

3.3 Air Quality

This section describes existing local and regional air quality conditions; summarizes applicable air quality regulations at the federal, state, and local levels; and analyzes potential air quality impacts attributable to the proposed project. Cumulative impacts on air quality are addressed in Chapter 4, “Cumulative Impacts.” Emissions from both stationary and mobile sources were estimated using the California Emission Estimator Model (CalEEMod), Version 2016.3.2. The results of this modeling are provided in Appendix B to this EIR.

3.3.1 Environmental Setting

3.3.1.1 Topography, Climate, and Meteorology

Air quality is defined by the concentration of pollutants relative to their impact on human health. Ambient concentrations of air pollutants are determined by the amount of emissions released by pollutant sources and the ability of the atmosphere to transport and dilute such emissions. Terrain, wind, atmospheric stability, and the presence of sunlight all affect transport and dilution. Therefore, existing air quality in the project area is influenced by topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources (discussed separately below).

The project site is located in the town of Loomis, in Placer County. Placer County lies within multiple air basins: the Sacramento Valley Air Basin (SVAB), Mountain Counties Air Basin, and Lake Tahoe Air Basin. The project site is located within the SVAB. In general, the SVAB is relatively flat and bounded by the north Coast Ranges to the west and the northern Sierra Nevada to the east. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Sacramento–San Joaquin Delta (Delta) from the San Francisco Bay Area.

The mountain ranges that surround the SVAB reach heights of 6,000 feet or more at their peaks. When meteorological conditions are unfavorable for transport and dilution, the resulting physical barrier to airflow can entrap locally generated air pollutants and pollution that otherwise might have been transported northward on prevailing winds from the Sacramento metropolitan area. Although much of the SVAB is located at an elevation of more than 1,000 feet above sea level, the vast majority of its populace lives and works below that elevation. The valley is often subjected to inversion layers that, coupled with the area’s geographic barriers and high summer temperatures, create a high potential for air pollution problems.

Poor air movement occurs most frequently in the fall and winter when high-pressure cells are present over the project area and meteorological conditions are stable. During these periods, the lack of surface winds combines with the reduced vertical flow caused by less surface heating to reduce the influx of air. Surface concentrations of air pollutant emissions are highest when these conditions occur in combination with agricultural burning activities or temperature inversions, which hamper dispersion by creating a ceiling over the area and trapping air pollutants near the ground. The winds and unstable atmospheric conditions associated with the passage of winter storms result in periods of low air pollution and excellent visibility. Precipitation and fog also tend to reduce or limit some pollutant concentrations. However, between winter storms, high pressure and light winds contribute to low-level temperature inversions and stable atmospheric conditions, resulting in the concentration of air pollutants.

May through October is ozone season in the SVAB and is characterized by poor air movement in the mornings and the arrival of the Delta sea breeze from the southwest in the afternoons. In addition, with the longer daylight hours, a larger amount of sunlight is available to fuel photochemical reactions between volatile organic compounds (VOC) and oxides of nitrogen (NO_x), which in turn result in ozone formation.

Typically, the Delta breeze transports air pollutants northward out of the SVAB. However, during approximately half of the time from July to September, a phenomenon known as the Schultz Eddy prevents this from occurring. The Schultz Eddy phenomenon causes winds to shift southward, blowing air pollutants back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the air basin and can contribute to violations of ambient air quality standards.

The region has a Mediterranean climate, characterized by hot, dry summers and cool, rainy winters. The local meteorology of the project area is represented by measurements recorded at Auburn National Climate Data Center

Station 040383, approximately 9 miles northeast of the project site. This is the nearest station to the project site within the SVAB that has current data. Normal annual precipitation is approximately 34.39 inches and occurs primarily from November through March (WRCC 2017a). Precipitation during the winter rainy season typically results when air masses move in from the Pacific Ocean and travel across California from west to east. The inland location and surrounding mountains typically prevent the area from experiencing much of the ocean breeze that moderates the temperatures in coastal regions. During July, typically the hottest month of the year, average temperatures range from a minimum of 61.08 degrees Fahrenheit (°F) to a maximum of 92.5°F (WRCC 2017a). During January, typically the coldest month of the year, average temperatures range from a minimum of 36.6°F to a maximum of 54.0°F (WRCC 2017a).

Characteristic of the winter months in the SVAB are periods of dense and persistent low-level fog, which are most prevalent between storms. The prevailing winds are moderate in speed and vary from moisture-laden breezes from the south to dry-land flows from the north. The predominant wind direction and speed is from the south at approximately 8 miles per hour, as measured at the Sacramento International Airport (WRCC 2017b, 2017c).

3.3.1.2 Criteria Air Pollutants

The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) have identified six air pollutants as being indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable particulate matter (PM) with an aerodynamic diameter of 10 micrometers or less (PM₁₀), fine PM with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}), and lead. Because the ambient air quality standards for these air pollutants are regulated using human health and environmentally based criteria, they are commonly referred to as “criteria air pollutants.” In general, the State of California’s standards, particularly those for ozone and PM (PM₁₀ and PM_{2.5}), are more stringent than the federal standards.

This section provides a brief description of criteria air pollutants, including their source types and health effects, along with the most current attainment designations and monitoring data for the project area.

Ozone

Ozone is a colorless gas that is odorless at ambient levels. It exists primarily as a beneficial component of the ozone layer in the upper atmosphere (stratosphere), shielding the earth from harmful ultraviolet radiation emitted by the sun, and as a pollutant in the lower atmosphere (troposphere).

Ozone is the primary component of urban smog. It is not emitted directly into the air, but is formed through a series of reactions involving VOC and NO_x in the presence of sunlight. VOC emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_x includes various combinations of nitrogen and oxygen, including nitric oxide, NO₂, and others, typically resulting from the combustion of fuels.

Emissions of both VOCs and NO_x are considered critical to ozone formation; therefore, either VOCs or NO_x can limit the rate of ozone production. When the production rate of NO_x is lower, indicating that NO_x is scarce, the rate of ozone production is NO_x-limited. Under these circumstances, ozone levels could be most effectively reduced by lowering current and future NO_x emissions (from fuel combustion), rather than by lowering VOC emissions. Rural areas tend to be NO_x-limited, while areas with dense urban populations tend to be VOC-limited. Both VOC and NO_x reductions provide ozone benefits in the region, but the Sacramento Federal Nonattainment Area (SFNA) exhibits a NO_x-limited regime; therefore, NO_x reductions are more effective than VOC reductions on a tonnage basis (SMAQMD et al. 2017).

Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry.

Individuals exercising outdoors, children, and people with lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible subgroups for ozone effects. Short-term ozone exposure (lasting for a few hours) can result in changes in breathing patterns, reductions in breathing capacity, increased susceptibility to infections, inflammation of lung tissue, and some immunological changes. In recent years, a correlation has also been reported between elevated ambient ozone levels and increases in daily hospital admission rates and mortality

(EPA 2017a). An increased risk of asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Emissions of the ozone precursors VOC and NO_x have decreased in the past several years. According to the most recently published edition of ARB's *California Almanac of Emissions and Air Quality*, NO_x and VOC emissions levels in the Sacramento metropolitan area are projected to continue to decrease through 2035, largely because of more stringent motor vehicle standards and cleaner burning fuels, as well as rules for controlling VOC emissions from industrial coating and solvent operations (ARB 2013).

Carbon Monoxide

CO is a colorless and odorless gas that, in the urban environment, is produced primarily by the incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. As of the 2014 EPA National Emissions Inventory, more than 50 percent of the nationwide CO emissions were from mobile sources (EPA 2018a). The remaining emissions are primarily from fires (both wildfires and prescribed fires), releases from vegetation and soil, wood-burning stoves, incinerators, and industrial sources. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300–600 feet) of heavily traveled roadways. Vehicular traffic emissions can cause localized CO impacts, and severe vehicle congestion at major signalized intersections can generate elevated CO levels, called “hot spots,” which can be hazardous to human receptors adjacent to the intersections. Overall, CO emissions are decreasing, in part because the Federal Motor Vehicle Control Program has mandated increasingly lower emission levels for vehicles manufactured since 1973.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, drastically reducing the amount of oxygen available to the cells. Adverse health effects from exposure to high CO concentrations, which typically can occur only indoors or within similarly enclosed spaces, include dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2017b).

Nitrogen Dioxide

NO₂ is one of a group of highly reactive gases known as oxides of nitrogen, or NO_x. NO₂ is formed when ozone reacts with nitric oxide (i.e., NO) in the atmosphere and is listed as a criteria pollutant because NO₂ is the more toxic than nitric oxide. The major human-made sources of NO₂ are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. The combined emissions of nitric oxide and NO₂ are referred to as NO_x and reported as equivalent NO₂. Because NO₂ is formed and depleted by reactions associated with ozone, the NO₂ concentration in a particular geographical area may not be representative of local NO_x emission sources. NO_x also reacts with water, oxygen, and other chemicals to form nitric acids, contributing to the formation of acid rain.

Inhalation is the most common route of exposure to NO₂. Breathing air with a high concentration of NO₂ can lead to respiratory illness. Short-term exposure can aggravate respiratory diseases, particularly asthma, resulting in respiratory symptoms (such as coughing, wheezing, or difficulty breathing), hospital admissions, and visits to emergency rooms. Longer exposures to elevated concentrations of NO₂ may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these subgroups (EPA 2017c).

Sulfur Dioxide

SO₂ is one component of the larger group of gaseous oxides of sulfur (SO_x). SO₂ is used as the indicator for the larger group of SO_x, as it is the component of greatest concern and found in the atmosphere at much higher concentrations than other gaseous SO_x. SO₂ is typically produced by such stationary sources as coal and oil combustion facilities, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO₂ exposure pertain to the upper respiratory tract. On contact with the moist mucous membranes, SO₂ produces sulfurous acid, a direct irritant. Concentration rather than duration of exposure is an important determinant of respiratory effects. Children, the elderly, and those who suffer from asthma are particularly sensitive to effects of SO₂ (EPA 2017d).

