This section describes the regional air quality, current attainment status of the air basin, local sensitive receptors, emission sources, and impacts that are likely to result from Project implementation. Following this discussion is an assessment of consistency of the Project with applicable policies and local plans. The Greenhouse Gases, Climate Change, and Energy analysis is located in Section 3.6.

This section is based in part on the following resources:

- *Air Quality and Land Use Handbook: A Community Health Perspective* (California Air Resources Board, 2005);
- *Guide to Air Quality Assessment in Sacramento County* (Sacramento Metropolitan Air Quality Management District [SMAQMD], 2009, Revised September 2018);
- *California Emissions Estimator Model* (CalEEMod), v.2016.3.2 (California Air Pollution Control Officers Association [CAPCOA], 2017);
- *Friant Ranch Interim Recommendation* (SMAQMD, 2019);
- *Recommended Guidance for Land Use Emission Reductions Version 4 (for Operational Emissions)* (SMAQMD, 2017).

Comments were received during the public review period or scoping meeting for the Notice of Preparation regarding this topic from the Sacramento Metropolitan Air Quality Management District (SMAQMD) (July 13, 2018) and the Sacramento Municipal Utility District (SMUD) (August 6, 2018). Each of the comments related to this topic are addressed within this section.

3.2.1 ENVIRONMENTAL SETTING

SACRAMENTO VALLEY AIR BASIN

The City of Rancho Cordova is located within the Sacramento Valley Air Basin (SVAB). The SVAB encompasses eleven counties including all of Shasta, Tehama, Glenn, Colusa, Butte, Sutter, Yuba, Sacramento, and Yolo Counties, the westernmost portion of Placer County and the northeastern half of Solano County. The SVAB is the northern half of California's Great Valley and is bordered on three sides (west, north, and east) by mountain ranges, with peaks in the eastern range above 9,000 feet. The SVAB is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. The SVAB is approximately 13,700 square miles and essentially a smooth valley floor with elevations ranging from 40 to 500 feet. The rolling valley is interrupted by the Sutter Buttes, an area of 80 square miles in northern Sutter County, which rise abruptly to more than 2,100 feet above the valley floor.

Topography and Meteorology

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the SVAB. During the year the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 19 inches, and the rainy season generally occurs from November through March. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions that trap pollutants near the ground.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds, with the delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north carrying the pollutants out, the Schultz Eddy causes the wind pattern to circle back to the south. This phenomenon has the effect of exacerbating the pollution levels in the area and increases the likelihood of violating federal or state standards.

CRITERIA POLLUTANTS

All criteria pollutants can have human health and environmental effects at certain concentrations. The United States Environmental Protection Agency (USEPA) uses six "criteria pollutants" as indicators of air quality, and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS). In addition, California establishes ambient air quality standards, called California Ambient Air Quality Standards (CAAQS). California law does not require that the CAAQS be met by a specified date as is the case with NAAQS.

The ambient air quality standards for the six criteria pollutants (as shown in Table 3.2-1) are set to public health and the environment within an adequate margin of safety (as provided under Section 109 of the Federal Clean Air Act). Epidemiological, controlled human exposure, and toxicology studies evaluate potential health and environmental effects of criteria pollutants, and form the scientific basis for new and revised ambient air quality standards. Principal characteristics and possible health and environmental effects from exposure to the six primary criteria pollutants generated by the Project are discussed below.

Ozone (O_3) is a photochemical oxidant and the major component of smog. While O_3 in the upper atmosphere is beneficial to life by shielding the earth from harmful ultraviolet radiation from the sun, high concentrations of O_3 at ground level are a major health and environmental concern. O_3 is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC)[1] and oxides of nitrogen (NOx) in the

[1] The CARB uses the term "Reactive Organic Gases" (ROG) in place of "Volatile Organic Compounds" (VOC).

presence of sunlight. These reactions are stimulated by sunlight and temperature so that peak O_3 levels occur typically during the warmer times of the year. Both VOCs and NOx are emitted by transportation and industrial sources. VOCs are emitted from sources as diverse as autos, chemical manufacturing, dry cleaners, paint shops and other sources using solvents.

The reactivity of O_3 causes health problems because it damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O_3 not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well. Exposure to O_3 for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion.

Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (U.S. Environmental Protection Agency 2019a). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggest that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (U.S. Environmental Protection Agency 2019b). The average background level of ozone in the California and Nevada is approximately 48.3 parts per billion, which represents approximately 77 percent of the total ozone in the western region of the U.S. (NASA, 2015).

In addition to human health effect, ozone has been tied to crop damage, typically in the form of stunted growth, leaf discoloration, cell damage, and premature death. O_3 can also act as a corrosive and oxidant, resulting in property damage such as the degradation of rubber products and other materials.

Ozone concentrations tend to be highest in summer and lowest in winter. In 2018, the lowest and highest daily average ozone concentrations at the highest site in Sacramento County were 8 parts per billion (on January 30th) and 62 parts per billion (on August 9th), respectively (California Air Resources Board, 2019a). According to the California Air Resources Board (CARB) Almanac, ozone concentrations in Sacramento have remained relatively steady from 1992 to 2012. However, over longer-term timeframes, ozone concentrations in Sacramento County have decreased (California Air Resources Board, 2019b).

Carbon monoxide (CO) is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. Carbon monoxide 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 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 (California Air Resources Board, 2019c). Exposure to CO at high concentrations can also cause fatigue, headaches, confusion, dizziness, and chest pain. There are no ecological or environmental effects to ambient CO (California Air Resources Board, 2019d).

Very high levels of CO are not likely to occur outdoors. However, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease. These people already have a reduced ability for getting oxygenated blood to their hearts in situations where the heart needs more oxygen than usual. They are especially vulnerable to the effects of CO when exercising or under increased stress. In these situations, short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain also known as angina (USEPA, 2016). Such acute effects may occur under current ambient conditions for some sensitive individuals, while increases in ambient CO levels increases the risk of such incidences.

CO concentrations tend to be highest in fall and winter and lowest in spring and summer. In 2018, the lowest and highest daily average carbon monoxide concentrations at the highest site in Sacramento County were 151 parts per billion (on March 1st) and 2,153 parts per billion (on November 15th), respectively (California Air Resources Board, 2019a). Over the long-term, CO concentrations have decreased throughout the United States, including the Sacramento region. Average concentrations of CO have reduced from approximately 333 parts per billion in 2000 to approximately 132 parts per billion in 2017, in California and Nevada (i.e. the West region, as defined by the USEPA) (USEPA, 2018).

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in all urban atmospheres. The main effect of increased NO_2 is the increased likelihood of respiratory problems. Under ambient conditions, NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O_3) and acid rain, and may affect both terrestrial and aquatic ecosystems. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly, are generally at greater risk for the health effects of NO_2.

NO2 is a member of a family of chemicals comprised of nitrogen and oxygen that are collectively known as nitrogen oxides (NOx). The major mechanism for the formation of NO2 in the atmosphere is the oxidation of the air pollutant nitric oxide (NO). NOx plays a major role, together with VOCs, in the atmospheric reactions that produce O3. NOx forms when fuel is burned at high temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

NO_2 concentrations tend to be highest in winter and lowest in summer. In 2018, the lowest and highest daily average NO_2 concentrations at the highest site in Sacramento County were 3 parts per billion (on May 13th and May 20th) and 40 parts per billion (on November 20th), respectively

(California Air Resources Board, 2019a). Over the long-term, nitrogen dioxide concentrations have generally been decreasing throughout the United States, including the Sacramento region (USEPA, 2018). Average concentrations of NO_2 have reduced from approximately 69 parts per billion in 2000 to approximately 48 parts per billion in 2017, in California and Nevada (i.e. the West region, as defined by the USEPA) (USEPA, 2018). The most recent forecast from the California Air Resources Board suggests that NOx levels in the Sacramento metropolitan area will decrease over time, with the region experiencing a decrease in emissions from an average of approximately 187 tons per day in 2000 and 118 tons per day in 2010 to 54 tons per day in 2035 (California Air Resources Board, 2014).

Sulfur dioxide (SO_2) is one of the multiple gaseous oxidized sulfur species and is formed during the combustion of fuels containing sulfur, primarily coal and oil. The largest anthropogenic source of SO_2 emissions in the U.S. is fossil fuel combustion at electric utilities and other industrial facilities. SO_2 is also emitted from certain manufacturing processes and mobile sources, including locomotives, large ships, and construction equipment.

SO_2 affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. SO_2 is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. This is especially noticeable in national parks. Ambient SO_2 results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

Short-term exposure to ambient SO_2 has been associated with various adverse health effects. Multiple human clinical studies, epidemiological studies, and toxicological studies support a causal relationship between short-term exposure to ambient SO_2 and respiratory morbidity. The observed health effects include decreased lung function, respiratory symptoms, and increased emergency department visits and hospitalizations for all respiratory causes. These studies further suggest that people with asthma are potentially susceptible or vulnerable to these health effects. In addition, SO_2 reacts with other air pollutants to form sulfate particles, which are constituents of fine particulate matter ($PM_{2.5}$). Inhalation exposure to $PM_{2.5}$ has been associated with various cardiovascular and respiratory health effects (USEPA, 2017). Increased ambient SO_2 levels would lead to increased risk of such effects.

SO_2 emissions that lead to high concentrations of SO_2 in the air generally also lead to the formation of other sulfur oxides (SO_x). SO_x can react with other compounds in the atmosphere to form small particles. These particles contribute to particulate matter (PM) pollution. Small particles may penetrate deeply into the lungs and in sufficient quantity can contribute to health problems.

In 2018, the lowest and highest daily average SO_2 concentrations at the highest site in Sacramento County ranged from approximately 0 parts per billion to 1 part per billion (California Air Resources Board, 2019a). Over the long-term, nitrogen dioxide concentrations have decreased throughout the United States, including the Sacramento region (USEPA, 2018). Average concentrations of SO_2

have reduced from approximately 17.6 parts per billion in 2000 to approximately 6.2 parts per billion in 2017 at monitoring sites in California and Nevada (i.e. the West region, as defined by the USEPA) (USEPA, 2018). The most recent forecast from the California Air Resources Board suggests that SO_x concentrations in the Sacramento metropolitan area will not increase over time (emissions were an average of approximately 3 tons per day in 2000 and 2 tons per day in 2010, and are projected to remain at approximately 2 tons per day 2035) (California Air Resources Board, 2014).

Particulate matter (PM) includes dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, fires and natural windblown dust. Particles formed in the atmosphere by condensation or the transformation of emitted gases such as SO_2 and VOCs are also considered particulate matter. PM is generally categorized based on the diameter of the particulate matter: PM_{10} is particulate matter 10 micrometers or less in diameter (known as respirable particulate matter), and $PM_{2.5}$ is particulate matter 2.5 micrometers or less in diameter (known as fine particulate matter).

Based on studies of human populations exposed to high concentrations of particles (sometimes in the presence of SO_2) and laboratory studies of animals and humans, there are major effects of concern for human health. These include effects on breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis and premature death. Small particulate pollution has health impacts even at very low concentrations – indeed no threshold has been identified below which no damage to health is observed.

