections for the City and the San Diego region for the 2021 Regional Plan.

Table 4.2-6. Population, Housing, and Employment

Year	City of Oceanside			San Diego Region		
	Population	Housing Units	Employment	Population	Housing Units	Employment
2016	176,666	65,851	47,256	3,309,510	1,190,555	1,646,419
2025	178,385	67,816	48,317	3,470,848	1,288,216	1,761,747
2035	184,283	71,359	49,909	3,620,348	1,409,866	1,921,475
2050	184,283	71,359	50,756	3,746,073	1,471,299	2,086,318
Change in Number (2016–2050)	7,617 (4.3%)	5,508 (8.4%)	3,500 (7.4%)	436,563 (14.2%)	280,744 (23.6%)	439,899 (26.7%)

Source: SANDAG 2021, Appendix F: Regional Growth Forecast and Sustainable Communities Strategy Land Use Pattern.

As shown above, the project is expected to add 469 residents in 164 dwelling units. The added residents would represent approximately 6% of the anticipated population growth and 3% of the housing growth over the RTP/SCS planning horizon. Based on the above information, the increase in population and housing units would be well within the growth projections.

Furthermore, the most recent RHNA from SANDAG stated that Oceanside needs to build 5,443 units from 2021 through 2029 (SANDAG 2020). The City has an allocation of 1,268 very-low, 718 low, 883 moderate, and 2,574 above-moderate income units (SANDAG 2020). The project is expected to bring 164 market-rate dwelling units to market in 2026, which would be within SANDAG's growth projection for housing during the 6th Cycle planning horizon (i.e., April 2021–April 2029). Therefore, the project would not conflict with SANDAG's regional growth forecast for the City.

Overall, the increase in the housing units and associated vehicle source emissions is not anticipated to result in air quality impacts that were not envisioned in the growth projections and RAQS, and the increase in residential units in the region would not obstruct or impede implementation of local air quality plans. Based on the analysis above, implementation of the project would not result in development in excess of that anticipated in local plans or increases in population/housing growth beyond those contemplated by SANDAG. As such, vehicle trip generation and planned development for the project are considered to be anticipated in the SIP and RAQS. Because the proposed land uses and associated vehicle trips are anticipated in local air quality plans, the project would be consistent at a regional level with the underlying growth forecasts in the RAQS. Thus, impacts would be **less than significant.**

Would the project 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?

Construction Emissions

Construction of the proposed project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (vendor and haul truck trips and worker vehicle trips). Construction emissions can vary substantially day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions.

Criteria air pollutant emissions associated with construction activities were quantified using the California Emissions Estimator Model (CalEEMod). Default values provided by the program were used where detailed proposed project information was not available. A detailed depiction of the construction schedule—including information regarding phasing, equipment used during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Appendix C.

Development of the proposed project would generate air pollutant emissions from entrained dust, off-road equipment, vehicle emissions, asphalt pavement application, and architectural coatings. As described previously, fugitive dust would be limited through compliance with SDAPCD Rule 55, which requires the restriction of visible emissions of fugitive dust beyond the property line.

Table 4.2-7 shows the estimated maximum unmitigated daily construction emissions associated with the construction phases of the project.

Table 4.2-7. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Construction Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2024	29.4	39.8	33.1	0.08	16.3	5.61
2025	29.3	3.70	10.2	0.01	1.25	0.38
Maximum	**29.4**	**39.8**	**33.1**	**0.08**	**16.3**	**5.61**
County of San Diego threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SDAPCD = San Diego Air Pollution Control District.
See Appendix C for complete results.
The values shown are the maximum summer or winter daily emissions results from the California Emissions Estimator Model (CalEEMod) and include fugitive dust mitigation (SDAPCD Rule 55).

As shown in Table 4.2-7, daily construction emissions for the project would not exceed SDAPCD's significance thresholds. Therefore, the project would have a **less than significant impact** related to emissions of criteria air pollutant emissions during construction.