SO₂ also reacts with water, oxygen, and other chemicals to form sulfuric acids, contributing to the formation of acid rain. SO₂ emissions that lead to high concentrations of SO₂ in the air generally also lead to the formation of other SO_x, which can react with other compounds in the atmosphere to form small particles, contributing to particulate matter pollution, which can have health effects of its own.

Particulate Matter

PM is a complex mixture of extremely small particles and liquid droplets made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Natural sources of particulates include windblown dust and ocean spray. The major areawide sources of PM_{2.5} and PM₁₀ are fugitive dust, especially from roadways, agricultural operations, and construction and demolition. Other sources of PM₁₀ include crushing or grinding operations. PM_{2.5} sources also include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. Exhaust emissions from mobile sources contribute only a very small portion of directly emitted PM_{2.5} and PM₁₀ emissions; however, they are a major source of VOCs and NO_x, which undergo reactions in the atmosphere to form PM, known as secondary particles. These secondary particles make up the majority of PM pollution.

The size of PM is directly linked to its potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller, because these particles generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects, even death. The adverse health effects of PM₁₀ depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine PM (referred to as the “piggybacking effect”), or with fine dust particles of silica or asbestos. Effects from short- and long-term exposure to elevated concentrations of PM₁₀ include respiratory symptoms, aggravation of respiratory and cardiovascular diseases, a weakened immune system, and cancer (WHO 2016). PM_{2.5} poses an increased health risk because these very small particles can be inhaled deep in the lungs and may contain substances that are particularly harmful to human health.

Direct emissions of PM_{2.5} in the Sacramento metropolitan area decreased between 2000 and 2010, but are projected to increase very slightly through 2035. Similarly, emissions of diesel PM (DPM) decreased from 2000 through 2010 because of reduced exhaust emissions from diesel mobile sources; these emissions are anticipated to continue to decline through 2035 (ARB 2013).

Lead

Lead is a highly toxic metal that may cause a range of human health effects. Lead is found naturally in the environment and is used in manufactured products. Previously, the lead used in gasoline anti-knock additives represented a major source of lead emissions to the atmosphere. Soon after its inception, EPA began working to reduce lead emissions, issuing the first reduction standards in 1973. Lead emissions have decreased substantially as a result of the near-elimination of leaded gasoline use. Metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose “hot spot” problems in some areas. As a result, ARB has identified lead as a toxic air contaminant (TAC).

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotients. In adults, increased lead levels are associated with increased blood pressure. Lead poisoning can cause anemia, lethargy, seizures, and death, although it appears that lead does not directly affect the respiratory system.

Monitoring Station Data and Attainment Area Designations

Health-based air quality standards have been established for criteria pollutants by EPA at the national level and ARB at the state level. These standards were established to protect the public with a margin of safety from adverse health impacts caused by exposure to air pollution. In addition to criteria pollutants, California has established standards for sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride.

Table 3.3-1 presents the national ambient air quality standards (NAAQS) and the California ambient air quality standards (CAAQS). These health-based pollutant standards are reviewed with a legally prescribed frequency and are revised, as warranted by new data on health and welfare effects. Each standard is based on a specific averaging

time over which the concentration is measured. Different averaging times are based on protection from short-term, high-dosage effects or longer term, low-dosage effects. NAAQS may be exceeded no more than once per year; CAAQS are not to be exceeded.

Table 3.3-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards ^a		National Standards ^b	
		Concentration ^c	Primary ^{c,d}	Secondary ^{c,e}	
Ozone ^f	1 hour	0.09 ppm (180 µg/m ³)	–	–	Same as primary standard
	8 hours	0.070 ppm (137 µg/m ³)	0.070 ppm (147 µg/m ³)	–	–
Respirable particulate matter—10 micrometers or less ^g	24 hours	50 µg/m ³	150 µg/m ³	–	Same as primary standard
	Annual arithmetic mean	20 µg/m ³	–	–	–
Fine particulate matter—2.5 micrometers or less ^g	24 hours	–	35 µg/m ³	–	Same as primary standard
	Annual arithmetic mean	12 µg/m ³	12 µg/m ³	–	15 µg/m ³
Carbon monoxide	8 hours	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	–	None
	1 hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	–	–
	8 hours (Lake Tahoe)	6 ppm (7 mg/m ³)	–	–	–
Nitrogen dioxide ^h	Annual arithmetic mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	–	Same as primary standard
	1 hour	0.18 ppm (339 µg/m ³)	100 ppb (188 µg/m ³)	–	None
Sulfur dioxide ⁱ	Annual arithmetic Mean	–	0.030 ppm (for certain areas) ⁱ	–	–
	24 hours	0.04 ppm (105 µg/m ³)	0.14 ppm (for certain areas) ⁱ	–	–
	3 hours	–	–	–	0.5 ppm (1,300 µg/m ³)
Lead ^{i,k}	1 hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³)	–	–
	30-day average	1.5 µg/m ³	–	–	–
	Calendar quarter	–	1.5 µg/m ³ (for certain areas) ^j	–	Same as primary standard
	Rolling 3-month average	–	0.15 µg/m ³	–	–
Visibility-reducing particles ^l	8 hours	See footnote l	–	–	–
Sulfates	24 hours	25 µg/m ³	–	–	–
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m ³)	–	–	No national standards
Vinyl chloride ^l	24 hours	0.01 ppm (26 µg/m ³)	–	–	–

Notes: µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million

^a California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM₁₀, PM_{2.5}, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

^b National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standards.

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

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

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

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

^g On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

^h To attain the 1-hour national standard, the 3-year average of the

Source: ARB 2017a

annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from 100 ppb to 0.100 ppm.

ⁱ On June 2, 2010, a new 1-hour SO₂ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical of 0.075 ppm.

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

^k The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

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

Concentrations of criteria air pollutants are measured at several monitoring stations in the SVAB. Table 3.3-2 summarizes the air quality data from the closest station to the project site, in Roseville on North Sunrise Avenue approximately 6.5 miles southwest of the project site, for the most recent 3 years of complete data (2014–2016). As shown, the 8-hour average ozone concentration exceeded the CAAQS and NAAQS in all 3 monitoring years, as did the 1-hour ozone concentration relative to the CAAQS. The 24-hour average PM_{2.5} NAAQS was not exceeded during any of the past 3 years. The 24-hour average PM₁₀ CAAQS was not exceeded at all in the past 3 years, while the NAAQS for 24-hour average PM₁₀ was exceeded one time in both 2015 and 2016. No exceedances have been registered for NO₂ near the project site for the last 3 years.

Table 3.3-2. Summary of Data regarding Annual Ambient Air Quality near the Project Site

	2014	2015	2016
Ozone			
Maximum 8-hour average concentration (ppm)	0.086	0.084	0.092
Maximum 8-hour average concentration (ppm) (2015/2008 national)	0.087	0.085	0.093
Number of days 8-hour standard exceeded (2015/2008 national)	19/10	6/3	20/8
Number of days 8-hour standard exceeded (state)	21	6	21
Maximum 1-hour concentration (ppm) (state)	0.097	0.098	0.115
Number of days 1-hour standard exceeded (state)	4	1	5
Carbon Monoxide ^a			
<i>Not available</i>			
Nitrogen Dioxide			
Maximum 1-hour concentration (ppm) (state/national)	54.0/54.1	50.0/50.8	50.0/50.0
Number of days state standard exceeded (state/national)	0/0	0/0	0/0
Annual average (ppm)	8	8	8
Sulfur Dioxide ^c			
<i>Not available</i>			
Fine Particulate Matter—2.5 Micrometers or Less			
Maximum 24-hour average concentration (µg/m ³) (state/national) ^c	30.7/22.2	44.1/29.1	24.4/21.2
Number of days national standard exceeded (measured/estimated) ^d	0/0	0/0	0/0
State annual average (µg/m ³)	10.5	8.1	6.9
Respirable Particulate Matter—10 Micrometers or Less			
Maximum 24-hour concentration (µg/m ³) (state/national) ^c	31.8/30.2	59.1/35.7	39.1/39.2
Number of days state standard exceeded (measured/estimated) ^d	0/0	0/–	0/0
Number of days national standard exceeded (measured/estimated) ^d	0/0	1/–	1/–
Annual average (state/national) ^c	18.0/17.9	–/13.0	–/15.8

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

^a Carbon monoxide is not currently monitored at any station in the Sacramento Valley Air Basin (SVAB). The highest recorded carbon monoxide concentration in the last 10 years was 1.94 ppm in 2009, which is approximately 22% of the 8-hour standard.

^b Since 2013, sulfur dioxide has not been monitored at any station in the SVAB.

^c 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 statistics are based on local conditions while national statistics are based on standard conditions. The State of California generally uses more stringent criteria than the U.S. government for ensuring that data are sufficiently complete for calculating valid annual averages.

^d Measured days are those days on which an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. The number of estimated days represents a mathematical estimate of those days on which concentrations would have been greater than the level of the standard, had monitoring occurred on each day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Source: ARB 2017b

Monitoring stations in the SVAB have not monitored for CO or SO₂ in the past 3 years. However, monitoring data are available for both CO and SO₂ for 2012 and prior years. Monitoring data are available for CO from the North Highlands–Blackfoot Way monitoring station, which is approximately 11.5 miles southwest of the project site. These monitoring data show a declining trend in CO concentrations over time. The maximum registered CO concentration in the past 10 years is 1.90, approximately 21 percent of the 8-hour standard. The nearest available monitoring station to the project site with SO₂ data is the Sacramento–Del Paso Manor station, which is approximately 16 miles southwest of the project site. The highest measurement at this site in the past 10 years is 0.004, less than 10 percent of the state 24-hour average standard. Therefore, it is highly unlikely that any exceedances of CO or SO₂ have occurred near the project site in the past 3 years (ARB 2017b).

EPA and ARB use the type of monitoring data presented in Table 3.3-2 to designate attainment status for criteria air pollutants based on the NAAQS and CAAQS, respectively. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement.

The three basic designation categories are “attainment,” “nonattainment,” and “unclassified”:

- **Attainment:** This designation signifies that pollutant concentrations in the area do not exceed the established standard. In most cases, a maintenance plan is required for a region after it has attained an air quality standard and is designated as an attainment or maintenance area after previously being designated as nonattainment. Maintenance plans are designed to ensure continued compliance with the standard.
- **Nonattainment:** This designation indicates that a pollutant concentration has exceeded the established standard. Nonattainment may differ in severity. To identify the severity of the problem and the extent of planning and actions required to meet the standard, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe, extreme).
- **Unclassified:** This designation indicates that insufficient data exist to determine attainment or nonattainment.