Respirable particulate matter (PM_{10}) consists of small particles, less than 10 microns in diameter, of dust, smoke, or droplets of liquid which penetrate the human respiratory system and cause irritation by themselves, or in combination with other gases. Particulate matter is caused primarily by dust from grading and excavation activities, from agricultural uses (as created by soil preparation activities, fertilizer and pesticide spraying, weed burning and animal husbandry), and from motor vehicles, particularly diesel-powered vehicles. PM_{10} causes a greater health risk than larger particles, since these fine particles can more easily penetrate the defenses of the human respiratory system.

Fine particulate matter ($PM_{2.5}$) consists of small particles, which are less than 2.5 microns in size. Similar to PM_{10}, these particles are primarily the result of combustion in motor vehicles, particularly diesel engines, as well as from industrial sources and residential/agricultural activities such as burning. It is also formed through the reaction of other pollutants. As with PM_{10}, these particulates can increase the chance of respiratory disease, and cause lung damage and cancer. In 1997, the EPA created new Federal air quality standards for $PM_{2.5}$.

The major subgroups of the population that appear to be most sensitive to the effects of particulate matter include individuals with chronic obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly and children. Particulate matter also soils and damages materials, and is a major cause of visibility impairment.

Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lunch function, and increased respiratory symptoms. Studies show that every 1 microgram per cubic meter reduction in $PM_{2.5}$ results in a one percent reduction in mortality rate for individuals over 30 years old (Bay Area Air Quality Management District, 2017). Long-term exposures, such as those experienced by people living for many years in areas with high PM levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis – and even premature death. Additionally, depending on its composition, both PM_{10} and $PM_{2.5}$ can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (U.S. Environmental Protection Agency 2019c).

PM concentrations tend to be highest in winter and spring and lowest in summer. In 2018, the lowest and highest daily average PM_{10} concentrations at the highest site in Sacramento County were 5.1 $\mu g/m^3$ (on November 29th) and 309.6 $\mu g/m^3$ (on November 15th), respectively (California Air Resources Board, 2019a). In 2018, the lowest and highest daily average $PM_{2.5}$ concentrations at the highest site in Sacramento County were 1.0 ug/m^3 (on March 26th) and 263.4 ug/m^3 (on November 15th), respectively (California Air Resources Board, 2019a). The most recent forecast from the California Air Resources Board projects that that $PM_{2.5}$ concentrations in the Sacramento metropolitan area will remain relatively constant from historical levels, with emissions reducing from an average of 32 tons/day in 2000 to 24 tons per day in 2010, while increasing from this level to 27 tons per day in 2035 (California Air Resources Board, 2014).

Lead (Pb) exposure can occur through multiple pathways, including inhalation of air and ingestion of Pb in food, water, soil or dust. Once taken into the body, lead distributes throughout the body in the blood and is accumulated in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. Lead exposure also affects the oxygen carrying capacity of the blood. Excessive Pb exposure can cause seizures, mental retardation and/or behavioral disorders. Low doses of Pb can lead to central nervous system damage. Recent studies have also shown that Pb may be a factor in high blood pressure and subsequent heart disease.

Lead is persistent in the environment and can be added to soils and sediments through deposition from sources of lead air pollution. Other sources of lead to ecosystems include direct discharge of waste streams to water bodies, and mining. Elevated lead in the environment can result in decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates.

Lead exposure is typically associated with industrial sources; major sources of lead in the air are ore and metals processing and piston-engine aircraft operating on leaded aviation fuel. Other sources are waste incinerators, utilities, and lead-acid battery manufacturers. The highest air concentrations of lead are usually found near lead smelters. As a result of the USEPA's regulatory efforts, including the removal of lead from motor vehicle gasoline, levels of lead in the air decreased by 98 percent between 1980 and 2014 (USEPA, 2019d). Based on this reduction of lead in the air over this period, and since most new developments do not generate an increase in lead exposure, the health impacts of ambient lead levels are not typically monitored by the California Air Resources Board.

ODORS

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

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another.

It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

SENSITIVE RECEPTORS

A sensitive receptor is a location where human populations, especially children, seniors, and sick persons, are present and where there is a reasonable expectation of continuous human exposure to pollutants. Examples of sensitive receptors include residences, hospitals and schools. The Project would include residences with sensitive receptors. Additionally, there are existing sensitive receptors located in the immediate vicinity of the Project to the north and west. Future sensitive receptors will also be located to the south and east of the Project site.

AMBIENT AIR QUALITY

Both the USEPA and the California Air Resources Board have established ambient air quality standards for common pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant. Each pollutant is measured over several standardized timeframes (called the averaging times), which provide a standard to compare monitored levels of pollutants to the federal and state standards. Each criteria pollutant has more than one average time – for example, the state ambient air quality standard for ozone is monitored over both a 1-hour and 8-hour periods.

The federal and California state ambient air quality standards are summarized in Table 3.2-1 for important pollutants. The federal and state ambient standards were developed independently, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and PM_{10}.

TABLE 3.2-1: FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	FEDERAL PRIMARY STANDARD	STATE STANDARD
Ozone	1-Hour 8-Hour	-- 0.070 ppm	0.09 ppm 0.070 ppm
Carbon Monoxide	8-Hour 1-Hour	9.0 ppm 35.0 ppm	9.0 ppm 20.0 ppm
Nitrogen Dioxide	Annual 1-Hour	0.53 ppm 0.100 ppm	0.03 ppm 0.18 ppm
Sulfur Dioxide	Annual 24-Hour 1-Hour	0.03 ppm 0.14 ppm 0.075 ppm	-- 0.04 ppm 0.25 ppm
PM_{10}	Annual 24-Hour	-- 150 ug/m^3	20 ug/m^3 50 ug/m^3
$PM_{2.5}$	Annual 24-Hour	15 ug/m^3 35 ug/m^3	12 ug/m^3 --
Lead	30-Day Avg. Calendar Quarter	-- 1.5 ug/m^3	1.5 ug/m^3 --

NOTES: PPM = PARTS PER MILLION, PPB = PARTS PER BILLION, UG/M^3 = MICROGRAMS PER CUBIC METER
SOURCES: CALIFORNIA AIR RESOURCES BOARD, 2019E.

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Existing air quality concerns within the Project site are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, and odors. The primary source of ozone (smog) pollution is motor vehicles which account for 70 percent of the ozone in the region. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

Attainment Status

In accordance with the California Clean Air Act (CCAA), the CARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria.

Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data do not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The USEPA designates areas for ozone, CO, and NO_2 as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used.

Sacramento County has a state designation of Nonattainment for ozone and PM_{10}, and a state designation of either Unclassified or Attainment for all other criteria pollutants. Sacramento County has a national designation of Nonattainment for ozone and $PM_{2.5}$ and a national designation of either Attainment or Unclassified for all other criteria pollutants. Table 3.2-2 presents the state and national attainment status for Sacramento County.

TABLE 3.2-2: STATE AND NATIONAL ATTAINMENT STATUS (SACRAMENTO COUNTY)

CRITERIA POLLUTANTS	*STATE DESIGNATIONS*	*NATIONAL DESIGNATIONS*
Ozone	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Attainment	Nonattainment
Carbon Monoxide	Attainment	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Sulfates	Attainment	N/A
Lead	Attainment	Unclassified/Attainment
Hydrogen Sulfide	Unclassified	N/A
Visibility Reducing Particles	Unclassified	N/A

SOURCE: CALIFORNIA AIR RESOURCES BOARD, 2018.

NOTE: N/A = NO FEDERAL STANDARD

Sacramento County Monitoring

The maintains numerous air quality monitoring sites throughout Sacramento County to measure ozone and $PM_{2.5}$. The CARB also maintains numerous air quality monitoring site throughout the SVAB to monitor PM_{10}. It is important to note that the federal ozone 1-hour standard was revoked by the USEPA and is no longer applicable for federal standards. The latest data obtained from the monitoring sites in Sacramento County between (available for year 2015 through 2017) is summarized in Tables 3.2-3 and 3.2-4, and data in the SVAB is summarized in Table 3.2-5.

TABLE 3.2-3: SACRAMENTO COUNTY AMBIENT AIR QUALITY MONITORING DATA SUMMARY - OZONE

Year	Days > Standard				1-Hour Observations			8-Hour Averages				Year Coverage	
	State		National			State	Nat'l	State		National			
	1-Hr	8-Hr	1-Hr	8-Hr	Max.	D.V.[1]	D.V.[2]	Max.	D.V.[1]	Max.	D.V.[2]	Min	Max
2017	6	21	0	18	0.121	0.11	0.107	0.092	0.089	0.091	0.082	20	98
2016	10	33	0	33	0.111	0.11	0.107	0.095	0.093	0.094	0.083	87	100
2015	6	20	0	20	0.122	0.10	0.101	0.094	0.088	0.094	0.080	88	99

Notes: All concentrations expressed in parts per million. The national 1-hour ozone standard was revoked in June 2005 and is no longer in effect. Statistics related to the revoked standard are shown in italics. D.V. ¹ = State Designation Value. D.V. ²= National Design Value.

Source: CARB Aerometric Data Analysis and Management System (ADAM) Air Pollution SUMMARIES.

TABLE 3.2-4: SACRAMENTO COUNTY AMBIENT AIR QUALITY MONITORING DATA SUMMARY - $PM_{2.5}$

Year	Est. Days > Nat'l '06 Std.	Annual Average		Nat'l Ann. Std. D.V.[1]	State Annual D.V.[2]	Nat'l '06 Std. 98th Percentile	Nat'l '06 24-Hr Std. D.V.[1]	High 24-Hour Average		Year Coverage	
		Nat'l	State					Nat'l	State	Min.	Max
2017	6.2	9.7	14.0	9.6	14	34.9	34	46.9	46.9	94	98
2016	3.3	8.8	9.8	9.3	12	28.2	31	46.8	57.5	8	96
2015	8.7	10.4	12.3	10.2	12	37.8	35	54.5	54.5	91	99

Notes: All concentrations expressed in parts per million. State and national statistics may differ for the following reasons: State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria. D.V. ¹ = State Designation Value. D.V. ²= National Design Value

Source: CARB Aerometric Data Analysis and Management System (ADAM) Air Pollution SUMMARIES.

TABLE 3.2-5: SVAB AMBIENT AIR QUALITY MONITORING DATA SUMMARY - PM_{10}

Year	Est. Days > Std.		Annual Average		3-Year Average		High 24-Hr Average		Year Coverage
	Nat'l	State	Nat'l	State	Nat'l	State	Nat'l	State	
2017	6.1	19.3	26.4	22.0	24	23	237.7	242.0	0-100
2016	*	12.2	24.2	20.6	23	25	88.5	88.9	0-100
2015	0.0	25.2	27.0	24.9	20	25	114.6	118.0	0-100

Notes: The national annual average PM_{10} standard was revoked in December 2006 and is no longer in effect. An exceedance is not necessarily a violation. Statistics may include data that are related to an exceptional event. State and national statistics may differ for the following reasons: State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. National statistics are based on standard conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

Source: CARB Aerometric Data Analysis and Management System (ADAM) Air Pollution Summaries.

3.2.2 REGULATORY SETTING

FEDERAL

Clean Air Act

The Federal Clean Air Act (FCAA) was first signed into law in 1970. In 1977, and again in 1990, the law was substantially amended. The FCAA is the foundation for a national air pollution control effort, and it is composed of the following basic elements: NAAQS for criteria air pollutants, hazardous air pollutant standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

The USEPA is responsible for administering the FCAA. The FCAA requires the USEPA to set NAAQS for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS were established: primary standards, which protect public health (with an adequate margin of safety, including for sensitive populations such as children, the elderly, and individuals suffering from respiratory diseases), and secondary standards, which protect the public welfare from non-health-related adverse effects such as visibility reduction.