Operational Emissions

Operation of the proposed project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources (vehicle trips), area sources (consumer products, landscape maintenance equipment), and energy sources. Pollutant emissions associated with long-term operations were quantified using CalEEMod. Project-generated mobile source emissions were estimated in CalEEMod based on project-specific trip rates. CalEEMod default values were used to estimate emissions from the proposed project area and energy sources. The project includes a project design feature that prohibits all fireplaces. As such, CalEEMod area source emissions were adjusted to show no fireplaces used in residential development.

Table 4.2-8 presents the unmitigated maximum daily emissions associated with the operation of the project in 2026 after all phases of construction have been completed. Emissions represent maximum of summer and winter. "Summer" emissions are representative of the conditions that may occur during the O_3 season (May 1 to October 31), and "winter" emissions are representative of the conditions that may occur during the balance of the year (November 1 to April 30).

Table 4.2-8. Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Mobile	2.64	2.13	20.3	0.05	1.72	0.33
Area	9.26	2.88	47.2	0.14	5.46	5.27
Energy	0.05	0.85	0.36	0.01	0.07	0.07
Total	**11.95**	**5.86**	**67.86**	**0.2**	**7.25**	**5.67**
County of San Diego threshold	*75*	*250*	*550*	*250*	*100*	*55*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
<0.01 = reported value is less than 0.01.
See Appendix C for complete results.
The values shown are the maximum summer or winter daily emissions results from the California Emissions Estimator Model (CalEEMod).

Air pollution is largely a cumulative impact and is cumulatively evaluated based on the air basin. The nonattainment status of regional pollutants is a result of past and present development, and SDAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. Based on calculations presented in Tables 4.2-7 and 4.2-8, the proposed project would not exceed the mass emissions significance thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ during operation, and therefore, project operational impacts are determined to be **less than significant.**

Would the project expose sensitive receptors to substantial pollutant concentrations?

Carbon Monoxide Hotspots

Mobile-source impacts occur on two basic scales of motion. Regionally, project-related travel will add to regional trip generation and increase the vehicle miles traveled within the local airshed and the SDAB. Locally, project traffic will be added to the City's roadway system. If such traffic occurs during periods of poor atmospheric ventilation, consists of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and operates on roadways already crowded with non-project traffic, there is a potential for the formation of microscale CO hot spots in the area immediately around points of congested traffic. Because of continued improvement in mobile emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the basin is steadily decreasing.

Projects contributing to adverse traffic impacts may result in the formation of CO hotspots. To verify that the project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hotspots was conducted. The City does not have guidance regarding CO hotspots; as such, the County's CO hotspot screening guidance (County of San Diego 2007) was followed to determine whether the project would require a site-specific hotspot analysis. Per guidance, any project that would place receptors within 500 feet of a signalized intersection operating at or below level of service (LOS) E (peak-hour trips exceeding 3,000 trips) must conduct a hot spot analysis for CO. Likewise, projects that will cause road intersections to operate at or below a LOS E (i.e., with intersection peak-hour trips exceeding 3,000) will also have to conduct a CO hot spot analysis. The signalized intersection nearest to the project is located at Monica Circle/Project Driveway and Macario Drive. Per the Local Transportation Study prepared for the project, once the project is constructed, the intersection will be operating at LOS A with project traffic (Appendix L). The intersection of Vandegrift Boulevard/North River Road and North Redondo Drive, which is approximately 1,850 feet southeast of the project site, will be operating at LOS E in the AM peak hour and LOS F in the PM peak hour under both the 2025 and 2050 Scenarios with Project Conditions. Although this intersection will be operating at LOS E and higher, CO hotspots would not be expected for the following reasons.

Ambient CO levels are monitored at the Escondido-Rancho Carmel Drive air quality monitoring station, which is approximately 16 miles southeast of the project site. Ambient CO levels monitored at this monitoring station are representative of ambient CO concentrations in the project area and indicate that the highest recorded 1-hour concentration of CO is 4.1 ppm (the state standard is 20 ppm) and the highest 8-hour concentration is 2.5 ppm (the state standard is 9 ppm) during the past 3 years of available data (EPA 2022). As discussed above, the highest CO concentrations typically occur during peak traffic hours, so CO impacts calculated under peak traffic conditions represent a worst-case analysis.