The California designations also include a subcategory called “nonattainment-transitional,” which is given to nonattainment areas that are progressing and nearing attainment.

As shown in Table 3.3-3, the portion of Placer County within the SVAB, where the project site is located, meets the NAAQS for all criteria air pollutants except ozone and the 24-hour average PM_{2.5} standard, and meets the CAAQS for all criteria air pollutants except ozone, PM₁₀, and PM_{2.5}.

In October 2017, Placer County Air Pollution Control District (PCAPCD) held a public hearing to consider, and ultimately adopted, the *Sacramento Regional 2008 National Ambient Air Quality Standard 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Attainment and Progress Plan). The Attainment and Progress Plan geographically covers the SFNA, which includes all of Sacramento and Yolo counties, and portions of Placer, El Dorado, Solano, and Sutter counties. The project site is located in the portion of Placer County that lies within the SFNA. The Attainment and Progress Plan documents how the region is meeting requirements under the federal Clean Air Act (CAA) in demonstrating reasonable further progress and attainment of the 2008 NAAQS (PCAPCD 2017a).

On behalf of all air districts that compose the SFNA, the Sacramento Metropolitan Air Quality Management District is considering adoption of the Sacramento Federal Ozone Nonattainment Area Redesignation Substitution Request for the 1-Hour Ozone Standard, which includes all of Sacramento and Yolo counties, and portions of Placer, El Dorado, Solano, and Sutter counties (PCAPCD 2017b).

3.3.1.3 Toxic Air Contaminants

Both federal and state air quality regulations also focus on TACs. A TAC is an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may otherwise pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their toxicity or health risk may pose a threat to public health even at low concentrations. TACs can be separated into carcinogens and noncarcinogens, based on the nature of the effects associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts would not occur. Noncarcinogens differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur.

Table 3.3-3. Attainment Designations for the Placer County Portion of the Sacramento Valley Air Basin

Pollutant	Federal Standard	California Standard
Ozone ^a	Nonattainment (1-hour) ^a	Nonattainment (1-hour) ^b
	Nonattainment (8-hour) ^c	Nonattainment (8-hour)
Particulate Matter— 10 Micrometers or Less	Attainment (24-hour)	Nonattainment (24-hour)
		Nonattainment (annual)
Particulate Matter— 2.5 Micrometers or Less	Nonattainment (24-hour)	Nonattainment (annual)
	Attainment (annual)	
Carbon Monoxide	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen Dioxide	Unclassified (1-hour)	Attainment (1-hour)
	Attainment (annual)	Attainment (annual)
Sulfur Dioxide ^d	Attainment (1-hour)	Attainment (1-hour)
	Attainment (24-hour)	Attainment (24-hour)
	Attainment (annual)	—
Lead	Attainment (3-month rolling average)	Attainment (30-day average)
Hydrogen Sulfide		Unclassified (1-hour)
Sulfates	No Federal Standard	Attainment (24-hour)
Visibility-Reducing Particles		Unclassified (8-hour)

Notes:

^a Air quality meets the federal 1-hour ozone standard (77 *Federal Register* 64036, October 18, 2012). The U.S. Environmental Protection Agency (EPA) revoked this standard, but some associated requirements still apply. The Sacramento Metropolitan Air Quality Management District attained the standard in 2009, and has requested that EPA recognize attainment to fulfill the requirements.

^b Per Health and Safety Code Section 40921.5(c), the classification is based on 1989–1991 data, and therefore does not change.

^c 2008 standard.

^d Cannot be classified.

Source: PCAPCD 2017c

According to the *California Almanac of Emissions and Air Quality* (ARB 2009), most of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (i.e., DPM). Other TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

DPM differs from other TACs because it is not a single substance, but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, type of lubricating oil, and presence or absence of an emission control system. Unlike the other TACs, no ambient monitoring data are available for DPM because no routine measurement method currently exists. However, emissions of DPM are forecasted to decline; it is estimated that emissions of DPM in 2035 will be less than half those in 2010, further reducing statewide cancer risk and non-cancer health effects (ARB 2016a).

3.3.1.4 Odors

The ability to detect odors varies considerably among the population and is subjective. Some individuals can smell minute quantities of specific substances while others may not have the same sensitivity but may be sensitive to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person (e.g., from a fast-food restaurant or bakery) may be perfectly acceptable to another. Unfamiliar odors may be more easily detected and likely to cause complaints than familiar ones.

Several examples of common land use types that generate substantial odors are wastewater treatment plants, landfills, composting/green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting/coating operations, rendering plants, and food packaging plants. In addition, odors can be caused by agricultural activities, such as dairy operations; horse, cattle, or sheep (livestock) grazing; fertilizer use; and aerial crop spraying.

Offensive odors can affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects, such as stress.

3.3.1.5 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others, because of the types of population groups or activities involved. Children, pregnant women, the elderly, those with existing health conditions, and athletes or others who engage in frequent exercise are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered sensitive receptors include schools, daycare centers, parks and playgrounds, and medical facilities.

Residential areas are considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to the pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent as the majority of the workers tend to stay indoors most of the time.

The residential uses adjacent to, and north and east of, the project site are the closest sensitive receptors.

3.3.2 Regulatory Setting

EPA, ARB, and PCAPCD are responsible for regulating air quality in the vicinity of the project site. Each agency develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, in general, both state and local regulations may be more stringent. The regulatory frameworks for criteria air pollutants, TACs, and odor emissions are described separately below.

3.3.2.1 Criteria Air Pollutants

Federal Plans, Policies, Regulations, and Laws

The primary legislation that governs federal air quality regulations is the Clean Air Act, enacted in 1970 and amended by Congress most recently in 1990. The CAA delegates primary responsibility for clean air to EPA. EPA develops rules and regulations to preserve and improve air quality and delegates specific responsibilities to state and local agencies.

Under the CAA, EPA has established the NAAQS for seven potential air pollutants: CO, ozone, NO₂, PM₁₀ and PM_{2.5}, SO₂, and lead (as shown above in Table 3.3-1). The purpose of the NAAQS is two-tiered: primarily to protect public health, and secondarily to prevent degradation to the environment (i.e., impairment of visibility, damage to vegetation and property).

The CAA also requires each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments and to determine whether implementing them will achieve ambient air quality standards. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area.

State Plans, Policies, Regulations, and Laws

ARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, adopted in 1988, required ARB to establish CAAQS (as shown above in Table 3.3-1). ARB has also established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulate matter, in addition to the above-mentioned criteria air pollutants regulated by EPA. In most cases, the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by

the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals. The CCAA requires that all air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practicable date. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and areawide emission sources and provides districts with the authority to regulate indirect sources.

ARB is the lead agency for developing the SIP in California. Air districts and other agencies prepare air quality attainment plans or air quality management plans, and submit them to ARB for review, approval, and incorporation into the applicable SIP. ARB also maintains air quality monitoring stations throughout the state in conjunction with air districts. ARB uses the data collected at these stations to classify air basins as being in attainment or nonattainment with respect to each pollutant and to monitor progress in attaining air quality standards.

ARB has established emission standards for vehicles sold in California and for various types of equipment. California gasoline specifications are governed by both state and federal agencies, which have imposed numerous requirements on the production and sale of gasoline in California during the past 15 years. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that are nearly identical to those finalized by EPA earlier that year. The standards required engine manufacturers to meet after-treatment–based exhaust standards for NO_x and PM, starting in 2011, that were more than 90 percent lower than current levels, putting emissions from off-road engines virtually on par with those from on-road, heavy-duty diesel engines. ARB has also adopted control measures for DPM and more stringent emissions standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators).

California's adopted 2007 *State Strategy for the State Implementation Plan for Federal PM_{2.5} and 8-Hour Ozone Standards* (2007 SIP) was submitted to EPA in November 2007 as a revision to the SIP (ARB 2017c). In July 2011, ARB approved revisions to the 2007 SIP that updated the ARB rulemaking calendar, made adjustments to transportation conformity budgets, revised reasonable further progress tables and made associated reductions for contingency purposes, and updated actions to identify advanced emission control technologies (ARB 2017c). In 2008, EPA strengthened the 8-hour ozone standard to 75 parts per billion (ppb), and again further strengthened this standard in 2015 down to 70 ppb. Sixteen areas in California were designated nonattainment in 2012. In 2012, EPA also strengthened the annual fine particulate matter (PM_{2.5}) standard to 12 micrograms per cubic meter (µg/m³), and designated four areas in California as nonattainment for this standard. ARB released the *Revised Proposed 2016 State Strategy for the State Implementation Plan*, describing the proposed commitment to achieve the reductions necessary from mobile sources, fuels, and consumer products to meet federal ozone and PM_{2.5} standards over the next 15 years (ARB 2017c).

Regional and Local Plans, Policies, Regulations, and Ordinances

Placer County Air Pollution Control District

PCAPCD attains and maintains air quality conditions in Placer County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. PCAPCD inspects stationary sources of air pollution, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and CCAA. The clean-air strategy of PCAPCD includes preparing plans and programs for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, and issuing permits for stationary sources of air pollution. The rules and regulations include procedures and requirements to control the emission of pollutants and to prevent adverse impacts.

All projects within PCAPCD's jurisdictional area are subject to PCAPCD rules and regulations in effect at the time of construction. Specific PCAPCD rules that could be applicable to the proposed project may include but are not limited to the following:

- Rule 205: Nuisance. A developer and proposed project cannot emit any quantities of air contaminants or other materials that would cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public; or that would endanger the comfort, repose, health, or safety of any persons or the public; or that would cause or have natural tendency to cause injury or damage to business or property.
- Rule 212: Storage of Organic Liquids. To limit emissions from storage tanks for organic liquids, any facility where organic liquids having a vapor pressure greater than 25.8 mm Hg [millimeters of mercury] (0.5 psi [pound per

square inch]) are placed, stored, or held in any stationary tank, reservoir or other bulk container shall comply with the provisions of this rule.

