4.2 AIR QUALITY

INTRODUCTION

This section evaluates the potential air quality impacts that would be generated by construction and occupancy of the uses of the Plan. The ambient air quality of the local and regional area is described, along with relevant federal, State, and local air pollutant regulations. In addition, sources of air emissions near the Plan Area are discussed. Plans and policies developed to improve air quality, and regulatory measures are identified. Air quality emission modeling results for the Plan are provided in **Appendix C: CalEEMod Output Data**.

ENVIRONMENTAL SETTING

Background

The Plan Area is located within the South Coast Air Basin (Basin), named so because its geographical formation is that of a basin, with the surrounding mountains trapping the air and its pollutants in the valleys below. The Basin includes all of Orange County and the nondesert portions of Los Angeles, San Bernardino, and Riverside Counties. The regional climate within the Basin is considered to be semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The air quality within the Basin is primarily influenced by a wide range of emissions sources—such as dense population centers, heavy vehicular traffic, and industry—and weather.

Air pollutant emissions within the Basin are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point sources and area sources. Point sources occur at an identified location and are usually associated with manufacturing and industry. Examples of point sources are boilers or combustion equipment that produce electricity or generate heat. Area sources are widely distributed and produce many small emissions. Examples of area sources include residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products, such as barbeque lighter fluid and hair spray. Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircrafts, ships, trains, race cars, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment, such as when fine dust particles are pulled off the ground surface and suspended in the air during high winds.

The United States Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) designate air basins where air pollution levels exceed the State or federal ambient air quality standards

(AAQS) as "nonattainment" areas. These pollutants are referred to as "criteria air pollutants" as a result of the specific standards, or criteria, that have been adopted for them. The federal and State standards have been set at levels considered safe to protect public health, including the health of "sensitive" populations, such as asthmatics, children, and the elderly with a margin of safety; and to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, an area is considered "unclassified." Federal nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Transportation conformity for nonattainment and maintenance areas is required under the federal Clean Air Act (CAA) to ensure federally supported highway and transit projects conform to the State Implementation Plan (SIP). The USEPA approved California's SIP revisions for attainment of the 1997 8-hour O3 National AAQS for the Basin in March 2012.

Ambient air pollution can cause public health concerns and can contribute to increases in respiratory illness and death rates. Air pollution can affect the health of both adults and children. The adverse health effects associated with air pollution are diverse and include cardiovascular effects, premature mortality, respiratory effects, cancer, reproductive effects, neurological effects, and other health outcomes.[1]

a. Criteria Air Pollutants

The criteria air pollutants that are most relevant to current air quality planning and regulation in the Basin include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). In addition, volatile organic compounds (VOC) and toxics air contaminants (TACs) are a concern in the Basin, but are not classified under AAQS. The characteristics of each of these pollutants are briefly described below.

The State and AAQS and their attainment status in the Basin for each of the criteria pollutants are summarized in **Table 4.2-1: Ambient Air Quality Standards and Attainment Status**. Under the federal standards, the Basin is currently designated as nonattainment for the O_3, Pb, and $PM_{2.5}$ thresholds. Under the State standards the Basin is currently designated as nonattainment for the O_3, PM_{10}, and $PM_{2.5}$ thresholds.

1 South Coast Air Quality Management District (SCAQMD), *2016 Air Quality Management Plan*, Appendix I: Health Effects (March 2017), accessed January 2019, https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/appendix-i.pdf?sfvrsn=14.

Table 4.2-1
Ambient Air Quality Standards and Attainment Status

Pollutant	Averaging Period	California Standards	California Attainment Status	Federal Standards	Federal Attainment Status
Ozone (O_3)	1-hour	0.09 ppm (180 µg/m^3)	Nonattainment	--	Nonattainment
	8-hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)	
Nitrogen Dioxide (NO_2)	Annual arithmetic mean	0.03 ppm (57 µg/m^3)	Attainment	0.053 ppm (100 µg/m^3)	Unclassified/ Attainment
	1-hour	0.18 ppm (339 µg/m^3)		0.100 ppm (188 µg/m^3)	
Carbon Monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Unclassified/ Attainment
	1-hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)	
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	Attainment	0.075 ppm	Attainment
	24-hour	0.04 ppm		-	
Lead (Pb)	30-day average	1.5 µg/m^3	Attainment	-	Unclassified/ Attainment
	Rolling 3-month average	-		0.15 µg/m^3	
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	Nonattainment	150 µg/m^3	Attainment
	Annual arithmetic mean	20 µg/m^3		-	
Fine Particulate Matter ($PM_{2.5}$)	24-hour	-	Nonattainment	35 µg/m^3	Nonattainment
	Annual arithmetic mean	12 µg/m^3		12 µg/m^3	

Source: California Air Resources Board website at: https://www.arb.ca.gov/research/aaqs/aaqs2.pdf (accessed January 2019) and CARB, "Area Designations Maps/State and National," http://www.arb.ca.gov/desig/adm/adm.htm (last reviewed December 28, 2018).
Note: ppm = parts per million.