Since the last update of SDAPCD's guidance (2007), the County has evaluated the potential for the growth anticipated under the General Plan Update to result in CO hot spots throughout the County. To do this, the County reviewed the CO hot spot analysis conducted by SCAQMD for their request to EPA for redesignation as a CO attainment area. In SCAQMD's analysis, they modeled the four most congested intersections identified in their basin (South Coast Air Basin [SCAB]), which included the following:

- **Long Beach Boulevard and Imperial Highway –** proximity to the Lynwood monitoring station, which consistently records the highest 8-hour CO concentrations in the SCAB each year
- **Wilshire Boulevard and Veteran Avenue –** the most congested intersection in Los Angeles County, with an average daily traffic (ADT) volume of 100,000 vehicles/day
- **Highland Avenue and Sunset Boulevard –** one of the most congested intersections in the City of Los Angeles

- **Century Boulevard and La Cienega Boulevard** – one of the most congested intersections in the City of Los Angeles

SCAQMD's analysis found that these intersections had an average 7.7 ppm 1-hour CO concentrations predicted by the models, which is only 38.5% of the 1-hour CO CAAQS of 20 ppm. Therefore, even the most congested intersections in SCAQMD's air basin would not experience a CO hot spot.

The air quality monitoring station closest to the most congested intersection in Los Angeles County (Wilshire Boulevard/Veteran Avenue) is the VA Hospital, West Los Angeles Station (Site ID 060370113) located at Wilshire Boulevard and Sawtelle Boulevard, approximately 0.5 miles to the southwest. Ambient CO levels monitored at this representative monitoring station are outlined in Table 4.2-9 for the original analysis year (2002) and the most recent year of available data (2021). As shown, there is noticeable improvement in background levels of CO since SCAQMD's regional hotspot analysis.

Table 4.2-9. Ambient Carbon Monoxide Concentrations for SCAQMD's Most Congested Intersection

Year	CO Concentration (ppm)	
	Maximum 1-hour	Maximum 8-hour
2002	4.3	2.7
2021	1.5	1.0

Source: EPA 2022.
Note: SCAQMD = South Coast Air Quality Management District; ppm = parts per million.

For the County of San Diego, there are no roadways/segments identified as deficient facilities under the worst-case traffic scenario that have an ADT greater than the 100,000 that was anticipated for the most congested intersection analyzed by SCAQMD. The most congested intersection in the County is Campo Road/SR-94 between Jamacha Boulevard and Jamacha Road in Valle De Oro. According to Table 5.23 of the Traffic and Circulation Assessment: County of San Diego General Plan Update (Wilson & Company 2009), this intersection has an ADT of 79,200, which is only 79% of the most congested intersection in the SCAB.

Regional access to the proposed project would be from Interstate (I) 15, which is located approximately 2 miles west of the project site. From I-15, main access to the project site would be provided by State Route (SR) 76, which is a two-lane state highway that runs east–west from the City to SR-79/Lake Henshaw. The County's General Plan Update Traffic and Circulation Assessment indicates that the segment from Old Hwy 395 to the I-15 southbound ramps on SR-76 has an ADT of 39,600, which is approximately 40% of the most congested intersection in the SCAB (Wilson and Company 2009). The additional trips anticipated with implementation of the proposed project (15,204 ADT) could increase ADT at this intersection to 54,804, which is still below the County's most congested intersection. This scenario assumes that each new daily trip generated by the proposed project would travel through the Old Highway 395/I-15 southbound ramps segment, which is unrealistic but provides an absolute worst-case scenario for conservative analysis. Even with this conservative assumption, project-generated trips would only represent 55% of the most congested intersection in the SCAB, which were determined to not experience a CO hot spot" according to SCAQMD's 2003 analysis.