NAAQS standards define clean air and represent the maximum amount of pollution that can be present in outdoor air without any harmful effects on people and the environment. Existing violations of the ozone and $PM_{2.5}$ ambient air quality standards indicate that certain individuals exposed to these pollutants may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments.

NAAQS standards have been designed to accurately reflect the latest scientific knowledge and are reviewed every five years by a Clean Air Scientific Advisory Committee (CASAC), consisting of seven members appointed by the USEPA administrator. Reviewing NAAQS is a lengthy undertaking and includes the following major phases: Planning, Integrated Science Assessment (ISA), Risk/Exposure Assessment (REA), Policy Assessment (PA), and Rulemaking. The process starts with a comprehensive review of the relevant scientific literature. The literature is summarized and conclusions are presented in the ISA. Based on the ISA, USEPA staff perform a risk and exposure assessment, which is summarized in the REA document. The third document, the PA, integrates the findings and conclusions of the ISA and REA into a policy context, and provides lines of reasoning that could be used to support retention or revision of the existing NAAQS, as well as several alternative standards that could be supported by the review findings. Each of these three documents is released for public comment and public peer review by the CASAC. Members of CASAC are appointed by the USEPA Administrator for their expertise in one or more of the subject areas covered in the ISA. The committee’s role is to peer review the NAAQS documents, ensure that they reflect the thinking of the scientific community, and advise the Administrator on the technical and scientific aspects of standard setting. Each document goes through two to three drafts before CASAC deems it to be final.

Although there is some variability among the health effects of the NAAQS pollutants, each has been linked to multiple adverse health effects including, among others, premature death, hospitalizations and emergency department visits for exacerbated chronic disease, and increased symptoms such as coughing and wheezing. NAAQS standards were last revised for each of the six criteria pollutants as listed below, with detail on what aspects of NAAQS changed during the most recent update:

- Ozone: On October 1, 2015, the U.S. EPA lowered the national eight-hour standard from 0.075 ppm to 0.070 ppm, providing for a more stringent standard consistent with the current California state standard.

- CO: In 2011, the primary standards were retained from the original 1971 level, without revision. The secondary standards were revoked in 1985.
- NO_2: The national NO_2 standard was most recently revised in 2010 following an exhaustive review of new literature pointing to evidence for adverse effects in asthmatics at lower NO_2 concentrations than the existing national standard.
- SO_2: 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.
- PM: the national annual average $PM_{2.5}$ standard was most recently revised in 2012 following an exhaustive review of new literature that pointed to evidence for increased risk of premature mortality at lower $PM_{2.5}$ concentrations than the existing standard.
- Lead: The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. In 2016, the primary and secondary standards were retained.

The law recognizes the importance for each state to locally carry out the requirements of the FCAA, as special consideration of local industries, geography, housing patterns, etc. are needed to have full comprehension of the local pollution control problems. As a result, the USEPA requires each state to develop a State Implementation Plan (SIP) that explains how each state will implement the FCAA within their jurisdiction. A SIP is a collection of rules and regulations that a particular state will implement to control air quality within their jurisdiction. The CARB is the state agency that is responsible for preparing and implementing the California SIP.

Transportation Conformity

Transportation conformity requirements were added to the FCAA in the 1990 amendments, and the EPA adopted implementing regulations in 1997. See §176 of the FCAA (42 U.S.C. §7506) and 40 CFR Part 93, Subpart A. Transportation conformity serves much the same purpose as general conformity: it ensures that transportation plans, transportation improvement programs, and projects that are developed, funded, or approved by the United States Department of Transportation or that are recipients of funds under the Federal Transit Act or from the Federal Highway Administration (FHWA), conform to the SIP as approved or promulgated by EPA.

Currently, transportation conformity applies in nonattainment areas and maintenance areas (maintenance areas are those areas that were in nonattainment that have been redesignated to attainment, under the FCCA). Under transportation conformity, a determination of conformity with the applicable SIP must be made by the agency responsible for the project, such as the Metropolitan Planning Organization, the Council of Governments, or a federal agency. The agency making the determination is also responsible for all the requirements relating to public participation. Generally, a project will be considered in conformance if it is in the transportation improvement plan and the transportation improvement plan is incorporated in the SIP. If an action is covered under transportation conformity, it does not need to be separately evaluated under general conformity.

Transportation Control Measures

One particular aspect of the SIP development process is the consideration of potential control measures as a part of making progress towards clean air goals. While most SIP control measures are aimed at reducing emissions from stationary sources, some are typically also created to address mobile or transportation sources. These are known as transportation control measures (TCMs). TCM strategies are designed to reduce vehicle miles traveled and trips, or vehicle idling and associated air pollution. These goals are achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs, transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.

STATE

California Clean Air Act

The CCAA was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. The CARB is the agency responsible for administering the CCAA. The CARB established ambient air quality standards pursuant to the California Health and Safety Code (CH&SC) [§39606(b)], which are similar to the federal standards.

California Air Quality Standards

Although NAAQS are determined by the USEPA, states have the ability to set standards that are more stringent than the federal standards. As such, California established more stringent ambient air quality standards. Federal and state ambient air quality standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulates (PM_{10}) and lead. In addition, California has created standards for pollutants that are not covered by federal standards. Although there is some variability among the health effects of the CAAQS pollutants, each has been linked to multiple adverse health effects including, among others, premature death, hospitalizations and emergency department visits for exacerbated chronic disease, and increased symptoms such as coughing and wheezing. The existing state and federal primary standards for major pollutants are shown in Table 3.2-1.

Air quality standard setting in California commences with a critical review of all relevant peer reviewed scientific literature. The Office of Environmental Health Hazard Assessment (OEHHA) uses the review of health literature to develop a recommendation for the standard. The recommendation can be for no change, or can recommend a new standard. The review, including the OEHHA recommendation, is summarized in a document produced CARB staff called the draft Initial Statement of Reasons (ISOR), which is released for comment by the public, and also for public peer review by the Air Quality Advisory Committee (AQAC). AQAC members are appointed by the President of the University of California for their expertise in the range of subjects covered in the ISOR, including health, exposure, air quality monitoring, atmospheric chemistry and physics, and effects on plants, trees, materials, and ecosystems. The Committee provides written comments on the draft ISOR. The CARB staff next revises the ISOR based on comments from AQAC and the public. The revised ISOR is then released for a 45-day public comment period prior to consideration by the Board at a regularly scheduled Board hearing.

In June of 2002, the CARB adopted revisions to the PM_{10} standard and established a new $PM_{2.5}$ annual standard. The new standards became effective in June 2003. Subsequently, staff reviewed the published scientific literature on ground-level ozone and nitrogen dioxide and the CARB adopted revisions to the standards for these two pollutants. Revised standards for ozone and nitrogen dioxide went into effect on May 17, 2006 and March 20, 2008, respectively. These revisions reflect the most recent changes to the CAAQS.

CARB Mobile-Source Regulation

The State of California is responsible for controlling emissions from the operation of motor vehicles in the state. Rather than mandating the use of specific technology or the reliance on a specific fuel, the CARB's motor vehicle standards specify the allowable grams of pollution per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved. Towards this end, the CARB has adopted regulations which required auto manufacturers to phase in less polluting vehicles.

CARB Air Quality and Land Use Handbook

The CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* addresses the importance of considering health risk issues when siting sensitive land uses, including residential development, in the vicinity of intensive air pollutant emission sources including freeways or high-traffic roads, distribution centers, ports, petroleum refineries, chrome plating operations, dry cleaners, and gasoline dispensing facilities. The CARB Handbook draws upon studies evaluating the health effects of traffic traveling on major interstate highways in metropolitan California centers within Los Angeles (Interstate [I] 405 and I-710), the San Francisco Bay, and San Diego areas. The recommendations identified by the CARB, including siting residential uses a minimum distance of 500 feet from freeways or other high-traffic roadways, are consistent with those adopted by the State of California for location of new schools. Specifically, the CARB Handbook recommends, "Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day" (CARB, 2005).

Tanner Air Toxics Act

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for the CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before the CARB can designate a substance as a TAC. To date, the CARB has identified more than 21 TACs and has adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the CARB list of TACs. Once a TAC is identified, the CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology (BACT) to minimize emissions.

The AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. The CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators). In February 2000, the CARB adopted a new public-transit bus-fleet rule and emission standards for new urban buses. These rules and standards provide for (1) more stringent emission standards for some new urban bus engines, beginning with 2002 model year engines; (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies; and (3) reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Other recent milestones include the low-sulfur diesel-fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide.

LOCAL

Sacramento Metropolitan Air Quality Management District

At the county level, air quality is managed through land use and development planning practices that are implemented by Sacramento County and the incorporated Cities and through permitted source controls that are implemented by the Sacramento County Air Quality Management District (SMAQMD).

The SMAQMD is responsible for (1) implementing air quality regulations, including developing plans and control measures for stationary sources of air pollution to meet the NAAQS and CAAQS, (2) implementing permit programs for the construction, modification, and operation of sources of air pollution, and (3) enforcing air pollution statutes and regulations governing stationary sources. With CARB oversight, the SMAQMD administers local regulations.

The following SMAQMD rules that may relate to Project construction activities or building design may include, but are not limited to:

- **Rule 201: General Permit Requirements**. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from SMAQMD prior to equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact the SMAQMD early to determine if a permit is required, and to begin the permit application process. Other general types of uses that require a permit include, but are not limited to, dry cleaners, gasoline stations, spray booths, and operations that generate airborne particulate emissions. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc.) with an internal combustion engine over 50 horsepower is required to have a SMAQMD permit or a CARB portable equipment registration (PERP).

- **Rule 402: Nuisance**. A person shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property.
- **Rule 403: Fugitive Dust**. The responsible person or entity is required to implement every reasonable method to control dust emissions from any construction, handling or storage activity, or any wrecking, excavation, grading, clearing of land or solid waste disposal operation to prevent fugitive dust generated through those activities from escaping the project site. Actions include but are not limited to application of water or chemicals, asphalt, and/or oil depending on the dust-generating activity.
- **Rule 442: Architectural Coatings**. The responsible person or entity may not use a coating with a VOC content in excess of the corresponding limits specified in this rule.
- **Rule 453**: **Cutback and Emulsified Asphalt Paving Materials**. Asphalt paving operations that may be associated with implementation of the project would be subject to Rule 453. This rule applies to the manufacture and use of cutback asphalt and emulsified asphalt for paving and maintenance operation.
- **Rule 460**: **Adhesives and Sealants.** The developer or contractor is required to use adhesives and sealants that comply with the volatile organic compound content limits specified in the rule.

Air Quality Attainment Plans

Each of the attainment plans currently in effect for the SVAB are discussed in further detail below.

2017 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan

The Sacramento region is classified as a severe-15 nonattainment area for the 2008 NAAQS (the USEPA states that the severe-15 classification refers to an area that has a design value for 8-hour ozone of up to 0.105 up to less than 0.111 ppm). The Sacramento Air Quality Management District, along with the other air districts in the region, prepared the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan in December 2008. The CARB determined that the Plan met CAA requirements and approved the plan on March 26, 2009 as a revision to the SIP. An update to the plan, 2017 Revisions to the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (*2017 Ozone Attainment Plan*), has been prepared and was approved and adopted by the CARB on November 16, 2017. A further update to the plan, *2018 Updates to the California State Implementation Plan*, was adopted by the CARB on October 25, 2018.