Ozone (O_3)

O3 is a highly reactive and unstable gas that is formed when reactive organic gases (ROGs), sometimes referred to as VOC, and nitrogen oxides (NOx), byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. O_3 concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.

Individuals exercising outdoors, children and people with preexisting lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible sub-groups for ozone effects. Short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities.

Ozone exposure under exercising conditions is known to increase the severity of the observed responses mentioned above. Animal studies suggest that exposures to a combination of pollutants that include ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide (CO)

CO is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike O3, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses, and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes.

Reduction in birth weight and impaired neurobehavioral development has been observed in animals chronically exposed to CO resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include preterm births and heart abnormalities. Additional research is needed to confirm these results.

Nitrogen Dioxide (NO_2)

NO_2 is a reddish-brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide (NO). NO_2 is also a byproduct of fuel combustion. The principle form of NO_2 population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy individuals. 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 sub-groups.

In animals, exposure to levels of NO2 considerably higher than ambient concentrations result in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of O_3 and NO_2.

A detailed discussion of the health effects of NO_2 is provided in the *Final 2016 Air Quality Management Plan*.[2]

Particulate Matter (PM_{10} and $PM_{2.5}$)

A consistent correlation between elevated ambient respirable and fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks, and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life span, and an increased mortality from lung cancer.

Daily fluctuations in fine-particulate-matter concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter. The elderly, people with preexisting respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of PM_{10} and $PM_{2.5}$.

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2 SCAQMD, *Final 2016 Air Quality Management Plan*, Appendix I: Health Effects, accessed April 2019, https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/appendix-i.pdf?sfvrsn=14.

Sulfur Dioxide (SO_2)

SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal, as well as from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms sulfates (SO_4). Collectively, these pollutants are referred to as sulfur oxides (SOx).

A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. Asthmatics' acute exposure to SO_2 increases their resistance to air flow and reduces their breathing capacity, which leads to severe breathing difficulties. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2.

Animal studies suggest that despite the fact that SO_2 is a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically, or one pollutant alone is the predominant factor.

Most of the health effects associated with fine particles and SO_2 at ambient levels are also associated with SO_4. Thus, both mortality and morbidity effects have been observed with an increase in ambient SO_4 concentrations. However, efforts to separate the effects of SO_4 from the effects of other pollutants have generally not been successful. Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure. Animal studies suggest that acidic particles, such as sulfuric acid aerosol and ammonium bisulfate, are more toxic than nonacidic particles like ammonium sulfate. Whether the effects are attributable to acidity or to particles remains unresolved.

Lead (Pb)

Pb occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne Pb in the Basin. The use of leaded gasoline is no longer permitted for on-road motor vehicles, so the majority of such combustion emissions are associated with off-road vehicles, such as racecars. However, because leaded gasoline was emitted in large amounts from vehicles when leaded gasoline was used for on-road motor vehicles, Pb is present in many urban soils and can be resuspended in the air. Other sources of Pb include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and the use of secondary lead smelters. Pb is also found in lead-based paint, which is

considered a health hazard for people, especially children. From the turn of the century through the 1940s, paint manufacturers used lead as a primary ingredient in many oil-based paints. Use of lead in paint decreased, but was still used until 1978 when it was banned from residential use. Remodeling, renovations, or demolition activities in older buildings could disturb lead-based paint surfaces.

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 levels. In adults, increased lead levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures, and death. It appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early-age environmental exposure, and elevated blood lead levels can occur due to the breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland), and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.

Volatile Organic Compounds (VOCs)

VOC means any compound of carbon, excluding carbon monoxide, carbon dioxide (CO_2), carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions and thus, a precursor of ozone formation. VOC emissions often result from the evaporation of solvents in architectural coatings. Reactive organic gases (ROG) are any reactive compounds of carbon, excluding methane, CO, CO_2 carbonic acid, metallic carbides or carbonates, ammonium carbonate, and other exempt compounds. ROG emissions are generated from the exhaust of mobile sources.[3] Both VOC and ROGs are precursors to ozone and the terms can be used interchangeably.[4]

b. Toxic Air Contaminants

TACs refer to a diverse group of "non-criteria" air pollutants that can affect human health but have not had ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed previously, but because their effects tend to be local rather than regional. TACs are classified as carcinogenic and noncarcinogenic, where carcinogenic TACs can cause

3 SCAQMD, *Appendix A: Calculation Details for CalEEMod* (October 2017), accessed January 2019, http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6.

4 Both VOC and ROGs are both precursors to ozone so they are summed in the CalEEMod report under the header ROG. For the purposes of comparing the ROG value to a VOC significance threshold, the terms can be used interchangeably.

cancer and noncarcinogenic TACs can cause acute and chronic impacts to different target organ systems (e.g., eyes, respiratory, reproductive, developmental, nervous, and cardiovascular).