- Rule 213: Gasoline Transfer into Stationary Storage Containers. The operation shall comply with the provisions of this rule for the transfer of gasoline from any tank truck or trailer into any stationary storage container with a capacity of more than 250 gallons.
- Rule 214: Transfer of Gasoline into Vehicle Fuel Tanks. The operation shall comply with the provisions of this rule for the transfer of gasoline from any stationary storage tank into any motor vehicle fuel tank.
- Rule 217: Cutback and Emulsified Asphalt Paving Materials. The developer or contractor is required to use asphalt paving materials that comply with the VOC content limits specified in the rule.
- Rule 218: Architectural Coatings. The developer or contractor is required to use coatings that comply with the content limits for VOCs specified in the rule.
- Rule 228: Fugitive Dust. The developer or contractor is required to control dust emissions from earthmoving activities or any other construction activity to prevent airborne dust from leaving the project site.
- Rule 247: Natural Gas-fired Water Heaters, Small Boilers, and Process Heaters. If a proposed project would install natural gas-fired units (i.e., boilers, steam generators, and process heaters) with a rated heat input capacity greater than or equal to 75,000 Btu [British thermal units] and less than 5 million Btu per hour, the unit is required to comply with the NO_x and CO emissions standards.
- Rule 501: General Permit Requirements. To provide an orderly procedure for the review of new sources of air pollution and modification and operation of existing sources through the issuance of permits. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may be required to obtain permit(s) from PCAPCD before equipment operation.

PCAPCD has also produced the *CEQA Air Quality Handbook*, which outlines guidance for analyzing construction and operational emissions from land use projects. PCAPCD also includes a list of analysis expectations and methodologies for CEQA analyses. On October 13, 2016, the PCAPCD Board of Directors adopted the *Review of Land Use Projects under CEQA Policy*, which includes recommendations for thresholds of significance for criteria air pollutant emissions. In developing the thresholds, PCAPCD took into account health-based air quality standards and the strategies to attain air quality standards, historical CEQA project review data in Placer County, and the geographic and land use features of Placer County. PCAPCD's emissions thresholds of significance are discussed further below in Section 3.3.3.2, "Thresholds of Significance."

Town of Loomis General Plan

State law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which bears relation to its planning" (Government Code Section 65300). The *Town of Loomis General Plan* (Town of Loomis 2001) contains a set of goals, policies, and programs that address important community issues and is the basis for land use and public policy decisions. The Natural Resources and Open Space portion of Section VII, "Conservation of Resources," in the *Town of Loomis General Plan* contains the following air quality policy and measures applicable to the proposed project:

- **Policy 1: Air quality.** Loomis will contribute toward the attainment of State and Federal air quality standards in the Sacramento Valley Air Basin through the following, and other feasible measures.
 - a. Site preparation and development activities shall incorporate effective measures to minimize dust emissions and the emissions of pollutants by motorized construction equipment and vehicles.
 - b. During the review of development plans, the Town should require that project proponents conduct their own air quality analysis to determine air quality impacts and potential mitigation measures.
 - d. Recognizing that trees and other vegetation can provide a biological means of reducing air contaminants, existing trees should be retained and incorporated into project design wherever feasible. The additional planting of a large number of trees along roadways and in parking areas shall be encouraged.
 - e. The Town shall require carbon monoxide modeling for development projects that, in combination with regionally cumulative traffic increases, would result in a total of 800 or more trips at an affected intersection or cause the level of service to drop to D or lower at the intersection.

...

- h. If an initial air quality screening indicates that emissions of any pollutant could exceed 10 pounds per day, the Town shall require such development projects to submit an air quality analysis to Placer County APCD [PCAPCD] for review. Based on the analysis, the Town may require appropriate mitigation measures consistent with the latest version of the AQAP [air quality attainment plan] or other regional thresholds of significance adopted for the air basin.
- i. New development shall pay its fair share of the cost to provide alternative transportation systems, including bikeways, pedestrian paths, and bus stop facilities.
- j. The Town shall require that new developments dedicate land sufficient for park-and-ride lots, when the location is appropriate for such facilities.

3.3.2.2 Toxic Air Contaminants

Air quality regulations also focus on TACs, known in federal regulations as hazardous air pollutants (HAPs). In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Instead, EPA and ARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions. These statutes and regulations, in conjunction with additional rules set forth by PCAPCD, establish the regulatory framework for TACs.

Federal Plans, Policies, Regulations, and Laws

The CAA requires EPA to identify and set national emissions standards for HAPs to protect public health and welfare. Emissions standards are set for what are called “major sources” and “area sources.” Major sources are defined as stationary sources with potential to emit more than 10 tons per year of any HAP or more than 25 tons per year of any combination of HAPs; all other sources are considered area sources. There are two types of emissions standards: those that require application of MACT, and those that are health-risk based and deemed necessary to address the risks that remain after implementation of MACT. For area sources, the MACT standards may be different because of differences in generally available control technology. The CAA also requires EPA to issue vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics.

State Plans, Policies, Regulations, and Laws

TACs in California are regulated primarily through the Tanner Air Toxics Act (Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act (Assembly Bill 2588; Chapter 1252, Statutes of 1987). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) HAPs adopted in accordance with Assembly Bill 2728, which required the state to identify the federal HAPs as TACs to make use of the time and costs the EPA had already invested in evaluating and identifying hazardous/toxic substances. The Air Toxics Hot Spots Information and Assessment Act seeks to identify and evaluate risks from air toxics sources, but does not regulate air toxics emissions. TAC emissions from individual facilities are quantified and prioritized. “High-priority” facilities must perform a health risk assessment and, if specific thresholds are violated, must communicate the results to the public in the form of notices and public meetings. TACs are generally regulated through statutes and rules that require the use of MACT or BACT to limit TAC emissions.

According to the *California Almanac of Emissions and Air Quality* (ARB 2013), most of the estimated health risk from TACs is attributed to relatively few compounds, the most dominant being DPM. In 2000, ARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 85 percent decrease in statewide diesel health risk by 2020 relative to the diesel health risk year in the year 2000 (ARB 2000). Additional regulations apply to new trucks and diesel fuel. Subsequent ARB regulations on diesel emissions include the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-road Diesel Vehicle Regulation, and the New Off-road Compression Ignition Diesel Engines and Equipment Program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment.

The *Air Quality and Land Use Handbook: A Community Health Perspective*, published by ARB, provides guidance on land use compatibility with sources of TACs (ARB 2005). The handbook is not a law or adopted policy but offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways

and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities.

The State of California has also implemented regulations to reduce DPM emissions. Two such regulations applicable to the proposed project include Title 13, Sections 2485 and 2449, of the California Code of Regulations, which limit idling time to a maximum of 5 minutes for heavy-duty commercial diesel vehicles (defined as diesel vehicles heavier than 10,000 pounds gross vehicle rated weight) and off-road diesel-fueled construction vehicles, respectively (ARB 2016b). These regulatory measures are driven by the ARB Airborne Toxic Control Measure and subsequent amendments.

Regional and Local Plans, Policies, Regulations, and Ordinances

At the local level, air pollution control or management districts may adopt and enforce ARB control measures. Under PCAPCD Rule 501 (General Permit Requirements), Rule 502 (New Source Review), and Rule 507 (Federal Operating Permit), all sources that could emit TACs must obtain permits from PCAPCD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new-source review standards and air toxics control measures. It is important to note that the air quality permitting process applies only to stationary sources; properties may be exposed to elevated levels of TACs from mobile sources (e.g., freeway traffic) that are not subject to this process or to any requirements regarding implementation of BACT for Toxics. Rather, emissions controls on mobile sources are subject to regulations implemented at the federal and state levels.

3.3.3 Impact Analysis

3.3.3.1 Methodology

The discussion below presents the methods used for the air quality analysis and explains how the significance of the proposed project's air quality impacts was determined. Potential air quality impacts associated with short-term construction and long-term operations were evaluated in accordance with PCAPCD-recommended and ARB-approved methodologies.

Construction and operational emissions were modeled using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2, and compared with the applicable thresholds of significance (described in Section 3.3.3.2 below) to determine potential impacts. PCAPCD's significance thresholds serve as a proxy for determining whether the proposed project could violate air quality standards, cause a substantial contribution to an existing or projected air quality violation, and/or conflict with any applicable air quality plan. Appendix B presents the modeling inputs and results.

CalEEMod allows the user to input project-specific parameters. In this case, project-specific construction inputs included items such as site acreage and construction schedule. Where project-specific information was not available, default parameters provided by the model were used. Default assumptions provided by the model are typically conservative to avoid underestimating emissions. In addition, to conservatively estimate the maximum daily emissions, construction emissions were modeled based on certain construction activities taking place on-site concurrently, thereby representing the most intensive day of construction for each phase. Construction-related emissions are compared with the applicable PCAPCD thresholds, as described above.

After construction, operation of the warehouse and fueling center would generate air pollutant emissions. CalEEMod was 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 proposed project were quantified using CalEEMod defaults, and project-specific trip generation rates and distances were based on the traffic impact study prepared in support of this EIR. Mobile-source emissions would be generated by vehicular trips, including those by delivery trucks and passenger cars. The analysis of mobile-source emissions compared the gross mobile-source emissions with the PCAPCD thresholds of significance for project operations. CO impacts were evaluated using the screening-level procedures provided by PCAPCD (2017c).

The impact analysis does not directly evaluate airborne lead. Because regulations require the use of unleaded fuel and prohibit lead in new building materials, neither construction nor future operations of the proposed project would generate lead emissions.

TAC emissions associated with project construction that could affect surrounding areas are evaluated based on modeled emissions estimates using CalEEMod; an analysis of the proximity of sensitive receptors to emission sources and their potential duration of exposure; and consideration of the ARB-recommended distances between sensitive land uses and potential TAC sources, as presented in *Air Quality and Land Use Handbook: A Community Health Perspective*. The potential for operation of the proposed warehouse and fueling center to expose residents to TAC emissions that would exceed applicable health standards is discussed qualitatively.