PM2.5 IMPLEMENTATION/MAINTENANCE PLAN AND RE-DESIGNATION REQUEST FOR SACRAMENTO PM2.5 NONATTAINMENT AREA

The USEPA promulgated a new 24-hour standard for $PM_{2.5}$ in October 2006, which strengthened the daily standard from 65 μg/m^3 to 35 μg/m^3 to protect the general public from health effects caused by exposure to fine particulate matter. Although the Sacramento area had attained the prior $PM_{2.5}$ standards, the area did not meet the new standards and the USEPA Administrator established $PM_{2.5}$ nonattainment designations for the 2006 standard, which became effective on December 14, 2009. In the USEPA's final designation, a multi-county $PM_{2.5}$ nonattainment area was created in the Sacramento region.

However, the Sacramento federal $PM_{2.5}$ nonattainment area attained the federal $PM_{2.5}$ health standards on December 31, 2011. To be re-designated, the area must, among other things, show that attainment was achieved by permanent and enforceable reductions and that the area would remain below the standard for 10 years after accounting for emissions growth. The $PM_{2.5}$ Implementation/Maintenance Plan and Re-designation Request for Sacramento $PM_{2.5}$ Nonattainment Area (*$PM_{2.5}$ Implementation/Maintenance Plan*) was prepared to show that the region has met the requirements and requests that the USEPA re-designate the area to attainment. The U.S EPA issued a final rule for Determination of Attainment for the Sacramento Nonattainment Area effective August 14, 2013. The *$PM_{2.5}$ Implementation/Maintenance Plan* would be adopted by the air districts within the nonattainment area, as well as the CARB, as a revision to the SIP. Contents of the *$PM_{2.5}$ Implementation/Maintenance Plan* include demonstration that the NAAQS was met and that all requirements have been met for a re-designation to attainment, specification of actions to be taken if the standards are violated in the future, and establishment of regional motor vehicle emission budgets.

The CCAA also requires that air districts assess their progress toward attaining the CAAQS once every three years. The triennial assessment is to report the extent of air quality improvement and the amounts of emission reductions achieved from control measures for the preceding three-year period. The SMAQMD reviews and revises the AQAP, if necessary, to correct for deficiencies in meeting progress, to incorporate new data or projections, to mitigate ozone transport, and to pursue the expeditious adoption of all feasible control measures. The most recent triennial assessment is the 2009 Triennial Report and Plan Revision. SMAQMD rules included in the Triennial Reports and AQAP Revisions are intended to limit emissions from stationary sources. Programs are also proposed to provide incentives for mobile heavy-duty vehicles/engines, CEQA mitigation for construction and land use development, and a Spare the Air program to reduce vehicle trips. Additional rules include, but may not be limited to, rules that would reduce emissions from degreasing and solvent cleaning operations, adhesives and sealants, solvents and unspecified coatings.

PM10 IMPLEMENTATION/MAINTENANCE PLAN AND REDESIGNATION REQUEST FOR SACRAMENTO COUNTY

The Sacramento region was classified as attainment for the 1997 PM_{10} 24-hour NAAQS of 150 μg/m^3. In October 2010, the SMAQMD prepared the PM_{10} *Implementation/Maintenance Plan and*

Redesignation Request for Sacramento County (2010). The USEPA approved the PM_{10} Plan, which allowed the USEPA to proceed with the redesignation of Sacramento County as attainment for the PM_{10} NAAQS. The first Maintenance Plan showed maintenance from 2012 through 2022.

A second plan must provide for maintenance of the NAAQS for 10 more years after expiration of the first 10-year maintenance period. The SMAQMD will prepare and submit a second maintenance plan in 2020 to demonstrate maintenance of the PM_{10} standard through 2032.

Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS)

SACOG is designated by the state and federal governments as the MPO for the region and is responsible for developing a regional transportation plan in coordination with Sacramento, Yolo, Yuba, Sutter, El Dorado and Placer counties and the 22 cities within those counties (excluding the Tahoe Basin). The SACOG MTP/SCS is required to cover at least a 20-year planning horizon, and be updated at least every four years.

The MTP/SCS links land use, air quality, and transportation needs within the region. If a city, county, or public agency in the Sacramento region wants to use federal transportation funding for transportation projects or programs, those projects must be included in the MTP/SCS project list. The MTP/SCS includes transportation improvements and investments that will serve the Sacramento region's projected land use pattern and population growth. All transportation projects that are regionally significant for potential air quality impacts must also be included in the MTP/SCS.

Rancho Cordova General Plan

The Rancho Cordova General Plan contains the following goals and policies that are relevant to air quality:

AIR QUALITY ELEMENT

Goal AQ.1: Ensure a healthy community by participating in local and regional efforts to meet or exceed all state and federal air quality standards.

> **Policy AQ.1.1:** Coordinate with responsible agencies and other jurisdictions to improve air quality within Rancho Cordova and the greater Sacramento region.
>
> **Policy AQ.1.2:** Evaluate projects for compliance with State and federal ambient air quality standards and the Sacramento Metropolitan Air Quality Management District's (SMAQMD) thresholds of significance.
>
> **Policy AQ.1.3:** The City shall prohibit wood-burning open masonry fireplaces in all new development. Fireplaces with EPA-approved inserts, EPA-approved stoves, and fireplaces burning natural gas will be allowed.

Policy AQ.1.4: The City shall develop an incentive program to encourage homeowners to replace high-pollution emitting non-EPA-certified wood stoves that were installed before the effective date of the applicable EPA regulation with newer cleaner-burning EPA-certified wood stoves.

Policy AQ.1.5: Require odor impact analyses be conducted for evaluating new development requests that either could generate objectionable odors that may violate SMAQMD Rule 402 or any subsequent rules and regulations regarding objectionable odors near sensitive receptors or locate new sensitive receptors near existing sources of objectionable odors. Should objectionable odor impacts be identified, odor mitigation shall be required in the form of setbacks, facility improvements or other appropriate measures.

Goal AQ.2: Support land use patterns and densities that lessen air quality impacts.

Policy AQ.2.1: Promote strategic land use patterns for businesses that reduce the number and length of motor vehicle trips and that encourage multiple forms of transportation for employees and patrons.

Policy AQ.2.2: Encourage mixed-use developments that put residences in close proximity to services, employment, transit, schools, and civic facilities/services.

Policy AQ.2.3: Encourage infill development as a way to reduce vehicle trips and improve air quality.

Policy AQ.2.4: Maximize air quality benefits through selective use of landscaping vegetation that is low in emission of volatile organic compounds, and through revegetation of appropriate areas.

Goal AQ.3: Support multiple forms of transportation and a circulation system design that reduces vehicle trips and emissions.

Policy AQ.3.1: Promote walking and bicycling as viable forms of transportation to services, shopping, and employment.

Policy AQ.3.2: Promote mass transit as an alternative to single-occupant motor vehicle travel.

Policy AQ.3.3: Involve local businesses in creating, maintaining, or promoting mass transit opportunities and reducing vehicle emissions.

Policy AQ.3.4: Emphasize "demand management" strategies that seek to reduce single-occupant vehicle use in order to achieve state and federal air quality plan objectives.

Goal AQ.4: Support energy conservation, the use of alternative fuels, clean vehicles and industries to reduce air quality impacts.

Policy AQ.4.1: Promote improved air quality benefits through energy conservation measures for new and existing development.

Policy AQ.4.2: Support vehicle improvements and the use of clean vehicles that reduce emissions and improve air quality.

Policy AQ.4.4: Support SMAQMD's program of retrofitting construction equipment.

LAND USE ELEMENT

Goal LU.1: Achieve a balanced and integrated land use pattern throughout the community.

Policy LU.1.4: Promote high quality, efficient, and cohesive land utilization that minimizes negative impacts (e.g., traffic congestion and visual blight) and environmental hazards (e.g. flood, soil instability) on adjacent neighborhoods and infrastructure and preserve existing and future residential neighborhoods from encroachment of incompatible activities and land uses.

3.2.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE FOR CRITERIA POLLUTANTS

Consistent with Appendix G of the CEQA Guidelines and the SMAQMD thresholds of significance, the Project will have a significant impact on the environment associated with air quality if it will:

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

Impacts related to greenhouse gases, climate change, and energy are addressed in Section 3.6.

The SMAQMD provides project-level thresholds of significance for: particulate matter less than 10 micrometers in diameter (PM_{10}) and less than 2.5 micrometers in diameter ($PM_{2.5}$), and the precursors to ozone, which are reactive organic gases (ROG) and nitrogen oxides (NOx). The SMAQMD developed these project-level thresholds based on the emissions amount that would exceed a CAAQS or contribute substantially to an existing or projected violation of a CAAQS. A substantial contribution is considered an emission that is equal to or greater than 5% of a CAAQS. The SMAQMD automatically adopts revisions to the CAAQS as revisions to the thresholds. The current thresholds are provided in Table 3.2-6, below.

TABLE 3.2-6: THRESHOLDS OF SIGNIFICANCE FOR CRITERIA POLLUTANTS OF CONCERN

POLLUTANT	*THRESHOLDS OF SIGNIFICANCE*	
	CONSTRUCTION	*OPERATIONAL*
ROG	None	65 pounds/day
NOx	85 pounds/day	65 pounds/day
PM_{10}	If all feasible Best Available Control Technology/Best Management Practices (BACT/BMP) are applied, then 80 pounds/day and 14.6 tons/year	If all feasible BACT/BMPs are applied, then 80 pounds/day and 14.6 tons/year
PM2.5	If all feasible BACT/BMPs are applied, then 82 pounds/day and 15 tons/year	If all feasible BACT/BMPs are applied, then 82 pounds/day and 15 tons/year

SOURCE: SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT, 2015.

Impacts related to Project-generated Pollutants of Human Health Concern

In December 2018, the California Supreme Court issued its decision in *Sierra Club v. County of Fresno* (226 Cal.App.4th 704) (hereafter referred to as the Friant Ranch Decision). The case reviewed the long-term, regional air quality analysis contained in the EIR for the proposed Friant Ranch development. The Friant Ranch project is a 942-acre master-plan development in unincorporated Fresno County within the San Joaquin Valley Air Basin, an air basin currently in nonattainment for the ozone and $PM_{2.5}$ NAAQS and CAAQS. The Court found that the air quality analysis was inadequate because it failed to provide enough detail "for the public to translate the bare [criteria pollutant emissions] numbers provided into adverse health impacts or to understand why such a translation is not possible at this time." The Court's decision clarifies that environmental documents must connect a project's air quality impacts to specific health effects or explain why it is not technically feasible to perform such an analysis.

All criteria pollutants that would be generated by the Project are associated with some form of health risk (e.g., asthma). Criteria pollutants can be classified as either regional or localized pollutants. Regional pollutants can be transported over long distances and affect ambient air quality far from the emissions source. Localized pollutants affect ambient air quality near the emissions source. Ozone is considered a regional criteria pollutant, whereas CO, NO_2, SO_2, and lead (Pb) are localized pollutants. PM can be both a local and a regional pollutant, depending on its composition. As discussed above, the primary criteria pollutants of concern generated by the Project are ozone precursors (ROG and NO_x) and PM (including diesel PM).