CARB and the Office of Environmental Health Hazard Assessment (OEHHA) determine if a substance should be formally identified, or "listed," as a TAC in California.[5] Diesel Particulate Matter (DPM), which is emitted in the exhaust from diesel engines, was listed by the State as a TAC in 1998. DPM has historically been used as a surrogate measure of exposure for all diesel exhaust emissions. DPM consists of fine particles (fine particles have a diameter less than 2.5 µm), including a subgroup of ultrafine particles (ultrafine particles have a diameter less than 0.1 µm). Collectively, these particles have a large surface area, which makes them an excellent medium for absorbing organics. The visible emissions in diesel exhaust include carbon particles or "soot." Diesel exhaust also contains a variety of harmful gases and cancer-causing substances.

Exposure to DPM may be a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. DPM levels and resultant potential health effects may be higher near heavily-traveled roadways with substantial truck traffic or near industrial facilities. According to CARB, DPM exposure may lead to the following adverse health effects: (1) aggravated asthma; (2) chronic bronchitis; (3) increased respiratory and cardiovascular hospitalizations; (4) decreased lung function in children; (5) lung cancer; and (6) premature deaths for people with heart or lung disease.[6]

To provide a perspective on the contribution that DPM has on the overall Statewide average ambient air toxics potential cancer risk, CARB evaluated risks from specific compounds using data from CARB's ambient monitoring network. CARB maintains a 21-site air toxics monitoring network that measures outdoor ambient concentration levels of approximately 60 air toxics. CARB has determined that, of the top ten inhalation risk contributors, DPM contributes approximately 68 percent of the total potential cancer risk.[7]

Regulatory Framework

Air quality within the Basin is addressed through the efforts of various federal, State, regional, and local government agencies. These agencies work jointly as well as individually to improve air quality through legislation, regulations, planning, policy making, enforcement, education, and a variety of programs. The

5 The complete list of such substances is located at www.arb.ca.gov/toxics/id/taclist.htm.

6 California Air Resources Board (CARB), Diesel and Health Research, accessed January 2019, https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health.

7 SCAQMD, "Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES-IV)." (May 2015), accessed January 2019, http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf.

agencies primarily responsible for improving the air quality within the Basin are discussed in the following paragraphs along with their individual responsibilities.

a. Federal

Clean Air Act

The USEPA is responsible for the implementation of portions of the CAA of 1970, which regulates certain stationary and mobile sources of air emissions and other requirements. Charged with handling global, international, national, and interstate air pollution issues and policies, the USEPA sets national vehicle and stationary source emission standards, oversees the approval of all State Implementation Plans,[8] provides research and guidance for air pollution programs, and sets NAAQS.[9] NAAQS for the six common air pollutants (ozone, PM_{10} and $PM_{2.5}$, NO_2, CO, Pb, and SO_2) are identified in the CAA.

The 1990 amendments to the CAA identify specific emission reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA that are most applicable to the Plan include Title I, Nonattainment Provisions, and Title II, Mobile Source Provisions.

The NAAQS were also amended in July 1997 to include an 8-hour standard for ozone and to adopt a NAAQS for $PM_{2.5.}$ The NAAQS were amended in September 2006 to include an established methodology for calculating $PM_{2.5}$, as well as to revoke the annual PM_{10} threshold. The CAA includes the following deadlines for meeting the NAAQS within the Basin: (1) $PM_{2.5}$ by the year 2014; which has not been met due to extreme drought conditions; and (2) 8-hour ozone by the year 2023. Thus, the SCAQMD requested that the USEPA reclassify the Basin as ”serious” nonattainment and committed to demonstrate attainment of the 24-hour PM2.5 NAAQS as expeditiously as practicable, but not beyond December 31, 2019. In addition, more stringent area requirements now apply including implementation of Best Available Control Measures/Best Available Control Technology (BACM/BACT), a lower major source threshold (from 100 tons per year to 70 tons per year), and an update to the reasonable further progress (RFP) analysis.[10]

8 A State Implementation Plan is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain National Ambient Air Quality Standards (NAAQS).

9 The NAAQS were established to protect public health, including that of sensitive individuals; for this reason, the standards continue to change as more medical research becomes available regarding the health effects of the criteria pollutants. The primary NAAQS define the air quality considered necessary, with an adequate margin of safety, to protect the public health.

10 SCAQMD, *Final 2016 Air Quality Management Plan* (2017), accessed January 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

b. State

California Clean Air Act

The California Clean Air Act, signed into law in 1988, requires all areas of the State to achieve and maintain the California AAQS by the earliest practicable date. CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both State and federal air pollution control programs within California. In this capacity, CARB conducts research, sets State AAQS, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions and the CAAQS currently in effect for each of the criteria pollutants, as well as other pollutants recognized by the State. The CAAQS include more stringent standards than the NAAQS. Criteria pollutants that are in nonattainment under the CAAQS include O_3, PM_{10}, and $PM_{2.5}$.

Air Quality and Land Use Handbook

CARB published the *Air Quality and Land Use Handbook*[11] on April 28, 2005, to serve as a general guide for considering health effects associated with siting sensitive receptors proximate to sources of TAC emissions. The recommendations provided therein are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts. The goal of the guidance document is to protect sensitive receptors, such as children, the elderly, acutely ill, and chronically ill persons, from exposure to TAC emissions.