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

3.3.3.2 Thresholds of Significance

An air quality impact would be considered significant if it would exceed any of the thresholds of significance listed below, which are based on Appendix G of the State CEQA Guidelines and on PCAPCD's *CEQA Air Quality Handbook* (PCAPCD 2017c). Based on Appendix G of the State CEQA Guidelines, the proposed project would result in a significant impact on air quality if it would:

- conflict with or obstruct implementation of the applicable air quality plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

As stated in Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management district may be relied on to make the above determinations. Thus, pursuant to the PCAPCD-recommended thresholds (PCAPCD 2017c) for evaluating project-related air quality impacts, the proposed project would result in a significant impact on air quality if it would:

- generate construction-related criteria air pollutant or precursor emissions that exceed the PCAPCD-recommended daily thresholds of 82 pounds per day (lb/day) for VOC, NO_x, or PM₁₀;
- generate long-term regional criteria air pollutant or precursor emissions that exceed the PCAPCD-recommended daily thresholds of 55 lb/day of VOC or NO_x, or 82 lb/day of PM₁₀;
- contribute to localized concentrations of air pollutants at nearby receptors that would exceed applicable ambient air quality standards; or
- expose sensitive receptors to excessive nuisance odors, as defined under PCAPCD Rule 205. [See "Regional and Local Plans, Policies, Regulations, and Ordinances," in Section 3.3.2.1, "Criteria Air Pollutants," above.]

Because there is considerable overlap between the threshold questions, this section has been organized to address the following topics:

- Short-term, construction-related emissions
- Long-term, operational emissions
- Exposure of sensitive receptors to substantial pollutant concentrations
- Exposure to objectionable odors

Two of the Appendix G checklist questions address conflicts with an air quality plan and contribution to an air quality violation. The criteria air pollutant significance thresholds serve as a proxy for these impacts; therefore, the evaluation of potential conflicts with air quality plans and air quality violations is consolidated.

For cumulative impacts, PCAPCD states that if a project's impacts would be significant at the project level (i.e., would exceed any of the thresholds listed above), it could also be considered significant on a cumulative level. Chapter 4 of this EIR addresses cumulative impacts in detail.

3.3.3.3 Environmental Impacts and Mitigation Measures

Impact 3.3-1: Generation of Temporary, Short-Term, Construction-Related Emissions of Criteria Pollutants and Precursors. *If the proposed project's site preparation and grading activities were to overlap, construction could generate emissions of criteria air pollutants that would exceed PCAPCD's daily construction emissions thresholds. This impact would be potentially significant.*

Construction emissions are described as “short-term” or temporary in duration, but have the potential to adversely affect air quality. Construction would result in temporary emissions of VOCs, NO_x, and PM. Ozone precursor emissions of VOCs and NO_x are associated primarily with construction equipment exhaust and the application of architectural coatings. PM emissions are associated primarily with fugitive dust generated during site preparation and grading and vary depending on the soil silt content, soil moisture, wind speed, acreage of disturbance, vehicular travel to and from the construction site, and other factors. PM emissions are also generated by equipment exhaust and re-entrained road dust from vehicular travel on paved and unpaved surfaces.

Construction activities would include site preparation (e.g., excavation, grading, and clearing); exhaust emissions from the use of off-road equipment, material delivery, and construction worker commutes; asphalt paving; and application of architectural coatings. Construction is assumed to begin in 2018 and occur over 6 months. Grading and site preparation would take 1 month each. Utility installation, paving, and erection of structures would follow over a 2-month time frame. Construction would conclude with application of architectural coatings and installation of landscaping occurring over a 1-month period. The site is anticipated to be balanced (i.e., construction would not require the substantial import of fill or removal of excavated material).

Table 3.3-4 summarizes the maximum daily emissions of VOCs, NO_x, and PM₁₀ associated with each phase of each construction. See Appendix B for model output files and assumptions.

Table 3.3-4. Summary of Modeled Maximum Daily Construction-Related Emissions of Criteria Air Pollutants and Precursors

Portion of Construction Phase	Maximum Daily Emissions (lb/day)		
	VOCs	NO _x	PM ₁₀
Site Preparation	4.6	48.3	20.8
Grading	5.2	59.6	12.4
Building Construction	3.9	34.9	3.7
Paving	2.6	17.6	1.1
Architectural Coatings	70.5	2.1	0.5
Maximum Daily Emissions	70.5	59.6	20.8
PCAPCD Significance Threshold	82	82	82
Exceeds Threshold?	No	No	No

Notes: lb/day = pounds per day; NO_x = oxides of nitrogen; PCAPCD = Placer County Air Pollution Control District; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; VOC = volatile organic compound

See Appendix B for detailed modeling assumptions, outputs, and results.

Source: Data compiled by AECOM in 2018

As shown, the modeled daily emissions generated by any single activity phase of construction would not exceed the PCAPCD-recommended thresholds of significance. Although PM₁₀ emissions would not exceed the PCAPCD emissions thresholds, PCAPCD recommends that all construction projects implement its Dust Control Requirements, in accordance with PCAPCD Rule 228. In addition, if grading activities would overlap with other construction phases such as site preparation or building construction, NO_x emissions could exceed the PCAPCD-recommended thresholds of significance, and therefore, would violate or contribute substantially to an existing or projected air quality violation. However, it is important to note that the overlap in phases would typically occur during a ramp-down or ramp-up of consecutive construction phases; therefore, construction activities during any overlap of phases would not include the maximum use of equipment for the given phases, and therefore would not likely result in the maximum

daily emissions. VOC emissions do not exceed PCAPCD thresholds and would not be expected to even if there were overlap of construction phases. As part of the proposed project, new and renewable building materials typically could be extracted and manufactured within the region and the materials for the masonry concrete would be purchased locally, minimizing transportation-related emissions. Finally, without incorporation of PCAPCD's Dust Control Requirements, and because NO_x emissions could exceed PCAPCD thresholds during overlap of consecutive construction phases, the impact of short-term construction activities would be **potentially significant**.

Mitigation Measures

Mitigation Measure AQ-1a: Comply with California Air Resources Board Idling Restrictions for On-Road and Off-Road Construction Equipment.

The construction contractors shall minimize idling time of heavy equipment by:

- shutting equipment off when not in use or reducing the time of idling to 5 minutes, as required by Title 13, Sections 2449(d) and 2485 of the California Code of Regulations;
- prohibiting idling within 1,000 feet of sensitive receptors; and
- posting clear signage of this requirement for workers at the entrances to the site and within 1,000 feet of sensitive receptors.

Mitigation Measure AQ-1b: Implement Air Pollutant Control Measures for Construction Vehicles to Reduce NO_x Emissions.

The construction contractors shall adhere to the following requirements shown to be effective in reducing NO_x emissions:

- Maintain all construction equipment properly according to manufacturer's specifications.
- Fuel all off-road and portable diesel powered equipment with ARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road).
- Locate all staging and queuing areas at least 1,000 feet from sensitive receptors.
- Use existing power sources (e.g., power poles) or clean fuel (e.g., gasoline, biodiesel, natural gas) generators rather than temporary diesel power generators.
- Comply with the State On-Road Regulation by using on-road heavy-duty trucks that meet or exceed ARB's Tier 3 standard for on-road heavy-duty diesel engines.

If the construction contractor is unable to comply with the State On-Road Regulation by using on-road heavy-duty trucks that meet or exceed ARB's Tier 3 standard for on-road heavy-duty diesel engines, then the construction phases shall be scheduled to ensure that grading activities would not occur simultaneously with site preparation and/or building construction phases.

If, after application of the above pollutant control measures, emissions would still exceed PCAPCD thresholds for NO_x, the project applicant shall implement the following PCAPCD-recommended construction mitigation measures, as listed below or as they may be updated in the future:

- Prior to the approval of a grading or improvement plan, whichever comes first, provide a plan for approval by PCAPCD, demonstrating that the heavy-duty (50 horsepower or greater) off-road vehicles to be used in aggregate of 40 or more hours for the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average of 20 percent NO_x reduction and 45 percent DPM reduction as compared to the most current ARB fleet average that exists at the time of construction. As recommended by the PCAPCD-recommended construction mitigation measures, the Sacramento Metropolitan Air Quality Management District's Construction Mitigation Calculator can be used to identify an equipment fleet that achieves this reduction (PCAPCD 2017c). Acceptable options for reducing emissions may include the use of late-model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

- Submit to PCAPCD a comprehensive inventory of all heavy-duty off-road equipment (50 horsepower or greater) that would be used in aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use for each piece of equipment. If any new equipment is added after the submission of the inventory, the inventory shall be updated and provided to PCAPCD before use of the new equipment.
- At least 3 business days before the use of heavy-duty off-road equipment, provide PCAPCD with the anticipated construction timeline including the start date, name, and phone number of the property owner, project manager, and on-site foreman.

Mitigation Measure AQ-1c: Use Locally-Sourced Building Materials

To the extent possible, the construction contractor shall use new and renewable building materials extracted and manufactured within the region, and purchase materials locally for the masonry concrete requirements.

Mitigation Measure AQ-1d: Implement PCAPCD Dust Control Requirements to Reduce Particulate Matter Emissions

The construction contractors shall submit a construction emission/dust control plan for approval by PCAPCD before ground disturbance. The plan will comply with PCAPCD Rule 202, Visible Emissions, and Rule 228, Fugitive Dust, and, at a minimum, will include the following PCAPCD minimum dust control requirements, as listed below or as they may be updated in the future:

- Keep unpaved areas subject to vehicle traffic wet, treated with a chemical dust suppressant, or covered.
- Maintain a maximum speed of 15 miles per hour for any vehicles and equipment traveling across unpaved areas unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust exceeding Ringelmann 2 or visible emissions from crossing the project boundary line.
- Stabilize storage piles and disturbed areas not subject to vehicular traffic by keeping them wet, treated with a chemical dust suppressant, or covered when material is not being added to or removed from the pile.
- Before any ground disturbance, including grading, excavating, and land clearing, apply sufficient water to the area to be disturbed to prevent emitting dust exceeding 40 percent opacity and to minimize visible emissions crossing the boundary line.
- Wash down construction vehicles leaving the site to prevent dust, silt, mud, and dirt, from being released or tracked off-site.
- Suspend grading and earthmoving operations when wind speeds are high enough to result in visible dust emissions crossing the boundary line, despite the application of dust mitigation measures.
- Maintain all trucks transporting loose materials such as sand, silt, or dirt to or from the site such that no spillage can occur from holes or other openings in cargo compartments, and ensure that loads are either covered with tarps or wetted and loaded such that the material does not touch the front, back, or sides of the cargo compartment at any point less than 6 inches from the top and that no point of the load extends above the top of the cargo compartment.