In addition, the CO hot spot analysis performed by SCAQMD included emissions for 1997 and 2002. Both running exhaust emission factors and idling emission factors predicted by the EMFAC model decreased from 1997 through 2002 as outlined in Table 4.2-10 below. This decrease in CO emission factors is indicative of a phase-out of older vehicles and increasingly strict emissions standards implemented by CARB. Emission factors for the County from the EMFAC2007 model, which were used in the General Plan Update analysis, indicated that running exhaust emissions of CO would be less than 6.708 grams of CO per mile in 2010. Continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion means that the potential for CO hotspots in the SDAB is likely to decrease.

Table 4.2-10. Carbon Monoxide Emission Factors Predicted by the EMFAC Model

Year	Carbon Monoxide (CO) Emission Factors (grams CO/mile)	
	Running Exhaust	Idling Exhaust
1997	13.13	2.43
2002	7.98	1.30

Source: EMFAC.

The County concluded in the General Plan Update (2011) that because the most congested intersections in San Diego are less congested than those from the SCAB, and because emissions of CO would be lower than those used in the SCAQMD analysis, CO concentrations would be lower within the County, and no CO hot spots are anticipated, as was concluded in the SCAQMD analysis.

Given that proposed development will not result in traffic that exceeds traffic volumes considered in the General Plan Update analysis, coupled with the considerably low level of CO concentrations in the project area, and continued improvements in vehicle emissions, the proposed project is not anticipated to result in CO hot spots. Consequently, implementation of the proposed project would not result in CO concentrations in excess of the health-protective CAAQS or NAAQS and as such would not expose sensitive receptors to significant pollutant concentrations or health effects. Therefore, impacts related to sensitive receptor exposure to substantial CO concentrations would be **less than significant**, and no mitigation measures are required.

Toxic Air Contaminants

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as TACs or hazardous air pollutants. The greatest potential for TAC emissions during construction would be DPM emissions from heavy equipment operations and heavy-duty trucks, and the associated health impacts to sensitive receptors. Construction of the project would occur over a period of 21 months, and following completion of construction activities, project-related TAC emissions would cease. The closest sensitive receptors to the project site are single-family residences immediately adjacent to the northern and southern boundaries of the site. As such, a construction HRA was performed for the project as discussed below.

Based on results from the HRA, the maximally exposed individual residents off site would be located at the single-family residences to the northeast of the project site. Once the first phase of building construction is complete, on-site residents would be exposed to TAC emissions during the second phase of building construction. Notably, Title 24 requires the use of enhanced filtration through installation of heating, ventilation, and air conditioning systems with a minimum of MERV13 filtration. MERV13 filters can reduce particulate emissions by almost 70% (adjusting for time spent indoors). Compliance with regulatory standards would reduce the exposure of future on-site residents during construction of the remaining building phase. Table 4.2-11 summarizes the results of the HRA for proposed project construction, and detailed results are provided in Appendix C.

Table 4.2-11. Construction Activity Health Risk Assessment Results Prior to Mitigation

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Off Site				
Cancer Risk	Per Million	18.12	10.0	**Potentially Significant**
HIC	Not Applicable	0.01	1.0	Less than Significant
On Site				
Cancer Risk	Per Million	2.57	10.0	Less than Significant
HIC	Not Applicable	<0.01	1.0	Less than Significant

Source: Appendix C.
Notes: CEQA = California Environmental Quality Act; HIC = Chronic Hazard Index.

The results of the HRA demonstrate that the TAC exposure from construction diesel exhaust emissions would result in cancer risk above the 10 in 1 million threshold, and the Chronic Hazard Index less than 1 for off-site receptors. On-site receptors would be exposed to fewer TAC emissions from construction and a shorter duration of exposure. The cancer risk is less than the 10 in 1 million threshold, and the Chronic Hazard Index is less than 1 for on-site receptors. Therefore, TAC emissions from construction of the project would result in a **potentially significant** impact to off-site receptors, and thus mitigation is required. This impact would be mitigated to less than significant through the use of Tier 4 interim construction equipment, as described in **MM-AQ-1** (Tier 4 Interim Construction Equipment).