Some examples of CARB's siting recommendations include the following: (1) avoid siting sensitive receptors within 500 feet of a freeway, urban road with 100,000 vehicles per day, or rural road with 50,000 vehicles per day; (2) avoid siting sensitive receptors within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 50 trucks with operating transport refrigeration units per day, or where transport refrigeration unit operations exceed 300 hours per week); and (3) avoid siting sensitive receptors within 300 feet of any dry cleaning operation using perchloroethylene and within 500 feet of operations with two or more machines.

11 CARB, *Air Quality and Land Use Handbook: A Community Health Perspective* (April 2005), accessed April 2019, https://www.arb.ca.gov/ch/handbook.pdf.

California Motor Vehicle Code

The vehicle programs are a critical component in the SIP for achieving national ambient air quality standards in the South Coast and San Joaquin Valley.[12] They are also integral in CARB's Scoping Plan[13] to achieve the GHG reduction goals that were established through California legislation and Executive Orders.

Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling (Title 13 of the California Code of Regulations, Section 2485)

The Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling[14] measure includes regulations that pertain to air quality emissions. Specifically, Section 2485 states that during construction, the idling of all diesel-fueled commercial vehicles weighing more than 10,000 pounds shall be limited to 5 minutes at any location. In addition, Section 93115 in Title 17 of the California Code of Regulations (CCR)[15] states that operation of any stationary, diesel-fueled, compression-ignition engines shall meet specified fuel and fuel additive requirements and emission standards.

California Air Resources Board (CARB)

CARB Rule 2449, General Requirements for In-Use Off-Road Diesel-Fueled Fleets

Requires off-road diesel vehicles to limit nonessential idling to no more than 5 consecutive minutes.[16]

CARB Rule 2485, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling

CARB Rule 2485 requires commercial vehicles weighing more than 10,001 pounds to limit nonessential idling to no more than 5 consecutive minutes.[17]

c. Regional

South Coast Air Quality Management District

SCAQMD shares responsibility with CARB for ensuring that all State and federal AAQS are achieved and maintained over an area of approximately 10,743 square miles, including the Basin. This area includes all

12 CARB, "California State Implementation Plans" (last reviewed September 21, 2018), https://www.arb.ca.gov/planning/sip/sip.htm.
13 CARB, "AB 32 Scoping Plan" (January 8, 2018), https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.
14 CARB, Section 2485 in Title 13 of the CCR, https://www.arb.ca.gov/msprog/truck-idling/13ccr2485_09022016.pdf.
15 CARB, Final Regulation Order: Amendments to the Airborne Toxic Control Measure For Stationary Compression Ignition Engines (May 19, 2011), https://www.arb.ca.gov/diesel/documents/FinalReg2011.pdf.
16 CARB, Final Regulation Order: Regulation For In-Use Off-Road Diesel-Fueled Fleets, https://www.arb.ca.gov/msprog/ordiesel/documents/finalregorder-dec2011.pdf.
17 CARB, CARB Rule 2485, https://www.arb.ca.gov/msprog/truck-idling/13ccr2485_09022016.pdf.

of Orange and Los Angeles counties except for the Antelope Valley, the nondesert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County.

The Plan Area lies within the jurisdiction of the SCAQMD, and compliance with SCAQMD rules and guidelines is required. SCAQMD is responsible for controlling emissions primarily from stationary sources. SCAQMD maintains the air quality monitoring stations throughout the Basin, including source receptor area (SRA) 32, as described previously. SCAQMD, in coordination with the Southern California Association of Governments (SCAG), is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the Basin. An AQMP is a plan prepared and implemented by an air pollution district for a county or region designated as "nonattainment" of the national and/or California AAQS. The term "nonattainment area" is used to refer to an air basin in which one or more AAQS are exceeded.

The SCAQMD approved the Final 2016 AQMP on March 3, 2017.[18] The 2016 AQMP includes transportation control measures developed by SCAG from the 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), as well as the integrated strategies and measures needed to meet the NAAQS. The 2016 AQMP demonstrates attainment of the 1-hour and 8-hour ozone NAAQS as well as the latest 24-hour and annual $PM_{2.5}$ standards.

The SCAQMD is responsible for limiting the amount of emissions that can be generated throughout the Basin by various stationary, area, and mobile sources. Specific rules and regulations have been adopted by the SCAQMD Governing Board. These rules and regulations limit the emissions that can be generated by various uses or activities and identify specific pollution reduction measures, which must be implemented in association with various uses and activities. These rules not only regulate the emissions of the federal and State criteria pollutants, but also toxic air contaminants and acutely hazardous materials. The rules are also subject to ongoing refinement by SCAQMD.