Significance after Mitigation

As shown in Table 3.3-5, with implementation of Mitigation Measure AQ-1b, use of on-road heavy-duty trucks that meet ARB's Tier 3 standard for on-road heavy-duty diesel engines would reduce NO_x emissions at least to 56 lb/day even during periods of overlap among construction phases such as grading and building construction, and thus, to less than PCAPCD's threshold of significance of 82 lb/day. Implementation of the PCAPCD dust control requirements and enhanced exhaust control practices, as required by Mitigation Measures AQ-1a through AQ-1d, would also reduce emissions of criteria air pollutants from short-term construction activities, including reducing NO_x emissions further. Although PM emissions are below the PCAPCD emissions thresholds, implementation of Mitigation Measure AQ-1d is recommended by PCAPCD and would reduce PM emissions further.

Table 3.3-5. Summary of Modeled Maximum Daily Construction-Related Emissions of Criteria Air Pollutants and Precursors with use of Equipment that Meet ARB's Tier 3 Standard

Portion of Construction Phase	Maximum Daily Emissions (lb/day)		
	VOCs	NO _x	PM ₁₀
Site Preparation	1.0	19.1	19.2
Grading	1.6	30.0	11.1
Building Construction	1.9	25.8	3.1
Paving	1.5	11.3	0.7
Architectural Coatings	70.3	1.5	0.4
Maximum Daily Emissions	70.3	30.0	19.2
PCAPCD Significance Threshold	82	82	82
Exceeds Threshold?	No	No	No

Notes: lb/day = pounds per day; NO_x = oxides of nitrogen; PCAPCD = Placer County Air Pollution Control District; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; VOC = volatile organic compound

See Appendix B for detailed modeling assumptions, outputs, and results.

Source: Data compiled by AECOM in 2018

Therefore, implementing Mitigation Measures AQ-1a through AQ-1d would reduce emissions of criteria air pollutants during project construction to a **less-than-significant** level.

Impact 3.3-2: Generation of Long-Term Operational Emissions of Criteria Pollutants and Precursors. *When accounting for the net reduction in vehicle miles traveled that would result from the proposed project, long-term operational emissions associated with day-to-day warehouse and fueling center activities would not exceed PCAPCD's threshold of significance for NO_x. Thus, operational emissions of criteria air pollutants and precursors would not violate or contribute substantially to an existing or projected air quality violation or conflict with air quality planning efforts. This impact would be less than significant.*

Daily activities associated with long-term operations of the proposed warehouse and fueling center would generate emissions of criteria air pollutants and precursors from mobile, energy, and area sources. Mobile sources include vehicular trips to and from the project site. Area sources include consumer products (i.e., cleaning supplies, kitchen aerosols, toiletries), natural gas combustion for water and space heating, landscape maintenance equipment, and periodic architectural coatings. Construction emissions are considered short term and temporary, but operational emissions are considered long term and would occur for the lifetime of the project. Therefore, operational emissions have greater potential to affect the attainment status of an air basin, particularly as a result of increased traffic.

As described above, long-term emissions were modeled using CalEEMod Version 2016.3.2. According to the traffic impact study prepared to support this EIR, a shift would occur from longer distance trips to the existing Costco warehouse and fueling center in the region to shorter distance trips to the site of the proposed Loomis Costco (i.e., relocation of existing trips), reducing the overall level of travel demand compared to existing conditions. However, this impact evaluation provides a conservative estimate of emissions by assuming that all trips to the Costco center would be new trips. As shown in Table 3.3-6, using this conservative assumption, the proposed warehouse and fueling center total operational emissions would exceed the PCAPCD threshold for NO_x. See Appendix B for model output files and assumptions.

The proposed project would incorporate many energy-saving features into the design of the facility, including energy efficiency lighting and building materials, use of pre-manufactured and renewable building materials, computerized heating ventilation and air conditioning systems, and energy efficient appliances (see Section 2.3.4.4, "Energy Conservation"). Energy emissions sources would account for less than 1 percent of total daily operational emissions. Therefore, while these energy conservation measures are important design features to reduce operational emissions associated with the proposed project, they would not provide significant reductions relative to overall emissions, which are primarily a result of mobile sources associated with project operations.

Table 3.3-6. Summary of Modeled Maximum Daily Long-Term Operational Emissions of Criteria Air Pollutants and Precursors^a

Emissions Source	Daily Emissions (lb/day)		
	VOC	NO _x	PM ₁₀
Area	3.89	0.00093	0.00036
Energy	0.05	0.50	0.04
Mobile	27.26	181.51	71.04
Total Daily Operational Emissions^b	31	182	71
PCAPCD Thresholds of Significance	55	55	82
Exceeds Thresholds?	No	Yes	No

Notes:

lb/day = pounds per day; NO_x = oxides of nitrogen; PCAPCD = Placer County Air Pollution Control District; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; VOC = volatile organic compound

See Appendix B for detailed modeling assumptions, outputs, and results.

^a Operational emissions were modeled for year 2018.

^b Total emissions may not add correctly due to rounding.

Source: Data compiled by AECOM in 2018

As shown in Table 3.3-6, the proposed project's total daily operational emissions of NO_x would exceed PCAPCD's threshold of significance of 55 lb/day. However, more than 99 percent of these emissions would be the result of mobile-source emissions related to daily operations of the proposed warehouse and fueling center, which are attributable to deliveries, work trips, as well as customer trips from the surrounding area. As detailed in the traffic impact study (Appendix E), the average trip distance for customers to and from the proposed site would be approximately 22 miles each way, generating the above mobile-source emissions throughout this surrounding radius. Although operation of the proposed project would result in approximately 12,000 daily trips to and from the project site, many of these trips would otherwise be on the roadway network for trips to the existing Costco warehouse and fueling center in nearby Roseville. In addition, because of the location of the proposed Loomis Costco, members using the existing Roseville Costco warehouse who would switch to the proposed Loomis warehouse based on location and convenience would ultimately drive an average of 5 fewer miles per trip. The vehicle miles traveled (VMT) analysis in the traffic impact study (Appendix E) determined that this per-trip reduction would result in an overall reduction of approximately 46,000 VMT for the region. While there could be unaccounted for induced demand from new members that may join Costco Wholesale as a result of the location of the new warehouse, the traffic analysis determined it unlikely that the overall VMT reduction from reduced trip lengths would be offset by new trips associated with this induced demand.

The emissions estimates presented in Table 3.3-6 present emissions only for assumed new trips and do not take into consideration the net reduction in VMT that would result from the proposed project. More than 99 percent of the estimated NO_x emissions are attributable to mobile-source operations; therefore, assuming a net decrease in VMT, there would be a net decrease in mobile-source emissions associated with local Costco trips, rather than a net increase in mobile emissions as presented in Table 3.3-6.

While there would still be mobile emissions resulting from consumer trips to and from the proposed project site, the overall emissions attributable to consumer trips to the local Costco centers within the trip radius of the project site would be reduced from current conditions. As described above, in Section 3.3.1.2, the portion of Placer County within which the project site is located is considered non-attainment for ozone. In October 2017, PCAPCD adopted the Attainment and Progress Plan, which documents how the region is meeting requirements under the federal CAA in demonstrating reasonable further progress and attainment of the 2008 NAAQS (PCAPCD 2017a). Both ROG and NO_x reductions provide ozone benefits in the region, but the SFNA exhibits a NO_x-limited regime; therefore, NO_x reductions are more effective than ROG reductions on a tonnage basis (SMAQMD et al. 2017). According to the Attainment and Progress Plan, on-road vehicles account for the main source of NO_x emissions within the Sacramento Region (SMAQMD 2017). Implementation of the proposed project would reduce average trip lengths associated with consumer trips to the local Costco centers, and therefore reduce regional VMT and associated NO_x emissions. This would support the overall goal of the SFNA to reduce emissions associated with ozone. Thus, when

accounting for the net reduction in VMT, project implementation would result in a reduction in net emissions of NO_x as compared to current conditions for the region, and would not exceed PCAPCD's threshold of significance.

The PCAPCD thresholds of significance are considered the allowable amount of emissions each project can generate without conflicting with or obstructing implementation of the applicable air quality plans developed to maintain and attain ambient air quality standards (PCAPCD 2016). Considering the net reduction in VMT, the Loomis Costco warehouse and fueling center would not generate long-term operational emissions that would exceed the PCAPCD thresholds, and thus, would not conflict with or obstruct implementation of any applicable air quality plan. This impact would be **less than significant**.

Impact 3.3-3: Generation of Local Mobile-Source Carbon Monoxide Emissions. *Operational CO emissions associated with day-to-day warehouse and fueling center activities would not result in or substantially contribute to CO concentrations that would exceed the California 1-hour ambient-air quality standard of 20 ppm or the 8-hour standard of 9.0 ppm. Therefore, this impact would be less than significant.*

CO concentration is a direct function of vehicle idling time, and thus, traffic flow conditions. Under stagnant meteorological conditions, CO concentrations near congested roadways and/or intersections may reach unhealthy levels that adversely affect nearby sensitive land uses.

The *Town of Loomis General Plan* contains an air quality policy and measures intended to serve as the basis for land use and public policy decisions. Included in the policy is a recommended threshold for determining the need for further analysis of potential impacts from CO emissions related to mobile-source operations. Since the publication of the *Town of Loomis General Plan*, PCAPCD has published its updated *CEQA Air Quality Handbook (2017)*, which provides screening levels for CO impact assessment. Overall, CO emissions have decreased over time, in part because the Federal Motor Vehicle Control Program has mandated increasingly lower emission levels for vehicles manufactured since 1973. Between 2000 and 2016, national average CO concentrations decreased by approximately 61 percent and regional average CO concentrations in the California and Nevada region decreased by approximately 60 percent (EPA 2018b).