The SMAQMD does not currently have a methodology that would correlate the expected air quality emissions of projects to the likely health consequences of the increased emissions. The SMAQMD is in the process of developing a methodology to assess these impacts, and anticipates releasing it in the fall of 2019. In the interim, the SMAQMD advises lead agencies to follow the Friant Court's advice to explain in meaningful detail why this analysis is not yet feasible (SMAQMD, 2019).

REGIONAL PROJECT-GENERATED CRITERIA POLLUTANTS (OZONE PRECURSORS AND REGIONAL PM)

Adverse health effects induced by regional criteria pollutant emissions generated by the Project (ozone precursors and PM) are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). For these reasons, ozone precursors (ROG and NO_x) contribute to the formation of ground-borne ozone on a regional scale, where emissions of ROG and NO_x generated in one area may not equate to a specific ozone concentration in that same area. Similarly, some types of particulate pollutants may be transported over long-distances or formed through atmospheric reactions. As such, the magnitude and locations of specific health effects from exposure to increased ozone or regional PM concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project.

Models and tools have been developed to correlate regional criteria pollutant emissions to potential community health impacts. Appendix B.4 summarizes many of these tools, identifies the analyzed pollutants, describes their intended application and resolution, and analyzes whether they could be used to reasonably correlate project-level emissions to specific health consequences. As provided in Appendix B.4, while there are models capable of quantifying ozone and secondary PM formation and associated health effects, these tools were developed to support regional planning and policy analysis and have limited sensitivity to small changes in criteria pollutant concentrations induced by individual projects. Therefore, translating project generated criteria pollutants to the locations where specific health effects could occur or the resultant number of additional days of nonattainment cannot be estimated with a high degree of accuracy.

Technical limitations of existing models to correlate project-level regional emissions to specific health consequences are recognized by air quality management districts throughout the state, including the San Joaquin Valley Air Pollution Control District (SJVAPCD) and South Coast Air Quality Management District (SCAQMD), who provided amici curiae briefs for the Friant Ranch legal proceedings. In its brief, SJVAPCD (2015) acknowledges that while health risk assessments for localized air toxics, such as DPM, are commonly prepared, "it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task." The air district further notes that emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NO_x and VOC in the Valley) is not likely to yield valid information," and that any such information should not be "accurate when applied at the local level." SCAQMD presents similar information in their brief, stating that "it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels"[2].

As discussed above, air districts develop region-specific CEQA thresholds of significance in consideration of existing air quality concentrations and attainment or nonattainment designations

[2] For example, SCAQMD's analysis of their 2012 Air Quality Attainment Plan showed that modeled NOx and ROG reductions of 432 and 187 tons per day, respectively, only reduced ozone levels by 9 parts per billion. Analysis of SCAQMD's Rule 1315 showed that emissions of NOx and ROG of 6,620 and 89,180 pounds per day, respectively, contributed to 20 premature deaths per year and 89,947 school absence (South Coast Air Quality Management District, 2015).

under the NAAQS and CAAQS. The NAAQS and CAAQS are informed by a wide range of scientific evidence that demonstrates there are known safe concentrations of criteria pollutants. While recognizing that air quality is a cumulative problem, air districts typically consider projects that generate criteria pollutant and ozone precursor emissions below these thresholds to be minor in nature and would not adversely affect air quality such that the NAAQS or CAAQS would be exceeded. Emissions generated by the Project could increase photochemical reactions and the formation of tropospheric ozone and secondary PM, which at certain concentrations, could lead to increased incidence of specific health consequences. Although these health effects are associated with ozone and particulate pollution, the effects are a result of cumulative and regional emissions. As such, a project's incremental contribution cannot be traced to specific health outcomes on a regional scale, and a quantitative correlation of project-generated regional criteria pollutant emissions to specific human health impacts is not included in this analysis.

LOCALIZED CARBON MONOXIDE CONCENTRATIONS

Heavy traffic congestion can contribute to high levels of CO, and individuals exposed to such hot spots may have a greater likelihood of developing adverse health effects. The SMAQMD has adopted screening criteria that provide a conservative indication of whether Project-generated traffic would cause a potential CO hotspot. If the screening criteria are not met, a quantitative analysis through site-specific dispersion modeling of Project-related CO concentrations would not be necessary, and the Project would not cause localized violations of the CAAQS for CO. Projects that do not generate CO concentrations in excess of the health-based CAAQS would not contribute a significant level of CO such that localized air quality and human health would be substantially degraded.

MODELS AND TOOLS TO CORRELATE PROJECT-GENERATED CRITERIA POLLUTANT EMISSIONS TO HEALTH IMPACTS

Several models and tools capable of translating mass emissions of criteria pollutants to various health endpoints have been developed. The table provided in Appendix B.4 summarizes key tools, identifies the analyzed pollutants, describes their intended application and resolution, and analyzes whether they could be used to reasonably correlate project-level emissions to specific health consequences. As shown in the table provided in Appendix B.4, almost all tools were designed to be used at the national, state, regional, and/or city-levels. Several of the methods and have additional problems related to their applicability for translating mass emissions of criteria pollutants to various health endpoints. These tools are not well suited to analyze small or localized changes in pollutant concentrations associated with individual projects. Accordingly, they are generally not recommended for CEQA analyses.

ANALYSIS METHODOLOGY

Potential air quality impacts associated with short-term construction and long-term operations were evaluated in accordance with SMAQMD-recommended and the CARB-approved methodologies. Construction and operational emissions of criteria air pollutants were compared with the applicable thresholds of significance (described below) to determine potential impacts. SMAQMD's significance thresholds are used to determine whether the Project would result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment, and also serve a proxy to determine the potential for the Project to conflict with or obstruct implementation of any applicable air quality plan.

Construction-related emissions were modeled using the California Emissions Estimator Model California Emission Estimator Model (CalEEMod)™ (v.2016.3.2) (California Air Pollution Control Officers, 2018). Project-specific construction parameters were used as inputs in the air quality analysis (to the extent information was available). Construction is assumed to begin in January 2020 and end in December 2035, and would be developed over five phases. Where Project-specific information was not available, default parameters provided by each model were used. It should be noted that default assumptions in the models are typically conservative to avoid underestimating emissions when project-specific information is not available. Modeled construction-related emissions are compared with the applicable SMAQMD thresholds to determine significance.

Following construction, operation of the Project would generate air pollutant emissions. CalEEMod was also used to estimate these long-term operational emissions, as well as emissions associated with area and energy sources (i.e., natural gas combustion, landscape maintenance, periodic architectural coating, and consumer products). Operational emissions associated with day-to-day activities of the Project were quantified using CalEEMod and trip generation rates were based upon the traffic study prepared for the project (Kimley Horn, 2019). Mobile sources involve vehicle trips, including construction trucks and passenger cars. The analysis of mobile-source emissions compares the gross mobile-source emissions with the SMAQMD thresholds of significance for project operations. CO impacts were evaluated using the screening-level procedures provided by SMAQMD (2018).

The impact analysis does not directly evaluate airborne lead. Neither construction nor future operations would generate quantifiable lead emissions because of regulations that require unleaded fuel and that prohibit lead in new building materials.

TAC emissions associated with Project construction that could affect surrounding areas are evaluated qualitatively. The potential for the Project operations to expose residents to TAC emissions that would exceed applicable health standards is also discussed qualitatively.

Lastly, SMAQMD recommends that odor impacts be addressed in a qualitative manner. Such an analysis must determine if the Project would result in excessive nuisance odors, as defined under California Code of Regulations, Health and Safety Code Section 41700, Air Quality Public Nuisance.

CALEEMOD METHODOLOGY

Operational Emissions

Full buildout of the Project is expected to occur by 2035. The land use inputs for CalEEMod were derived from the Project Description (see Chapter 2.0), which includes information provided by the Project Applicant[3]. The CalEEMod land use inputs include:

- Retail:
  - Regional Shopping Center (32,000 square feet) (5.16 acres)
- Residential:
  - Apartments Mid Rise (215 Dwelling Units) (7.17 acres)
  - Retirement Community (38 dwelling units) (1.26 acres)
  - Retirement Community (737 dwelling units) (90.91 acres)
  - Single Family Housing (735 dwelling units) (77.87 acres)
- Recreational:
  - City Park (9.1 acres) (including an 8,000 square foot restroom) (9.28 acres)
  - City Park (3.07 acres) (including a 21,000 square foot clubhouse) (3.69 acres)
  - City Park (0.5 acres)
  - Parking – Other Asphalt Surfaces (3.5 acres)
  - Parking – Parking Lot (1.5 acres)

Vegetation change was modeled to estimate the reduction in carbon accumulation provided by the existing biomass (e.g. grasses) that would be removed upon Project buildout. It was assumed that, out of the approximately 530.1 acres within the project site, approximately 278.76 acres within the Project site would remain undeveloped upon project buildout. The Grassland vegetation land use subtype was used a proxy for the current land type within the Project site.

Carbon sequestration was also modeled from the planting of new trees within the Project site. Based on information provided by the Project applicant, it was assumed that 2,240 new trees would be planted within the project site.

Separately, minor adjustments were made to several of the default emission factors provided by CalEEMod. These are as follows:

- Consumer products:
  - The "general category" emission factor was adjusted from default value (reduced by a total of 29.10%), based on the following differences between Project attributes and the inputs used to develop the default value (the default value utilizes statewide factors from year 2008):

[3] Passive park uses are treated as open space and therefore and not modeled.

- The Project is estimated to have a persons per dwelling unit (persons/du) value of 2.504, versus the current statewide average of 2.97[4]. This is a difference of 18.60%
- The CARB estimated total statewide year 2016 ROG emissions of 208.71 tons/year, which is 12.89% less than the amount estimated for year 2008 (239.6 tons/year).

- Architectural Coatings:
  - The residential interior and non-residential interior emission factors were reduced from 100 g/L to 50 g/L, based on the SMAQMD Rule 442 that provides a maximum VOC limit of 50 g/L for flat coatings. It was assumed that flat coatings are used for interior coatings.

There are three types of emission sources modeled for the Project: area, energy, and mobile sources. These collectively make up the Project's operational emissions. The California Emission Estimator Model (CalEEMod)TM (v.2016.3.2) was used to estimate area source emissions. The methodology used in this analysis to address each source is presented below.

AREA SOURCES

The term area source emissions refer to equipment or devices operating within a project that individually emit small quantities of air pollutants, but when considered collectively, represent large quantities of emissions. Examples include fireplaces, wood burning heaters, lawn maintenance equipment, application of paints and lacquers, and use of consumer products.

MOBILE SOURCES

The term mobile source emissions refer to vehicle emissions generated by a project. Mobile source emissions are dependent on a large number of variables including trip length, average speed, trip generation rates, vehicle fleet mix, starting conditions, temperature, year, and other factors.

CalEEMod was used to estimate mobile source emissions. The traffic inputs were derived from the traffic analysis. The traffic inputs include trip generation rates as included within the Traffic Impact Analysis provided by Kimley Horn (2019).

ENERGY SOURCES

Energy generated by the Project is accounted for within this category. Examples include building electricity and natural gas consumption.

[4] California Department of Finance, Table 2: E-5 City/County Population and Housing Estimates (1/1/2018).

Construction Emissions

Construction activities can generate a substantial amount of air pollution. In some cases, the emissions from construction represent the largest air quality impact associated with a project. While construction-related emissions are considered temporary, these short-term impacts can contribute to the pollution load recorded at monitoring stations. Emissions from construction are assessed in this document to determine whether the thresholds of significance established by the SMAQMD would be exceeded.