Health Effects

In December 2018, in the case of Sierra Club v. County of Fresno (2018) 6 Cal.5th 502, California Supreme Court held that an EIR's air quality analysis must meaningfully connect the identified air quality impacts to the human health consequences of those impacts or meaningfully explain why that analysis cannot be provided. As noted in the brief of amicus curiae by SCAQMD in the Friant Ranch case (April 6, 2015, Appendix 10.1), SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the state, and thus it is uniquely situated to express an opinion on how lead agencies should correlate air quality impacts with specific health outcomes.

SCAQMD discusses that it may be infeasible to quantify health risks caused by projects similar to the proposed project, due to many factors. It is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, meteorology and topography of the area, and location of receptors (worker and residence). The brief states that it may not be feasible to perform an HRA for airborne toxics that will be emitted by a generic industrial building that was built on “speculation” (i.e., without knowing the future tenant[s]). Even where an HRA can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project. The brief also cites the author of the CARB methodology, which reported that a $PM_{2.5}$ methodology is not suited for small projects and may yield unreliable results. Similarly, SCAQMD staff does not currently know of a way to accurately quantify O_3-related health impacts caused by NO_X or VOC emissions from relatively small projects, due to photochemistry and regional model limitations. The brief concludes, with respect to the Friant Ranch EIR, that although it may have been technically possible to plug the data into a methodology, the results would not have been reliable or meaningful.

Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction

Odors would be generated from vehicles and/or equipment exhaust emissions during construction of the project. Odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and architectural coatings. Such odors are temporary and, for the types of construction activities anticipated for project components, would generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be considered **less than significant.**

Operation

Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there are no quantitative or formulaic methodologies to determine if potential odors would have a significant impact. Examples of land uses and industrial operations that are commonly associated with odor complaints include agricultural uses, wastewater treatment plants, food processing facilities, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding facilities. In addition to the odor source, the distance between the sensitive receptor(s) and the odor source, as well as the local meteorological conditions, are considerations in the potential for a project to frequently expose the public to objectionable odors. Although localized air quality impacts are focused on potential impacts to sensitive receptors, such as residences and schools, other land uses where people may congregate (e.g., workplaces) or uses with the intent to attract people (e.g., restaurants and visitor-serving accommodations) should also be considered in the evaluation of potential odor nuisance impacts. The project would include a residential development, which is not expected to produce any nuisance odors; therefore, impacts related to odors caused by the project would be **less than significant.**

4.2.5 Cumulative Analysis

In analyzing cumulative impacts from a project, the analysis must specifically evaluate the project's contribution to the cumulative increase in pollutants for which the SDAB is designated as nonattainment for the CAAQS and NAAQS. If the project does not exceed thresholds and is determined to have less-than-significant project-specific impacts, it may still contribute to a significant cumulative impact on air quality if the emissions from the project components, in combination with the emissions from other proposed or reasonably foreseeable future projects, are in excess of established thresholds. However, the project would only be considered to have a significant cumulative impact if its contribution accounts for a significant proportion of the cumulative total emissions (i.e., it represents a "cumulatively considerable contribution" to the cumulative air quality impact).

Additionally, for the SDAB, the RAQS serves as the long-term regional air quality planning document for the purpose of assessing cumulative operational emissions within the basin to ensure the SDAB continues to make progress toward NAAQS and CAAQS attainment status. As such, cumulative projects located in the San Diego region would have the potential to result in a cumulative impact to air quality if, in combination, they would conflict with or obstruct implementation of the RAQS. Similarly, individual projects that are inconsistent with the regional planning documents on which the RAQS is based would have the potential to result in cumulative impacts if they represent development beyond regional projections.

The SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ emissions associated with construction generally result in near-field impacts. The nonattainment status is the result of cumulative emissions from all sources of these air pollutants and their precursors within the SDAB. The emissions of all criteria pollutants from the project's construction would be below the significance levels. Construction would be short term and temporary in nature, and activities would be considered typical of a residential project. Once construction is completed, construction-related emissions would cease. Operational emissions generated by the project would not result in emissions that exceed significance thresholds for any criteria air pollutant. As such, the project would result in less-than-significant impacts to air quality.