Among the SCAQMD rules applicable to the Plan are Rule 212 (Standards for Approving Permits and Issuing and Public Notice), Rule 403 (Fugitive Dust), Rule 1113 (Architectural Coatings), Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities), Rule 1401 (New Source Review of Toxic Air Contaminants), and Regulation XIII (New Source Review). Rule 212 states that the Executive Officer has the power to deny a Permit to Construct or Permit to Operate based on standard operating procedures for construction equipment and required notifications. Rule 403 requires the use of stringent best available control measures to minimize PM_{10} emissions during grading and construction activities. Rule 1113 requires reductions in the VOC content of coatings, with a substantial reduction in the VOC content

18 SCAQMD, *Final 2016 Air Quality Management Plan* (2017), accessed January 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

limit for flat coatings. Compliance with SCAQMD Rule 1403 requires that the owner or operator of any demolition or renovation activity to have an asbestos survey performed prior to demolition and provide notification to the SCAQMD prior to commencing demolition activities. Rule 1401 requires limits for maximum individual cancer risk, cancer burden, and noncancer acute and chronic hazard index from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants. Regulation XIII requires new on-site facility nitrogen dioxide emissions to be minimized through the use of emission control measures (e.g., use of best available control technology for new combustion such as boilers, emergency generators, and water heaters). Additional details regarding these rules and other potentially applicable rules are presented in the following paragraphs.

Under the federal CAA, SCAQMD has adopted federal attainment plans for O3 and PM_{10}. The SCAQMD reviews projects to ensure that they would not (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any air quality standard; or (3) delay the timely attainment of any air quality standard or any required interim emission reductions or other milestones of any federal attainment plan.

Multiple Air Toxics Exposure Study

To date, the most comprehensive study on air toxics in the Basin is the Multiple Air Toxics Exposure Study (MATES IV), conducted between July 2012 and June 2013. The monitoring program measured more than 30 air pollutants including both gases and particulates. The study concluded that the average of the modeled air toxics concentrations measured at each of the monitoring stations in the Air Basin equates to a background cancer risk of approximately 418 in one million primarily due to diesel exhaust. Subsequent to SCAQMD's risk calculation estimates, the California Office of Environmental Health Hazard Assessment (OEHHA) updated the methods for estimating cancer risks.[19] The updated method utilizes higher estimates of cancer potency during early life exposures and uses different assumptions for breathing rates and length of residential exposures. However, diesel particulate matter remains the largest component of air toxics estimated risk.[20]

SCAQMD is in the process of conducting the MATES V study. This would involve the addition of an advanced monitoring network which would include account flight-based measurements, a mobile laboratory, an optical tent, sensor networks, and community engagement.[21]

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19 California Office of Environmental Health Hazard Assessment, Air Toxics Hot Spots Program (February 2015), accessed January 2019, https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

20 South Coast Air Quality Management District, *Multiple Air Toxics Exposure Study (MATES-IV) in the South Coast Air Basin*, May 1, 2015, accessed January 2019, http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-iv.

21 SCAQMD, *MATES V Multiple Air Toxics Exposure Study*, accessed January 2019, http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v.

SCAQMD Amicus Brief

In its Friant Ranch decision, the California Supreme Court conceded that an explanation of the connection between an individual project's pollutant emissions in excess of thresholds and human health effects may not be possible given the current state of environmental science modeling. However, the California Supreme Court concluded that the Friant Ranch Project EIR itself must explain, in a manner reasonably calculated to inform the public, the scope of what is and is not yet known about the effect of the Project's significant and unavoidable air quality impacts on human health. The specific language provided by the Court is provided below.

> *The EIR fails to provide an adequate discussion of health and safety problems that will be caused by the rise in various pollutants resulting from the Project's development. At this point, we cannot know whether the required additional analysis will disclose that the Project's effects on air quality are less than significant or unavoidable, or whether that analysis will require reassessment of proposed mitigation measures. Absent an analysis that reasonably informs the public how anticipated air quality effects will adversely affect human health, an EIR may still be sufficient if it adequately explains why it is not scientifically feasible at the time of drafting to provide such an analysis.*

SCAQMD has provided amicus briefs explaining the difficulties in providing correlation between regional pollutant emissions and human health. With regard to the analysis of air quality-related health impacts, the SCAQMD, the air quality authority for the South Coast Air Basin, has stated that "EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions)." In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient.

The SCAQMD has further stated that from a scientific standpoint, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. SCAQMD further acknowledges that it may be feasible to analyze air quality related health impacts for projects on a regional scale with very high emissions of NOx and VOCs, where impacts are regional. The example SCAQMD provided was for proposed Rule 1315, which authorized various newly permitted sources to use offsets from the District's "internal bank" of emission reductions. The CEQA analysis accounted for essentially all of the increases in emissions due to new or modified sources in the District between 2010 and 2030, or approximately 6,620 pounds per day of NOx and 89,947 pounds per day of VOC, to expected

health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[22]

Southern California Association of Governments

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development, and the environment. SCAG coordinates with various air quality and transportation stakeholders in Southern California to ensure compliance with the federal and State air quality requirements, including the Transportation Conformity Rule and other applicable federal, State, and air district laws and regulations. As the federally designated Metropolitan Planning Organization (MPO) for the six-county Southern California region, SCAG is required by law to ensure that transportation activities "conform" to, and are supportive of, the goals of regional and State air quality plans to attain the NAAQS. In addition, SCAG is a co-producer, with the SCAQMD, of the transportation strategy and transportation control measure sections of the AQMP for the Basin. With regard to future growth, SCAG's RTP provides population, housing, and employment projections for cities under its jurisdiction.

d. Local

City of Rancho Cucamonga

Local governments have the authority and responsibility to reduce air pollution through their police power and land use decision-making authority. Specifically, local governments are responsible for the mitigation of emissions resulting from land use decisions and for the implementation of transportation control measures as outlined in the AQMP.[23] The AQMP assigns local governments certain responsibilities to assist the Basin in meeting air quality goals and policies. Air quality goals, policies, and implementation measures in the City of Rancho Cucamonga's General Plan, adopted in May 19, 2010, provide the regulatory framework.[24] Through capital improvement programs, local governments can fund infrastructure that contributes to improved air quality by requiring such improvements as bus turnouts, energy-efficient streetlights, and synchronized traffic signals.