Construction activities would include: site preparation, grading, building construction, paving, and architectural coatings. The emissions generated from these common construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips.

As provided by the Project applicant, approximately 152,708 cubic yards of soil (net) would be exported from the Project site. Additionally, it was assumed that 278.76 acres of the Project site would be graded (this includes all of the residential and commercial portions of the Project site, as well as right-of-way).

The Project is anticipated to be developed in approximately five phases, according to the Project applicant, as follows:

- Phase 1 (January 2020 – August 2023):
  - Phase I Clubhouse and associated landscaping (Lot A) – 1/3 of the building complex (about 7000 sf);
  - 270 single family residential units;
  - 232 single family residential units – age restricted.
- Phase 2 (April 2022 – November 2025):
  - 197 single family residential units
  - 210 single family residential units – age restricted.
    - Neighborhood Park 2.2 ac (lot Q)
    - Liner Park Lot C (1.4ac)
    - Phase 2 Clubhouse building (~7000 sf)
- Phase 3 (February 2025 – April 2029):
  - 268 single family residential units
  - 295 single family residential units – age restricted
  - 16 senior multi-family residential units
  - Open Space (Lot T) – 1.2 acres
  - Rancho Cordova Parkway Widening
  - Phase 3 clubhouse (~7000 sf)
  - Lot B (Park)
- Phase 4 (March 2030 – June 2033):
  - 215 multi-family residential units
  - 22 senior multi-family residential units

- Phase 5 (March 2034 – December 2035)
    - Commercial Center

CalEEMod was used to estimate the construction emissions from construction activities. Based on construction phasing and schedule, the default off-road construction equipment types, amount, and characteristics provided by CalEEMod were used to model Project off-road construction equipment.

IMPACTS AND MITIGATION MEASURES

Impact 3.2-1: The Project has the potential to conflict with or obstruct implementation of the applicable air quality plan or to result in a cumulatively considerable net increase in criteria pollutants for which the region is in non-attainment (Less than Significant)

The Project is consistent with all applicable planning documents, including each of the attainment plans currently in effect for the SVAB, including the State SIP. The Project was also planned for within the SACOG MTP/SCS. Therefore, the Project's consistency with the SMAQMD's emissions thresholds are used as a proxy to determine the potential for the Project to conflict with or obstruct implementation of any applicable air quality plan.

PROJECT OPERATIONS

The Project would be a direct and indirect source of air pollution, in that it would generate and attract vehicle trips in the region (mobile source emissions), require the use of grid energy (natural gas and electricity), and generate area source emissions. The mobile source emissions would be entirely from vehicles, while the area source emissions would be primarily from landscape fuel combustion, consumer products, and architectural coatings.

CalEEMod was used to estimate operational emissions for the Project. Full buildout was estimated occur by 2035, based on the construction schedule provided by the Project applicant. Tables 3.2-8 through 3.2-10 show the Project's approximate unmitigated operational emissions under the annual, winter, and summer scenarios. Operational emissions include emissions of criteria pollutants that would result from mobile, energy, and area sources. CalEEMod model only allows some Project characteristics to be modeled as "mitigation" for the purposes of the model. Nevertheless, since Project characteristics represent the unmitigated scenario, the incorporation of these results into the model represent unmitigated results.

Specifically, the Project would include the following operational project characteristics that would reduce Project operational emissions below the applicable thresholds as provided in Table 3.2-7 through Table 3.2-9. As stated, these represent Project characteristics rather than mitigation. For further detail, see the list of sustainability features and other Project details as provided in Chapter 2.0: Project Description. A summary of the Project characteristics is provided below (note: the associated CalEEMod measure is provided in brackets below):

- Density to 6.86 dwelling units per acre [Traffic Mitigation, LUT-1];
- Increase diversity through single family residential, multi-family residential, commercial, parks and recreation, and senior uses [Traffic Mitigation, LUT-3];
- Improve walkability design (123.53 intersections per square miles) [Traffic Mitigation, LUT-9];
- Improve destination accessibility (12.3 miles) [Traffic Mitigation LUT-4];
- Increase transit accessibility (Project site would include transit facilities for the City's Signature Transit Route) – average distance to transit for Project residents would be approximately 0.25 miles) [Traffic Mitigation, LUT-5];
- Improve pedestrian network (Project site and connecting off-site) [Traffic Mitigation, SDT-1];
- Provide traffic calming measures (50% of streets and intersections with improvements) [Traffic Mitigation, SDT-2];
- Install electric vehicle (EV) charging stations throughout the Project site, such that at least 50% of single-family residences and 5% of parking spaces within the commercial, park and recreation, and multi-family land uses will have EV charging stations [Traffic Mitigation SDT-3];
- Expand transit network [Traffic Mitigation, TST-3];
- Plant a minimum of 2,240 new trees throughout the Project site [4.11.2-Sequestration];
- No hearths [Area Mitigation];
- Use low-VOC paint (50 EF g/L);
- Install energy efficient (i.e. LED or better lighting) for all outdoor lighting (for outdoor lighting) [Energy Mitigation, LE-1];
- Generate 95% or more of electricity via renewable energy (on-site energy generation and/or contract with SMUD) [Energy Mitigation, AE-1, AE-2, AE-3];
- Install energy efficient *(i.e. Energy Star)* appliances [Energy Mitigation, BE-4];
- Install low-flow appliances (bathroom faucet, kitchen faucet, toilet, and shower) [Water Mitigation, WUW-1];
- Use water-efficient irrigation systems (automatic rain shut-off, maximum gallon per minute restriction, WiFi connectivity) [Water Mitigation, WUW-4]; and
- Minimize turf for residential uses to 70% less than the maximum allowed turf area [Water Mitigation, WUW-5].

Furthermore, the Project would implement all feasible SMAQMD BMPs for particulate matter emissions from land use development projects. The SMAQMD BMPs are required by existing regulations. The following list identifies the BMPs for operational PM emissions for land use development projects:

- Compliance with District rules that control operational PM and NOx emissions, including SMAQMD Rule 403 (Fugitive Dust). Rule 403 requires the Project applicant to implement every reasonable method to control dust emissions. Actions include but are not limited to application of water or chemicals, asphalt, and/or oil depending on the dust-generating activity.

- Compliance with the mandatory measures in the California Building Energy Efficiency Standards (Title 24, Part 6) that pertain to efficient use of natural gas for space and water heating and other uses at residential or non-residential land uses.
- Compliance with mandatory measures in the California Green Building Code (Title 24, Part 11). Current mandatory measures related to operational PM include requirements for bicycle parking, parking for fuel-efficient vehicles, electric vehicle charging, and fireplaces for non-residential projects. Residential project measures include requirements for electric vehicle charging and fireplaces.
- Compliance with anti-idling regulations for diesel-powered commercial motor vehicles (greater than 10,000 gross vehicular weight rating). This BMP focuses on non-residential land use projects (retail and industrial) that would attract these vehicles.

The Project would comply with each of the operational BMPs as promulgated by the SMAQMD for land use development projects.

Since the SMAQMD operational thresholds for ROG and NOx are only provided in pounds per day, annual operational emissions for these pollutants are provided for informational purposes only. Detailed CalEEMod emissions calculations are presented in Appendix B.

TABLE 3.2-7: PROJECT OPERATIONAL EMISSIONS (TONS/YEAR) - ANNUAL

EMISSIONS(A)	*ROG*	*NOx*	*PM_{10}*	*$PM_{2.5}$*
Area	8.0	0.2	0.1	0.1
Energy	0.2	1.4	0.1	0.1
Mobile	1.5	7.8	8.6	2.3
Total	**9.7**	**9.4**	**8.8**	**2.5**
Threshold	**N/A**	**N/A**	**14.5**	**15**
Above Threshold?	**N/A**	**N/A**	**No**	**No**

NOTE: (A) NUMBERS PROVIDED HERE MAY NOT ADD UP EXACTLY TO TOTAL DUE TO ROUNDING. (B) MAXIMUM VALUE.

SOURCE: CALEEMOD (V.2016.3.2)

TABLE 3.2-8: PROJECT OPERATIONAL EMISSIONS (POUNDS/DAY) - SUMMER

EMISSIONS(A)	*ROG*	*NOx*	*PM_{10}*	*$PM_{2.5}$*
Area	45.4	1.6	0.8	0.8
Energy	0.9	7.7	0.6	0.6
Mobile	10.6	41.9	48.8	13.1
Total	**57.0**	**51.3**	**50.2**	**14.6**
Threshold	**65**	**65**	**80**	**82**
Above Threshold?	**No**	**No**	**No**	**No**

NOTE: (A) NUMBERS PROVIDED HERE MAY NOT ADD UP EXACTLY TO TOTAL DUE TO ROUNDING. (B) MAXIMUM VALUE.

SOURCE: CALEEMOD (V.2016.3.2)

TABLE 3.2-9: PROJECT OPERATIONAL EMISSIONS (POUNDS/DAY) - WINTER

EMISSIONS(A)	*ROG*	*NOx*	*PM_{10}*	*$PM_{2.5}$*
Area	45.4	1.6	0.8	0.8
Energy	0.9	7.7	0.6	0.6
Mobile	17.6	43.3	48.8	13.2
Total	**53.9**	**52.7**	**50.2**	**14.6**
Threshold	**65**	**65**	**80**	**82**
Above Threshold?	**No**	**No**	**No**	**No**

NOTE: (A) NUMBERS PROVIDED HERE MAY NOT ADD UP EXACTLY TO TOTAL DUE TO ROUNDING. (B) MAXIMUM VALUE.

SOURCE: CALEEMOD (V.2016.3.2)

The SMAQMD has established operational emissions thresholds of significance of 65 pounds/day for the ozone precursors ROG and NOx, and 80 pounds/day for PM_{10} and 82 pounds/day for $PM_{2.5}$ (if all feasible BACT/BMPs are applied for PM emissions[5]). As shown in the above tables, Project-generated emissions would not exceed the SMAQMD thresholds for any pollutant under any of the scenarios. As such, Project operational emissions would not be expected to contribute a significant level of air pollution such that regional air quality within the SVAB would be degraded. Therefore, Project operational emissions would result in a ***less than significant*** impact.

PROJECT CONSTRUCTION

Construction activities associated with construction and implementation of the Project would result in temporary short-term emissions associated with vehicle trips from construction workers, operation of construction equipment, and the dust generated during construction activities. These temporary and short-term emissions would generate additional ozone precursors (ROG and NO_x) as well as PM_{10} and $PM_{2.5}$. Below is an estimated phasing construction schedule for the Project, broken down into five phases (as provided by the Project applicant)[6]:

- Phase 1:
  - Site Preparation: 1/1/2020 – 3/30/2020
  - Grading: 4/1/2020 – 11/1/2020
  - Paving: 11/1/2020 – 1/30/2021
  - Building Construction: 2/1/2021 – 5/1/2023
  - Architectural Coating: 5/2/2021 – 8/1/2023
- Phase 2:
  - Building Construction: 4/1/2022 – 9/30/2022
  - Paving: 10/1/2022 – 12/31/2022
  - Building Construction: 4/1/2023 – 7/31/2025

[5] Note: Best Available Control Technologies (BACT) only apply to stationary source emissions. Since the Project does not include any stations sources, they are not applicable to the Project (SMAQMD, 2016).

[6] Note: Site preparation and grading activities for Phases 1 and 2 are anticipated to be conducted during Phase 1, as provided by the Project applicant.