With consideration for the changing environment in mobile-source emissions standards and declining trends for CO emissions, local mobile-source CO concentrations were assessed using the screening-level procedure provided by PCAPCD (PCAPCD 2017c). PCAPCD recommends a screening approach to determine whether traffic would cause a potential CO hotspot at affected intersections. A project is identified to have potential CO impacts if:

- the project's CO emissions from vehicle operation would be more than 550 lb/day; **and**
- traffic generated by the proposed project would result in deterioration of intersection peak-hour level of service (LOS) from an acceptable peak-hour LOS (e.g. A, B, C, or D) to an unacceptable LOS (e.g., E or F); **or**
- the project would contribute additional traffic that would substantially worsen and already existing unacceptable peak-hour LOS on one or more intersections in the project vicinity. "Substantially worsen" is defined by PCAPCD as a situation where a delay would increase by 10 seconds or more when project-generated traffic is included.

Based on the CalEEMod results, which reflect mobile-source operations based on the traffic impact study, maximum daily CO emissions would be approximately 336 lb/day and would not exceed the PCAPCD screening level of 550 lb/day. Therefore, the proposed project would not exceed the PCAPCD screening-level criteria.

CO emissions attributable to on-site truck idling were also considered in this analysis. An average of 10 large trucks would deliver goods on a typical weekday, averaging two to three trucks per hour, with most deliveries completed by 10 a.m., when the warehouse would open for the day. The loading dock for the Costco warehouse would be located on the southwest side of the warehouse, away from residential uses located north and east of the project site. A smaller on-grade door would be located on the west side of the building to receive bread deliveries and shipments. To reduce idling time, Costco trucks are equipped with engine idle shut-off timers.

Because the proposed project meets PCAPCD's recommended screening criteria, and because delivery truck trips would be dispersed throughout the day and are anticipated to average less than three per hour, the proposed warehouse and fueling center would not violate air quality standards for CO. Therefore, this impact would be **less than significant**.

Impact 3.3-4: Exposure of Sensitive Receptors to Toxic Air Contaminant Emissions. *Short-term construction of the proposed project would not result in the exposure of sensitive receptors to substantial concentrations of TAC emissions for an extended period of time. Long-term operations of the proposed project would include operation of a gasoline dispensing facility that could result in the emissions of TACs, primarily benzene. These emissions could result in the exposure of sensitive receptors to TAC emission. Therefore, this impact would be potentially significant.*

The exposures of sensitive receptors (e.g., existing off-site residents) to TAC emissions from short-term sources (construction) and long-term operational sources (mobile, stationary, and other sources) are discussed separately below.

Short-Term Construction Emissions and Exposure to Toxic Air Contaminants at Surrounding Land Uses

Project construction would generate DPM emissions during the use of off-road diesel-powered equipment required for site grading and excavation, paving, and other construction activities. These activities may expose nearby receptors to TACs, including residents adjacent to the eastern and northern project site boundaries. This would particularly be the case during grading, which would involve using the largest amount of equipment at heavy loads (i.e., graders, scrapers, dozers). Most DPM emissions associated with material delivery trucks and construction worker vehicles would occur off-site. For this analysis, DPM is considered to be less than or equal to 10 micrometers in diameter. Therefore, PM₁₀ represents the upper limit for DPM emissions associated with construction of the proposed project. Based on the CalEEMod-modeled emissions estimates, the PM emission concentrations from exhaust generated by the off-road equipment would be a maximum of 33.2 lb/day during construction, which would occur during the potential overlap of the initial site preparation and grading phases.

Receptor dose is the primary factor used to determine health risk and is a function of exposure concentration and duration. However, even in intensive phases of construction, there would not be substantial pollutant concentrations, except potentially in the immediate vicinity of the construction site, as concentrations of mobile-source DPM emissions are typically reduced by approximately 60 percent at a distance of around 300 feet (100 meters) (Zhu et al. 2002). Residences are present near the eastern and northern boundaries of the project site; however, construction activities would be dispersed throughout the 17-acre project site, so the majority of construction activities would take place farther than 300 feet from the residences near the eastern and northern boundaries of the site.

The use of newer off-road equipment is also effective in reducing PM emissions from off-road equipment used during construction; while not required, these vehicles are increasingly in use in construction equipment fleets. In January 2001, EPA promulgated a final rule to reduce emissions standards for heavy-duty diesel engines in the 2007 and subsequent model years. These emissions standards represent emissions reductions of 90 percent for NO_x, 72 percent for nonmethane hydrocarbons, and 90 percent for PM, in comparison to the emissions standards for the 2004 model year. In December 2004, ARB adopted a fourth phase of emission standards (Tier 4) in the Clean Air Non-road Diesel Rule that were nearly identical to those finalized by EPA earlier that year. The Tier 4 emission standards required engine manufacturers to meet after-treatment-based exhaust standards for NO_x and PM, starting in 2011, that were more than 90 percent lower than the current levels, putting emissions from off-road engines virtually on par with those from on-road heavy-duty diesel engines.

The exposure of sensitive receptors to construction emissions would be short term, intermittent, and temporary. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent to which a person is exposed to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for such an individual are higher if a fixed exposure occurs over a longer period of time. Health effects from TACs are often described in terms of individual cancer risk, which is based on a 30-year lifetime exposure to TACs (OEHHA 2015).

Construction activities for the proposed project are anticipated to last approximately 6 months and would cease after completion of the proposed project. Even during this period of time, construction activities would vary in activity and equipment intensity, and would take place throughout the project site. It is not anticipated that individual receptors would be exposed to substantial TAC emissions from the proposed project for longer than 6 months. If the duration of construction activities near a sensitive receptor was for the entirety of 18 months, which is not anticipated, then the exposure would be less than 2 percent of the total exposure period used for typical health risk calculations (i.e., 30 years).

Because the construction activities that could result in TAC emissions would be temporary, in combination with the dispersive properties of DPM, and the fact that PM emissions would be less than PCAPCD emission thresholds, short-term construction would not expose sensitive receptors to substantial DPM emission levels. As a result, this impact would be **less than significant**.

Land Use Compatibility and Exposure of Sensitive Receptors to Toxic Air Contaminants from Proposed Operational Uses

The proposed Loomis Costco warehouse and fueling station would result in an increase in daily traffic trips to and from the project site by both passenger cars for staff and customers and large trucks for deliveries. In addition, a large gasoline station would operate, and would be a potential source of TACs.

ARB's *Air Quality and Land Use Handbook: A Community Health Perspective* provides guidance concerning land use compatibility with regard to sources of TAC emissions (ARB 2005). The handbook offers recommendations for siting sensitive receptors near uses associated with TACs (e.g., freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, industrial facilities). Although these recommendations are for the siting of new sensitive land uses, they can similarly be applied to the siting of a potential TAC source near a sensitive land use, such as siting the proposed fueling center near residences. Although the handbook is advisory and not regulatory, it offers the following recommendations that are pertinent to the proposed project:

- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.
- 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 per day, or where transport refrigeration 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.
- 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).

The project site is consistent with all the recommendations described above. According to the traffic impact study, the proposed project would not result in traffic levels that would approach the high-volume roadway thresholds for urban or rural areas for roadways adjacent to the project site and nearby residences. With an average of 10 daily truck deliveries, the project would not meet the ARB definition of a distribution facility, as described above. Nonetheless, the truck bays are proposed to be located in the southwest portion of the warehouse, which would be the farthest point of the warehouse from residences.

The ARB screening distance for large gasoline stations is 300 feet. The proposed fueling center would be sited in the southwest corner of the project site, approximately 550 feet from the nearest residence and the farthest point on the project site from residences; this is beyond the recommended distance of 300 feet. Because the proposed project would involve construction and operation of a gasoline fueling center, the project would be required to comply with PCAPCD Rule 214 with regard to requirements for installing and maintaining vapor recovery equipment. Gasoline vapors contain TACs, primarily benzene, which is a potent carcinogen and can be released into the air at gasoline dispensing facilities. A well-maintained vapor recovery system can reduce emissions of benzene (the primary TAC of concern for human health from gasoline dispensing facilities) by 90 percent compared to those facilities without such technology (ARB 2005). For very large gasoline dispensing facilities, such as those located at wholesale centers, dispensing 9 million gallons of gasoline per year or more, the potential risk to human health is approximately 5 in 1 million at a distance of 300 feet (ARB 2005). In addition, prior to construction and operation of a gasoline facility, the proposed project would require an Authority to Construct permit from PCAPCD.

Therefore, although the proposed project would be consistent with all ARB recommendations listed above to avoid and minimize impacts from TACs and, based on gasoline throughput and distance from nearby receptors, is anticipated to have a health risk of less than 10 in 1 million, the proposed project could still expose sensitive receptors to substantial concentrations of TAC emissions without compliance with PCAPCD Rules and Regulations and permitting requirements. As a result, this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure AQ-3a: Obtain an Authority to Construct (ATC) Permit from APCD prior to Receipt of a Building Permit

Prior to receipt of a building permit, the applicant shall obtain an ATC permit from PCAPCD. The ATC permit shall include the following:

- A third party HRA will be conducted to determine the potential cancer risk that would be generated as a result of the proposed fueling center.
- HRA results shall be compared to the PCAPCD Significance Risk Threshold for probability of cancer of 10 in a million, as well as the health index number of one for non-carcinogens.
- Should the HRA results indicate a health risk that exceeds the above PCAPCD Significance Risk Thresholds, the fueling center annual throughput of gasoline would be reduced to the point at which the HRA indicated that these thresholds were no longer exceeded, which reduction shall be reflected in the PCAPCD permit.