The Public Health and Safety Chapter of the General Plan addresses air quality, atmosphere and climate-related issues. Motor vehicles represent the major source of regional emissions throughout the Basin and the City. The Public Health and Safety Chapter identifies that sources of nonmobile air pollution include

22 The SCAQMD was able to establish the location of future NOx and VOC and emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v. SCAQMD*, Los Angeles Superior Court No. BS110792.

23 SCAQMD, *CEQA Air Quality Handbook* (April 2003), p. 2-2.

24 City of Rancho Cucamonga, *Rancho Cucamonga General Plan*, Chapter 8: Public Health and Safety (May 2010).

industrial/manufacturing uses, auto repair businesses, dry cleaners, and other businesses that regularly use chemical solvents. Common sources of PM_{10} include road dust, construction activity, grading, and fires (including fireplaces). Air pollution is significantly worse where air pollutants are concentrated, including energy-intensive industrial areas, high volume roads, diesel truck routes, rail yards, and sea ports.

Section 17.66.060, Odor, Particulate Matter, and Air Containment Standards,[25] of the City's Development Code, includes performance standards to ensure that uses and activities occur in a manner to protect the public health and safety and that do not produce adverse impacts on surrounding properties or on the community at large. The following standards are relevant to air quality:

- Sources of odorous emissions, particulate matter, and air containment standards shall comply with the rules and regulations of the air pollution control district and the State Health and Safety Code;
- Noxious odorous emissions in a manner or quantity that is detrimental to or endanger the public health, safety, comfort, or welfare is declared to be a public nuisance and unlawful, and shall be modified to prevent further emissions release, except for agricultural operations in compliance with this title. No emission of odors shall be permitted in such quantities as to be readily detectable when diluted in the ratio of one volume of odorous air to four volumes of clean air at the property line (as specified in section 17.66.030 (Points of Measurements)). Any process which may involve the creation or emission of any odors shall be provided with a secondary safeguard system, so that control will be maintained if the primary safeguard system should fail;
- No dust or particulate matter shall be emitted that is detectable by a reasonable person without instruments; and
- Exhaust air ducts shall be located or directed away from abutting residentially zoned properties.

Existing Conditions

a. Climate

The Basin is a coastal plain, with connecting broad valleys and low hills that are bounded by the Pacific Ocean to the southwest and by high mountains around the rest of its perimeter. In general, Southern California has a warm, dry Mediterranean climate; hot in the summer and mild in the winter. Temperatures are cooler near the coast and hotter near inland areas. The general region lies in the semi-permanent, high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. Los Angeles County, including the City of Los Angeles, is known to be in a local steppe climate, which is the region between the tropic and polar regions in the middle latitudes associated

25 City of Rancho Cucamonga, Municipal Code Chapter 17.66.060 – Odor, particulate matter, and air containment standards.

with cool winters and warm summers. The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds.

Basin climate increases the potential to create air pollution problems. Air quality within the Basin generally rates from fair to poor. Sinking, or subsiding, air from the Pacific High-Pressure System creates a temperature inversion (known as a subsidence inversion), which acts as a lid to vertical movement of air masses and dispersion of pollutants. The lower bound of this inversion at any given time is known as the "mixing height." Restricted maximum mixing heights are 3,500 feet above sea level or less. Weak summertime pressure gradients suppress winds and further limit horizontal dispersion of pollutants in the mixed layer below the subsidence inversion. Poorly dispersed anthropogenic (human-made) emissions, combined with strong sunshine, lead to photochemical reactions that create ozone (O3) in this surface layer. Daytime onshore air flow (i.e., sea breeze) and nighttime offshore flow (i.e., land breeze) are quite common in Southern California. The sea breeze helps to moderate daytime temperatures and leads to air pollutants being blown out to sea at night and returning to land the following day.

Southern California frequently has temperature inversions that inhibit the dispersion of pollutants. Inversions may be either ground based or elevated. Ground-based inversions (sometimes referred to as "radiation inversions") are most severe during clear, cold, early winter mornings. Under ground-based inversion conditions, very little mixing or turbulence occurs, and high concentrations of primary pollutants may occur local to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversions act as a lid or upper boundary and restrict vertical mixing. Below the elevated inversion, dispersion is not restricted. Mixing heights for elevated inversions are lower in the summer and more persistent. This low summer inversions puts a lid over the Basin and is responsible for the high levels of O3 observed during summer months.

b. Local Air Quality

SCAQMD has divided its jurisdictional territory of the Basin into 38 Source Receptor Areas (SRAs), most of which have monitoring stations that collect air quality data.[26] These SRAs are designated to provide a general representation of the local meteorological, terrain, and air quality conditions within the particular geographical area. These geographical areas include urbanized regions, interior valleys, coastal areas, and mountains.