  - Architectural Coating: 8/1/2023 – 11/30/2025
- Phase 3:
  - Site Preparation: 2/1/2025 – 4/27/2025
  - Grading: 4/28/2025 – 10/1/2025
  - Paving: 10/2/2025 – 12/31/2025
  - Building Construction: 1/1/2026 – 9/30/2028
  - Architectural Coating: 4/1/2026 – 12/31/2028
  - Site Preparation and grading for Rancho Cordova widening: 1/1/2027 – 10/1/2027
  - Paving for Rancho Cordova widening: 10/2/2027 – 01/31/2028
  - Site Prep (note: for park – Lot D): 4/1/2028 – 4/1/2029
- Phase 4:
  - Site Preparation for Commercial and MFR: 3/1/2030 – 4/27/2030
  - Grading and Improvements: 4/28/2030 – 8/1/2030
  - Paving: 8/2/2030 – 10/31/2030
  - Building Construction: 4/1/2031 – 1/1/2033
  - Architectural Coating: 1/2/2033 – 6/1/2033
- Phase 5:
  - Site Preparation for commercial center: 3/1/2034 – 4/27/2034
  - Grading and Improvements: 4/28/2034 – 7/31/2024
  - Paving: 8/1/2034 – 9/1/2034
  - Building Construction: 10/1/2034 – 8/31/2035
  - Architectural Coating: 9/1/2035 – 12/31/2035

SMAQMD advises that projects incorporate best management practices, regardless of whether emissions would be above the applicable thresholds. Below is a list of the best management practices that are recommended by the SMAQMD.

- Water all active construction sites at least three times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transportation soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting off equipment when not in use or reducing the time of idling to 5 minutes. Provide clear signage that posts this requirement for workers at the entrance to the site.

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

CalEEMod allows the inclusion of measures that would reduce project-related construction emissions consistent with the SMAQMD construction-related best management practices (as provided above). To reflect the SMAQMD best management practices within the modeling, the following CalEEMod measures were used within CalEEMod to calculate the reduction in construction emissions due to implementation of these best management practices, per SMAQMD guidance:

- Water Exposed Area two times daily (55% Fugitive Dust PM reduction);
- Clean Paved Road (9% Fugitive Dust PM reduction).
- Unpaved Road Mitigation: Limit on-site construction vehicle speeds to 15 mph.

Table 3.2-10 shows the maximum daily and annual construction emissions that would result from the Project. The emissions provided in Table 3.2-10 represent emissions inclusive of the above-specified measures that would reduce Project-related construction emissions consistent with the SMAQMD construction-related best management practices.

The SMAQMD has established construction emissions threshold of significance of 85 pounds per day for NOx, 80 pounds per day and 14.6 tons per year for PM_{10}, and 82 pounds per day and 15 tons per year for $PM_{2.5}$. The SMAQMD utilizes a screening process and separate model for CO impacts. There is no construction threshold for ROG. As shown in Table 3.2-10, construction emissions of NOx would be at its maximum in year 2020, with a maximum of approximately 68.2 pounds per day, which is below the 85 pounds per day threshold for NOx. Year 2027 would be the peak years for PM_{10} and $PM_{2.5}$. However, emissions for PM would also be below the applicable daily and annual thresholds for PM as provided by the SMAQMD. As such, Project construction emissions would not be expected to contribute a significant level of air pollution such that regional air quality within the SVAB would be degraded. Therefore, Project construction emissions would result in a ***less than significant*** impact.

TABLE 3.2-10: SUMMARY OF MAXIMUM CONSTRUCTION DAILY AND ANNUAL EMISSIONS

YEAR	*ROG (LBS/DAY)*	*NOx (LBS/DAY)*	*PM_{10} (LBS/DAY)*	*$PM_{2.5}$ (LBS/DAY)*	*PM_{10} (TONS/YEAR)*	*$PM_{2.5}$ (TONS/YEAR)*
PHASE 1						
2020	5.0	68.3	10.5	6.5	0.8	0.5
2021	14.7	39.0	8.9	3.5	1.0	0.4
2022	14.2	34.9	8.7	3.2	1.1	0.4
2023	13.9	31.6	8.5	3.1	0.4	0.1
Maximum	**14.7**	**68.2**	**10.5**	**6.5**	**1.1**	**0.5**
Threshold	**None**	**85**	**80**	**82**	**14.6**	**15**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
PHASE 2						
2022	1.8	15.7	1.1	0.8	0.1	0.1
2023	10.5	22.1	3.6	1.5	0.2	0.1
2024	10.3	20.9	3.5	1.4	0.5	0.2
2025	10.1	19.7	3.4	1.3	0.3	0.1
Maximum	**10.5**	**22.1**	**3.6**	**1.5**	**0.5**	**0.2**
Threshold	**None**	**85**	**80**	**82**	**14.6**	**15**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
PHASE 3						
2025	3.9	36.6	9.8	5.6	0.5	0.3
2026	17.6	25.8	5.9	2.0	0.7	0.2
2027	20.0	50.8	15.3	7.5	1.7	0.8
2028	19.9	50.6	15.3	7.5	1.5	0.7
2029	2.5	25.3	9.3	5.5	0.3	0.2
Maximum	**20.0**	**50.8**	**15.3**	**7.5**	**1.7**	**0.8**
Threshold	**None**	**85**	**80**	**82**	**14.6**	**15**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
PHASE 4						
2030	3.1	14.9	8.7	4.9	0.3	0.2
2031	1.7	9.9	1.5	0.5	0.1	<0.1
2032	1.7	9.9	1.5	0.5	0.2	0.1
2033	17.4	0.9	0.3	0.1	<0.1	<0.1
Maximum	**17.4**	**14.9**	**8.7**	**4.9**	**0.3**	**0.2**
Threshold	**None**	**85**	**80**	**82**	**14.6**	**15**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**
PHASE 5						
2034	2.5	13.7	8.7	4.9	0.6	0.3
2035	3.5	8.3	0.2	0.1	<0.1	<0.1
Maximum	**3.5**	**13.7**	**8.7**	**4.9**	**0.6**	**0.3**
Threshold	**None**	**85**	**80**	**82**	**14.6**	**15**
Above Threshold?	**N**	**N**	**N**	**N**	**N**	**N**

SOURCE: CALEEMOD (V.2016.3.2)

PROJECT EFFECTS ON PUBLIC HEALTH

Sacramento County has a state designation of Nonattainment for ozone and PM_{10}, and a national designation of Nonattainment for ozone and $PM_{2.5}$. As shown in Table 3.2-7 through Table 3.2-10, construction and operation of the Project would not generate ozone precursors (ROG and NO_x) or PM exhaust in excess of the SMAQMD's numeric thresholds. The SMAQMD developed these project-level thresholds based on the emissions amount that would exceed a CAAQS or contribute substantially to an existing or projected violation of a CAAQS, as described in the *Thresholds of Significance for Criteria Pollutants* discussion. Ambient levels of these criteria pollutants are likely to decrease in the future, based on current and future implementation of federal and/or state regulatory requirements, such as improvements to the statewide vehicle fleet over time (including the long-term replacement of internal combustion engine vehicles with electric vehicles in coming decades).

As shown in the table provided in Appendix B.4, almost all tools available to measure criteria pollutant emissions were designed to be used at the national, state, regional, and/or city-levels. These tools are not well suited to analyze small or localized changes in pollutant concentrations associated with individual projects. Accordingly, they are not recommended by the SMAQMD for CEQA analyses (SMAQMD, 2019).

Ozone

O_3 is not emitted directly into the air but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) (also known as ROG) and oxides of nitrogen (NO_x) in the presence of sunlight. The reactivity of O_3 causes health problems because it damages lung tissue, reduces lung function and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O_3 not only affect people with impaired respiratory systems, such as asthmatics, but healthy adults and children as well. Exposure to O_3 for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing and pulmonary congestion.

Studies show associations between short-term ozone exposure and non-accidental mortality, including deaths from respiratory issues. Studies also suggest long-term exposure to ozone may increase the risk of respiratory-related deaths (U.S. Environmental Protection Agency 2019a). The concentration of ozone at which health effects are observed depends on an individual's sensitivity, level of exertion (i.e., breathing rate), and duration of exposure. Studies show large individual differences in the intensity of symptomatic responses, with one study finding no symptoms to the least responsive individual after a 2-hour exposure to 400 parts per billion of ozone and a 50 percent decrement in forced airway volume in the most responsive individual. Although the results vary, evidence suggest that sensitive populations (e.g., asthmatics) may be affected on days when the 8-hour maximum ozone concentration reaches 80 parts per billion (U.S. Environmental Protection Agency 2019b).

The Project would generate emissions of ROG and NOx during Project operational and construction activities, as shown in Table 3.2-7 through Table 3.2-10. Although the exact effect of such emissions on local health are not known, it is likely that the increases in ROG and NOx generated by the proposed Project would especially affect people with impaired respiratory systems, but also healthy adults and children. However, the increases of these pollutants generated by the proposed Project are not on their own likely to generate an increase in the number of days exceeding the NAAQS or CAAQS standards, based on the size of the proposed Project in comparison to Sacramento County as a whole.

Particulate Matter

Based on studies of human populations exposed to high concentrations of particles (sometimes in the presence of SO_2) and laboratory studies of animals and humans, PM can cause major effects of concern for human health. These include effects on breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis and premature death. Small particulate pollution has health impacts even at very low concentrations – indeed no threshold has been identified below which no damage to health is observed. The major subgroups of the population that appear to be most sensitive to the effects of particulate matter include individuals with chronic obstructive pulmonary or cardiovascular disease or influenza, asthmatics, the elderly and children. Particulate matter also soils and damages materials, and is a major cause of visibility impairment.

Numerous studies have linked PM exposure to premature death in people with preexisting heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lunch function, and increased respiratory symptoms. Studies show that every 1 microgram per cubic meter reduction in $PM_{2.5}$ results in a one percent reduction in mortality rate for individuals over 30 years old (Bay Area Air Quality Management District, 2017). Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis – and even premature death. Additionally, depending on its composition, both PM_{10} and $PM_{2.5}$ can also affect water quality and acidity, deplete soil nutrients, damage sensitive forests and crops, affect ecosystem diversity, and contribute to acid rain (U.S. Environmental Protection Agency 2019c).

The Project would generate emissions of PM during Project operational and construction activities, as shown in Table 3.2-7 through Table 3.2-10. Although the exact effect of such emissions on local health are not known, it is likely that the increases in PM generated by the proposed Project would especially affect people with impaired respiratory systems, but also healthy adults and children located in the immediate vicinity of the Project site. However, the increases of these pollutants generated by the proposed Project are not on their own likely to generate an increase in the number of days exceeding the NAAQS or CAAQS standards, based on the size of the Project in comparison the Sacramento County as a whole.

Discussion

As previously discussed, the magnitude and locations of any potential changes in ambient air quality, and thus health consequences, from these additional emissions cannot be quantified with a high level of certainty due to the dynamic and complex nature of pollutant formation and distribution (e.g., meteorology, emissions sources, sunlight exposure). However, it is known that public health will continue to be affected in the City of Rancho Cordova and the surrounding region so long as the region does not attain the CAAQS or NAAQS. However, the increases of these pollutants generated by the proposed Project are not on their own likely to generate an increase in the number of days exceeding the NAAQS or CAAQS standards, based on the size of the Project in comparison the Sacramento County as a whole.