Mitigation Measure AQ-3b: Obtain a Permit to Operate from APCD prior to Operation of the Fueling Center

Prior to operations, the client shall obtain a Permit to Operate from PCAPCD for the operations of the fueling facility. As part of the Permit to Operate, the applicant shall comply with the following, as well as any other conditions as detailed per PCAPCD permit requirements:

- Demonstrate compliance with PCAPCD Rule 214, as well as applicable California Health and Safety Code Sections 41950-41964, the California Code of Regulations Sections 94010-94168 and the ARB Vapor Recovery Executive Orders, to meet vapor recovery and control requirements for the fueling station.
- Provide annual performance testing and inspection of gasoline dispensing facility vapor recovery and control equipment by a certified contractor. PCAPCD must be notified 15 days prior to the testing and test results provided to PCAPCD within 30 days of the testing date.
- Document weekly, quarterly (if the facility includes a Clean Air Separator), and yearly inspections of the vapor recovery equipment, as well as in-station diagnostics failure alarms, maintenance, and repairs. Inspection documentation may be recorded using forms provided by PCAPCD.

Significance after Mitigation

The proposed project design has already taken into consideration ARB screening distance for large gasoline stations of 300 feet, siting the proposed fueling center in the southwest corner of the project site, approximately 550 feet from the nearest residence and the farthest point on the project site from residences. Implementation of Mitigation Measures AQ-3a and 3b would ensure project compliance with PCAPCD permit requirements, as well as PCAPCD Rule 214, applicable California Health and Safety Code Sections 41950-41964, the California Code of Regulations Sections 94010-94168 and the ARB Vapor Recovery Executive Orders. Compliance with these measures would ensure adequate screening for potential exposure of sensitive receptors to substantial TAC emissions from the proposed project. In addition, installation and proper maintenance of a vapor recovery system would reduce emissions of benzene (the primary TAC of concern for human health from gasoline dispensing facilities) and other TACs. Vapor recovery systems collect gasoline vapors that would otherwise escape into the air during bulk fuel delivery (Phase I) or fuel storage and vehicle refueling (Phase II). Phase I vapor recovery system components include the couplers that connect tanker trucks to the underground tanks, spill containment drain valves, overfill prevention devices, and vent pressure/vacuum valves. Phase II vapor recovery system components include gasoline dispensers, nozzles, piping, break away hoses, faceplates, vapor processors, and system monitors. Additionally, CARB requires fuel storage tanks to be equipped with a permanent submerged fill pipe tank that prevents the escape of gasoline vapors. It is estimated that vapor recovery systems, when well-maintained, reduce benzene emissions by 90 percent compared to those facilities without such technology, and for a large gasoline dispensing facility such as that proposed, dispensing 9 million gallons of gasoline per year or more, the potential risk to human health is approximately 5 in 1 million at a distance of 300 feet (ARB 2005). Therefore, implementing Mitigation Measures AQ-

3a and AQ-3b would reduce emissions of TACs such that the proposed project would not result in the exposure of sensitive receptors to TACs that exceed the recommended thresholds. As a result, this impact would be **less than significant with mitigation**.

Impact 3.3-5: Exposure of Sensitive Receptors to Objectionable Odors. *Short-term odorous emissions from diesel exhaust from on-site construction equipment would be temporary and intermittent and would dissipate rapidly from the source. The proposed project would include the long-term operation of food preparation and services and a fueling facility; while neither is a typical land use considered likely to emit objectionable odors, sensitivity to odors varies considerably among the population and these operations could generate odorous emissions that would affect certain people. Therefore, the proposed project could result in the exposure of sensitive receptors to objectionable odors. This impact would be **potentially significant**.*

Odor Emissions Related to Short-Term Construction

The predominant source of power for construction equipment is diesel engines. Some individuals may be offended by exhaust odors from diesel engines and emissions associated with asphalt paving and the application of architectural coatings; however, odors would be temporary and would disperse rapidly with distance from the source. Therefore, construction-generated odors would not result in the frequent exposure of receptors to objectionable odor emissions and this impact would be **less than significant**.

Odor Emissions Related to Long-Term Operations

Types of land uses that are likely to emit objectionable odors include wastewater treatment plants, landfills, composting facilities, petroleum refineries, and manufacturing plants. The proposed project would not include any of these types of facilities. The project site is proposed to include both a warehouse retail store and a fueling station, neither of which is typically considered to be a source of objectionable odors. However, the ability to detect odors varies considerably among the population and is inherently subjective in nature. For instance, gasoline vapors from the gas station component of the proposed project could be considered unpleasant to some. Similarly, the proposed project would include food service preparation, meat preparation, and baking of baked goods, which are potential sources of odors that may affect certain people.

Cooking odors generated by the combustion of animal and vegetable matter result in a complex mixture of odorous gases. A small percentage of these odors may be absorbed by the grease particles, but the vast majority exists separately in the airstream. Additionally, grease trap interceptors would be installed where a significant quantity of fats, oils, and grease (FOG) enters the wastewater stream from food production. Grease traps are passive devices designed to collect the FOG for removal by pumping the tank. The grease layer builds and forms a "grease cap." Due to a high content of FOG with limited other nutrients and bacteria, the grease cap quickly putrefies and becomes rancid. A very high level of fatty acids is produced, contributing to a lowering of the pH in the trap. A low pH environment allows odor-producing bacteria to flourish.

The food preparation and service areas would be required to comply with all state regulations associated with cooking equipment and controls, such as grease filtration and removal systems, exhaust hood systems, and blowers to move air into the hood systems, through air cleaning equipment, and then outdoors. Proposed food preparation and sale areas would be equipped with kitchen exhaust systems and pollution/odor control systems, which typically include smoke control, odor control, and exhaust fan sections. Such equipment would ensure that pollutants associated with smoke and exhaust from cooking surfaces would be captured and filtered, allowing only filtered air to be released into the atmosphere. Grease trap maintenance is very important for odor control. Common grease trap maintenance includes routine cleaning using high pressure washing, pumping the trap out, and using non-toxic, natural odor control products and vapor barriers. Because these systems are standard in food production and the proposed food production and service areas would be equipped with these measures, the food production and service area would not be likely to emit objectionable odors.

As described within the discussion of Impact 3.3-4, vapor recovery systems ensure that minimal vapor is released into the atmosphere. Not only does this limit potential TAC emissions, it also minimizes potential associated odorous gases from being released. Without implementation and proper maintenance of vapor recovery systems, the fueling station could expose sensitive receptors to objectionable odors. This impact would be **potentially significant**.

Mitigation Measures

Although construction-generated odors would not result in the frequent exposure of receptors to objectionable odor emissions, the project applicant is required to comply with PCAPCD Rule 205 (Nuisance) and Rule 218 (Architectural Coatings) (described in Section 3.3.2, “Regulatory Setting,” above). To ensure compliance with these Rules to address potential odor impacts Mitigation Measure AQ-5 is recommended.

Mitigation Measure AQ-5a: Comply with PCAPCD Rules and Regulations

The construction contractor shall comply with the following PCAPCD Rules to ensure reduced odor emissions during construction of the proposed project:

- Rule 205: Nuisance. The construction contractor cannot emit any quantities of air contaminants or other materials that would cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public; or that would endanger the comfort, repose, health, or safety of any persons or the public; or that would cause or have natural tendency to cause injury or damage to business or property.
- Rule 218: Architectural Coatings. The construction contractor is required to use coatings that comply with the content limits for VOCs specified in the rule.

To address potential long-term operational impacts, Mitigation Measure AQ-5b is recommended:

Mitigation Measure AQ-5b: Implement Mitigation Measure AQ-3b.

Significance after Mitigation

Any odors generated by short-term construction operations would be temporary and disperse rapidly with distance from the source. Implementation of Mitigation Measure AQ-5a would ensure compliance with PCAPCD Rule 205 and 218 to further reduce potential odorous emissions during construction. Long-term operations would not include any facilities typically considered to be potential sources of odorous emissions. However, operations such as the food preparation and services or the fueling center could generate odorous gases. The food preparation and services areas would include standard equipment to abate potential odors. The fueling center would require compliance with various rules and regulations to ensure odorous emissions are minimized. Implementation of Mitigation Measure AQ-5b would ensure compliance with PCAPCD Rules and Regulations, as well as ARB Vapor Recovery Executive Orders to properly install and maintain vapour recovery systems at the fueling center. Such requirements ensure that minimal vapor and associated odors are released into the atmosphere. Therefore, the proposed project would not result in the exposure of sensitive receptors to objectionable odors. As a result, this impact would be **less than significant with mitigation**.

3.3.4 Significance after Mitigation

With implementation of Mitigation Measure AQ-1b, use of on-road heavy-duty trucks that meet ARB's Tier 3 standard for on-road heavy-duty diesel engines would reduce NO_x emissions at least to 56 lb/day, and thus, to less than PCAPCD's threshold of significance of 82 lb/day. Implementation of the PCAPCD dust control requirements and enhanced exhaust control practices, as required by Mitigation Measures AQ-1a through AQ-1d, would also reduce emissions of criteria air pollutants from short-term construction activities, including reducing NO_x emissions further. Although PM emissions are below the PCAPCD emissions thresholds, implementation of Mitigation Measure AQ-1d is recommended by PCAPCD and would reduce PM emissions further. Therefore, implementing Mitigation Measures AQ-1a through AQ-1d would reduce Impact 3.3-1 to a **less-than-significant** level.

Implementation of Mitigation Measures AQ-3a and 3b would ensure project compliance with PCAPCD permit requirements, as well as PCAPCD Rule 214, applicable California Health and Safety Code Sections 41950-41964, the California Code of Regulations Sections 94010-94168 and the ARB Vapor Recovery Executive Orders. Compliance with these measures would ensure adequate screening for potential exposure of sensitive receptors to substantial TAC emissions from the proposed project. In addition, installation and proper maintenance of a vapor recovery system would reduce emissions of benzene (the primary TAC of concern for human health from gasoline dispensing facilities) and other TACs. Therefore, implementing Mitigation Measures AQ-3a and AQ-3b would reduce Impact 3.3-4 to a **less-than-significant** level.

Implementation of Mitigation Measure AQ-5a would ensure compliance with PCAPCD Rule 205 and 218 to further reduce potential odorous emissions during construction. Implementation of Mitigation Measure AQ-5b would ensure compliance with PCAPCD Rules and Regulations, as well as ARB Vapor Recovery Executive Orders to properly install and maintain vapory recovery systems at the fueling center. Such requirements ensure that minimal vapor and associated odors are released into the atmosphere. Therefore, implementing Mitigation Measures AQ-5a and AQ-5b would reduce Impact 3.3-5 to a **less-than-significant** level.