26 SCAQMD, Map of Monitoring Areas, accessed January 2019, http://www.aqmd.gov/docs/default-source/default-document-library/map-of-monitoring-areas.pdf.

The Plan Area is located in the Northwest San Bernardino Valley SRA (SRA 32).[27] The monitoring station for this area is located at 14360 Arrow Highway, Fontana, approximately 3 miles southeast of the Plan Area.[28] This station presently monitors pollutant concentrations of O_3, NO_2, PM_{10}, and $PM_{2.5}$.

Table 4.2-2: Air Quality Monitoring Summary lists the ambient pollutant concentrations registered and the violations of State and federal standards that have occurred at the aforementioned monitoring stations from 2015 through 2017, the most recent years for which data is available. As shown, the monitoring stations have registered values above State and federal standards for O_3 and the federal standard for $PM_{2.5}$. Concentrations of NO_2 have not been exceeded anywhere within the Basin for several years.

Table 4.2-2
Air Quality Monitoring Summary

Air Pollutant	Average Time (Units)	2015	2016	2017
Ozone (O_3)	State Max 1 hour (ppm)	0.133	0.139	0.137
	Days > CAAQS threshold (0.09 ppm)	36	34	33
	National Max 8 hour (ppm)	0.111	0.105	0.118
	Days > NAAQS threshold (0.070 ppm)	57	49	49
	State Max 8 hour (ppm)	0.111	0.105	0.119
	Days > CAAQS threshold (0.07 ppm)	59	52	51
Carbon Monoxide (CO)*	Max 1 hour (ppm)	2.1	1.7	1.9
	Days > CAAQS threshold (20 ppm)	N/A	N/A	N/A
	Days > NAAQS threshold (35 ppm)	N/A	N/A	N/A
	Max 8 hours (ppm)	1.3	1.3	1.4
	Days > CAAQS threshold (9.0 ppm)	N/A	N/A	N/A
	Days > NAAQS threshold (9.0 ppm)	N/A	N/A	N/A
Nitrogen dioxide (NO_2)	National Max 1 hour (ppm)	0.089	0.072	0.069
	Days > NAAQS threshold (0.100 ppm)	0	0	0
	State Max 1 hour (ppm)	0.089	0.071	0.069
	Days > CAAQS threshold (0.18 ppm)	0	0	0
Sulfur dioxide (SO_2)	Max 1 hour (ppb)	N/A	N/A	N/A
	Days > CAAQS threshold (250 ppb)	N/A	N/A	N/A
	Days > NAAQS threshold (0.075 ppm)	N/A	N/A	N/A
Particulate matter (PM_{10})	Annual Average ($\mu g/m^3$)	34.4	39.2	39.8
	24 hours ($\mu g/m^3$)	96.0	94.0	75.3
	Days > CAAQS threshold (50 $\mu g/m^3$)	13	14	8

27 SCAQMD, Map of Monitoring Areas.

28 CARB, Quality Assurance Air Monitoring Site Information, accessed March 2019, https://www.arb.ca.gov/qaweb/site.php?s_arb_code=36197.

Air Pollutant	Average Time (Units)	2015	2016	2017
	Days > NAAQS threshold (150 µg/m^3)	0	0	0
Fine particulate matter ($PM_{2.5}$)	National Max (µg/m^3)	50.5	58.8	39.2
	National Annual Average (µg/m^3)	11.0	12.3	12.0
	Days > NAAQS threshold (35 µg/m^3)	3	1	1

Source: California Air Resources Board, "Top 4 Summary," https://www.arb.ca.gov/adam/topfour/topfour1.php.
Notes:
** CO data from at SCAQMD, Historical Data By Year, https://www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year.*
> = exceeds; CAAQS = California Ambient Air Quality Standard; max = maximum; mean = annual arithmetic mean; µg/m3 = micrograms per cubic meter; N/A = no data; NAAQS = National Ambient Air Quality Standard; ppm = parts per million.

c. Sensitive Receptors

Some receptors are considered more sensitive to air pollutants than others because of preexisting health problems, proximity to the emissions source, or duration of exposure to air pollutants. According to the Rancho Cucamonga General Plan, land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality related health problems than the general public. Residential areas are also considered sensitive to poor air quality because people in residential areas are often at home for extended periods. CARB has identified the following people as most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and those with cardiovascular and chronic respiratory diseases. The nearest receptors to the Plan area include the residential communities to the south of Sub-Areas 2 and 4, to the east and west of Sub-Areas 1 and 8, the residential communities to the west of Sub-Areas 2 and 3, the Los Osos High School located to the east of Sub-Area 2, south of Sub-Area 5, and west of Sub-Area 4.

d. Toxic Air Contaminants

As mentioned previously, the MATES IV is a monitoring and evaluation study conducted in the Basin focusing on the carcinogenic risk from exposure to air toxics. It does not estimate mortality or other adverse health effects from particulate exposures. The modeled carcinogenic risk for an area that includes the Plan area ranges from a low of 591 per million to a high of 769 per million.[29]