Regarding long-term cumulative operational emissions in relation to consistency with local air quality plans, the SIP and RAQS serve as the primary air quality planning documents for the state and SDAB, respectively. The SIP and RAQS rely on SANDAG growth projections based on population, vehicle trends, and land use plans developed by the cities and by the County as part of the development of their General Plans. Therefore, projects that propose development that is consistent with the growth anticipated by local plans would be consistent with the SIP and RAQS and would not be considered to result in cumulatively considerable impacts from operational emissions. The project is consistent with the SANDAG growth projections. Thus, it would be consistent at a regional level with the underlying growth forecasts in the SIP and RAQS.

As a result, the project would not result in a cumulatively considerable contribution to regional O_3 concentrations or other criteria pollutant emissions. Cumulative impacts for construction and operation would be **less than significant** for the project.

4.2.6 Mitigation Measures

The following mitigation measure sets forth a program of air pollution control strategies designed to reduce the proposed project's air quality impacts during construction (**Mitigation Measure [MM] AQ-1**).

MM-AQ-1 Tier 4 Interim Construction Equipment**.** Prior to the commencement of any construction activities, the applicant or its designee shall provide evidence to the City of Oceanside (City) that for off-road equipment with engines rated at 300 horsepower or greater, no construction equipment shall be used that is less than Tier 4 Interim or equivalent (i.e., Tier 4 Final or other diesel particulate filter control that achieves equal or increased coarse particulate matter [PM_{10}] exhaust reduction). An exemption from these requirements may be granted by the City if the applicant documents that equipment with the required tier is not reasonably available and equivalent reductions in PM_{10} exhaust emissions are achieved from other construction equipment. The applicant shall be responsible for preparation of a new air quality assessment demonstrating that health risks are below significance thresholds of 10 in 1 million with the revised equipment mix. Before an exemption may be considered by the City, the applicant shall be required to demonstrate that two construction fleet owners/operators in the San Diego region were contacted and that those owners/operators confirmed Tier 4 equipment or equivalent could not be located within the San Diego region. The City shall review the exemption request and provide a determination within 10 business days from receipt of the request.

4.2.7 Level of Significance After Mitigation

The results of the HRA, and shown in Table 4.2-12, demonstrate that after implementation of **MM-AQ-1**, which requires use of Tier 4 equipment during construction, the TAC exposure from construction diesel exhaust emissions would not result in cancer risk above the 10 in 1 million threshold, nor a Chronic Hazard Index greater than 1.0. As shown in Table 4.2-4, the existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Thus, it is not expected the project's operational NO_x emissions would result in exceedances of the NO_2 standards or contribute to the associated health effects. CO tends to be a localized impact associated with congested intersections. The associated CO hot spots were discussed previously as a less-than-significant impact. Thus, the project's CO emissions would not contribute to significant health effects associated with this pollutant. PM_{10} and $PM_{2.5}$ would not contribute to potential exceedances of the NAAQS and CAAQS for particulate matter, would not obstruct the SDAB from coming into attainment for these pollutants, and would not contribute to significant health effects associated with particulates. Therefore, overall health impacts associated with criteria air pollutants would be **less than significant.**

Table 4.2-12. Construction Activity Health Risk Assessment Results With Mitigation

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Off Site				
Cancer Risk	Per Million	9.06	10.0	Less than Significant
HIC	Not Applicable	<0.01	1.0	Less than Significant
On Site				
Cancer Risk	Per Million	2.57	10.0	Less than Significant
HIC	Not Applicable	<0.01	1.0	Less than Significant

Source: Appendix C.
Notes: CEQA = California Environmental Quality Act; HIC = Chronic Hazard Index.

INTENTIONALLY LEFT BLANK

Table of Contents

SECTION **PAGE NO.**

FIGURES

No table of figures entries found.

TABLES