CONCLUSION

As shown in Tables 3.2-11 through 3.2-13, modeled Project characteristics demonstrate that the Project's operational emissions to levels would be below the SMAQMD thresholds. The Project would have a ***less than significant*** impact relative to project operational emissions. Additionally, as shown in Table 3.2-11, implementation of the SMAQMD construction-related best management practices (as required) would reduce Project-related construction emissions during the construction timeframe and emissions would be below SMAQMD thresholds. Therefore, Project construction emissions would have a ***less than significant*** impact. Lastly, the Project would not generate significant health impacts associated with exposure to increases in criteria pollutant levels, based on the tools that are currently available and SMAQMD's interim guidance. This Project would have a ***less than significant*** impact relative to this topic.

Impact 3.2-2: The Project has the potential to generate carbon monoxide hotspot impacts as a result of increased traffic congestion that would exceed the applicable ambient air quality standards (Less than Significant)

Very high levels of CO are not likely to occur outdoors. However, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease. These people already have a reduced ability for getting oxygenated blood to their hearts in situations where the heart needs more oxygen than usual. They are especially vulnerable to the effects of CO when exercising or under increased stress. In these situations, short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain also known as angina (USEPA, 2016). Such acute effects may occur under current ambient conditions for some sensitive individuals, while increases in ambient CO levels could increase the risk of such incidences.

Project traffic would increase concentrations of carbon monoxide along streets providing access to the Project site. Carbon monoxide is a local pollutant (i.e., high concentrations are normally only found very near sources). The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations (i.e. hotspots), therefore, are usually only found near areas of high traffic volume and congestion.

Long-distance transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. Under specific meteorological conditions and traffic conditions, CO concentrations at receptors located near roadway intersections may reach unhealthy levels, when combined with background CO level.

Emissions and ambient concentrations of CO have decreased dramatically in the SVAB with the introduction of the catalytic converter emission control technology for on-road motor vehicles in 1975 and reformulated fuels required by the 1990 Clean Air Act amendments. No exceedances of the CAAQS or NAAQS for CO have been recorded at a monitoring station in Sacramento County since 1993. Both the CARB and the USEPA have redesignated the Sacramento Valley Air Basin as an attainment area for CO, for the CAAQS in 1997 and the NAAQS on June 1, 1998, respectively. However, elevated localized concentrations of CO still warrant consideration in the environmental review process. Occurrences of localized CO concentrations (i.e., “hotspots”) are often associated with heavy traffic congestion, which most frequently occur at signalized intersections of high-volume roadways.

The preliminary screening methodology provided by the SMAQMD provides lead agencies with a conservative indication of whether Project-generated vehicle trips will result in the generation of CO emissions that contribute to an exceedance of the thresholds of significance. The SMAQMD’s recommended screening criteria are divided into two tiers. The screening criteria have been developed to help lead agencies analyze potential CO impacts and identify when site-specific CO dispersion modeling is not necessary.

According to the SMAQMD, a Project will result in a less than significant impact to air quality for local CO if:

- Traffic generated by the Project will not result in deterioration of intersection level of service (LOS) to LOS E or F; and
- The project will not contribute to additional traffic to an intersection that already operates at LOS of E or F.

The Project would not satisfy this first tier of screening criteria. As identified in Section 3.13: Transportation and Circulation, there are several intersections that would be affected by the Project such that the Project would contribute additional traffic to some intersections that already operate at LOS of E or F. There would also be an intersection (Intersection #9 as identified in Section 3.13: Transportation and Circulation) that would result in a deterioration of intersection LOS to E during the PM peak hour. Therefore, the Project would not satisfy the first tier of the SMAQMD’s recommended screening criteria.

The SMAQMD guidance states that, if the first tier of screening criteria is not met, then a second tier of screening criteria shall be examined. The second tier of screening criteria is listed below. According to the SMAQMD, the Project would result in a less than significant impact to air quality for local CO if all of the following criteria are met:

- The project will not result in an affected intersection experiencing more than 31,600 vehicles per hour;
- The project will not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway; or other locations where horizontal or vertical mixing of air will be substantially limited; and
- The mix of vehicle types at the intersection is not anticipated to be substantially different from the County average (as identified by the EMFAC or CalEEMod models).

The Project meets each of these three criteria. The Project does not result in an affected intersection experiencing more than 31,600 vehicles per hour, would not contribute traffic at a location where horizontal or vertical mixing of air will be substantially limited, and the mix of vehicles types at the intersection would not be substantially different than the County average.

The SMAQMD does not maintain a mass emissions threshold for carbon monoxide. Therefore, since the Project passes the SMAQMD screening criteria for Carbon monoxide hotspots, the potential for a carbon monoxide hotspot impact represents a ***less than significant*** impact.

Impact 3.2-3: The Project has the potential for expose sensitive receptors to substantial toxic air contaminants (Less than Significant)

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the state and federal governments have set ambient air quality standards.

The CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (2007) to provide information to local planners and decision-makers about land use compatibility issues associated with emissions from industrial, commercial and mobile sources of air pollution. The CARB Handbook indicates that mobile sources continue to be the largest overall contributors to the State's air pollution problems, representing the greatest air pollution health risk to most Californians. The most serious pollutants on a statewide basis include diesel exhaust particulate matter (diesel PM), benzene, and 1,3-butadiene, all of which are emitted by motor vehicles. These mobile source air toxics are largely associated with freeways and high traffic roads. Non-mobile source air toxics are largely associated with industrial and commercial uses. Table 3.2-11 provides the California Air Resources Board minimum separation recommendations on siting sensitive land uses.

The CARB recommends avoiding placing new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles per day. The Project site is not within 500 feet of any highway or interstate (the closest highway, CA-16, is located more than 2.5 miles to the south of the Project site). Moreover, the Project site is not located adjacent to any major roadways, and Project sensitive receptors would not be located within 500 feet of roadways with traffic volumes of 50,000 vehicles/day or greater. Therefore, the site lies beyond the CARB-recommended buffer area, and future receptors would not be negatively affected by toxic air contaminants generated on nearby roadways. The Project is primarily a residential development, with some light commercial and recreation land uses. These land uses are not typically known to expose the public to substantial concentrations of TACs. In addition, there are no distribution centers, rail yards, ports, refineries, chrome platers, dry cleaners, or gasoline dispensing facilities located in the vicinity of the Project site. There are no major stationary sources of toxic air contaminants identified in the vicinity of the development site that could potentially affect future on-site sensitive receptors, and the Project would not be a large generator of diesel truck trips during Project operation. Therefore, development of the Project would not cause a substantial increase in exposure of sensitive receptors to localized concentrations of TACs. This Project would have a ***less than significant*** relative to this topic.

TABLE 3.2-11: CARB MINIMUM SEPARATION RECOMMENDATIONS ON SITING SENSITIVE LAND USES

SOURCE CATEGORY	*ADVISORY RECOMMENDATIONS*
Freeways and High-Traffic Roads	• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). • Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. • Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the CARB on the status of pending analyses of health risks.
Refineries	• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloro- ethylene	• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district. • Do not site new sensitive land uses in the same building with perc dry cleaning operations.
Gasoline Dispensing Facilities	• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

SOURCE: AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE" (CARB, 2007)

DIESEL PARTICULATE MATTER

The Project requires earthmoving during the Project's construction phase. Construction activity can result in emissions from particulate matter from diesel exhaust (diesel PM). CalEEMod was used to estimate construction PM_{10} emissions for the Project. Construction emissions are discussed in more detail under Impact 3.2-2 (detailed CalEEMod emissions calculations are presented in Appendix B). An estimated Project construction schedule, quantity and types of diesel-powered equipment, and number of hours of equipment operated per day is provided under the "CalEEMod Methodology" discussion provided above. Residential receptors are located surrounding the Project site to the north, northwest, southeast, and east of the Project site. Wind direction varies by time of the year, but typically comes from the south in late winter/early spring and from mid-summer through late fall, while the wind is most often from west from during late spring/early summer, and from the north during the winter. Construction staging areas would be located adjacent to Project construction activities throughout the duration of Project construction.

The SMAQMD has not established a quantitative threshold of significance for construction-related TAC emissions. SMAQMD construction-related best management practices require the implementation of construction dust mitigation measures to reduce overall PM emissions during construction, consistent with the recommendations of the SMAQMD in their *Guide to Air Quality Assessment in Sacramento County (CEQA Guide)* (2018). The Project does not contain any land uses or construction activities that would generate an unusual amount of diesel PM, in comparison to projects of a similar kind. The Project would have a ***less than significant*** impact with regard to diesel PM.

Impact 3.2-4: The Project has the potential to result in other emissions (such as those leading to odors) that could adversely affect a substantial number of people (Less than Significant)

In addition to criteria pollutants and TACs, other emissions that have the potential to affect a substantial number of people are offensive odors. While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the SMAQMD. The general nuisance rule (Heath and Safety Code §41700 and SMAQMD Rule 402) is the basis for the SMAQMD threshold. In addition, Policy AQ.1.5 of the City of Rancho Cordova General Plan requires an odor impact analysis for new development that could generate objectionable odors near sensitive receptors or locate new sensitive receptors near existing sources of objectionable odors. A project may reasonably be expected to have a significant adverse odor impact where it "generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property."

As discussed under Impact 3.2-4, implementation of the Project would not place sensitive receptors adjacent to TACs above the applicable standards and thresholds. Similarly, implementation of the Project would not directly create or generate objectionable odors to a significant degree. The Project would also not place sensitive receptors near objectionable odors. Trash in enclosed areas from the commercial uses would be separated at a sufficient distance from nearby residences, and enclosed in industry-standard containers, such that odors from trash would not generally generate noticeable odors for nearby residential receptors.

Examples of facilities that are known producers of odors include: Wastewater Treatment Facilities, Chemical Manufacturing, Sanitary Landfill, Fiberglass Manufacturing, Transfer Station, Painting/Coating Operations (e.g. auto body shops), Food Processing Facility, Petroleum Refinery, Asphalt Batch Plant, and Rendering Plant. The Project would not develop any of these known producers of odors.

Separately, Project construction activities have the potential to generate objectionable odors on nearby existing residential receptors during Project construction activities (such as those to the west and north of the Project site, or those within the project site itself). Diesel-fueled construction equipment and heavy-duty trucks can generate odorous diesel particulate matter (diesel PM) exhaust emissions that could adversely affect nearby receptors. However, the Project would be developed in phases over several years. Since only small portions of the Project site would be developed on a given day, odors from Project construction activities are expected to be minimal. In addition, the Project site is relatively flat, which would help to disperse odors for construction activities. Furthermore, as provided under Impact 3.2-2, the Project would be required to implement the SMAQMD's Basic Construction Emissions Control Practices (Best Management Practices), which would reduce PM emissions, thereby reducing the potential for project construction activities to generate odors that would affect a substantial number of people.

It should be noted that the California Supreme Court decision in the case of *California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal. 4th 369* clarified that lead agencies are not required by CEQA to analyze the impact of existing environmental conditions on a project's future users or residents unless the project will exacerbate the existing environmental hazards or conditions. This limits the CEQA analysis of existing odor source impacts on new receptors from a project (SMAQMD, 2018).[7] The Project would not exacerbate existing environmental odors. Therefore, the Project would have a ***less than significant*** impact with regard to the potential for odors.

[7] See Sacramento Metropolitan Air Quality Management District CEQA Guide, page 7-2.

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