29 SCAQMD, *Final Report Multiple Air Toxics Exposure Study in the South Coast Air Basin*, May 2015, accessed April 2019, https://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf?sfvrsn=7

ENVIRONMENTAL IMPACTS

Methodology

The SCAQMD requires that emissions of air pollutants that will be generated by implementation of a proposed Plan are quantified and compared to applicable regulatory thresholds. Emissions of criteria air pollutants (CAPs) that will be generated by Plan implementation were quantified using CalEEMod. Various assumptions are made within the modeling software based on land use type and project scale. Emissions were estimated for both construction and operation of the Plan. It is anticipated that the Plan would be developed over nine phases over approximately 13 years. A summary of the distribution of the projected number of dwelling units and acreages for parks, public facilities, and shops/restaurants by phase are provided in detail in **Section 2.0: Project Description.** Default data contained in CalEEMod was used to supplement this Plan specific information where necessary.

Construction Emissions

Construction activities produce combustion emissions from various sources, such as on-site heavy-duty construction vehicles, vehicles hauling materials to and from the site, loose dirt from paved site access roadways, and motor vehicles transporting the construction crew. Grading activities produce fugitive dust emissions (PM_{10} and $PM_{2.5}$) from soil-disturbing activities. Exhaust emissions from construction activities on site would vary daily as construction activity levels change. Short-term emissions of criteria air pollutants (e.g., CO, SOx, PM_{10}, and $PM_{2.5}$) generated by Plan construction and ozone precursors (e.g., VOCs and NOx) were assessed in accordance with SCAQMD-recommended methods. These emissions were modeled using the CARB-approved CalEEMod computer program as recommended by SCAQMD. CalEEMod is designed to model construction emissions for land use development projects and allows for the input of project-specific information. The program contains default settings specific to the air district, county, air basin, or State level using approved vehicle emissions factors (EMFAC2014), established methodologies, and the latest survey data.

Construction of the Plan must comply with SCAQMD rules. Rule 201, Rule 402, Rule 403, Rule 1113, Rule 1186, and Rule 1403 are mandatory for all construction projects in SCAQMD jurisdiction within the Basin. The emission calculations take into account compliance with Rule 403 by incorporating the watering of exposed surfaces and unpaved roads three times daily, reducing speed on unpaved roads to less than 15 mph, and sweeping loose dirt from access roadways. CalEEMod also incorporates Rule 1113 by reducing the VOC content in the area coatings.

Localized Significance Threshold

The localized significance threshold (LST) methodology uses lookup tables based on site acreage to determine the significance of emissions for CEQA purposes. However, CalEEMod does not allow the user to mitigate construction emissions by directly modifying acreage disturbed. CalEEMod calculates construction emissions (off-road exhaust and fugitive dust) based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment. Based on the input parameters during grading, 2 excavators operating 8 hours a day would disturb 1 acre, 1 grader operating 8 hours a day would disturb 0.5 acres, 1 rubber tired dozer operating 8 hours a day would disturb 0.5 acres, 2 scrapers operating 8 hours a day would disturb 1 acre, and 2 tractors operating 8 hours a day would disturb 2 acres in an given day for a total maximum of 5 acres disturbed in one day.[30]

The SCAQMD provides LST mass rate look-up tables for projects that are less than or equal to five acres. For projects that exceed five acres, such as the Plan, the 5-acre LST look-up values can be used as a screening tool to determine which pollutants require detailed analysis. This approach is conservative as it assumes that all on-site emissions would occur within a 5-acre area and would overpredict potential localized impacts (i.e., more pollutant emissions occurring in a smaller area and within closer proximity to potential sensitive receptors). If a project exceeds the LST look-up values, then the SCAQMD recommends that project-specific localized air quality modeling be conducted.

Operational Emissions

Operational emissions generated by both stationary and mobile sources would result from normal day-to-day activities associated with the uses that would be permitted by the Plan. Source emissions would be generated by the consumption of natural gas and landscape maintenance. Mobile emissions would be generated by the motor vehicles traveling to and from the Plan Area.

Project-generated, regional area, and mobile-source emissions of criteria air pollutants and ozone precursors were also modeled using the CalEEMod computer program. CalEEMod allows land use selections that include project location specifics and trip generation rates. CalEEMod accounts for area-source emissions from the use of natural gas, landscape maintenance equipment, and consumer products and from mobile-source emissions associated with vehicle trip generation.

The analysis of daily operational emissions associated with the Plan have been prepared using the data and methodologies identified in SCAQMD's *CEQA Air Quality Handbook*[31] and current motor vehicle

30 SCAQMD, Fact Sheet for Applying CalEEMod Localized Significance Thresholds, accessed April 2019, http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf

31 SCAQMD, *CEQA Air Quality Handbook* (November 1993).

emission factors in CalEEMod. Trip rates for these land uses were obtained from the traffic impact study for the Plan (**Appendix K: Traffic Study**).

Thresholds of Significance

The Plan would have a significant impact related to air quality if it would:

Threshold AQ-1: **Conflict with or obstruct implementation of the applicable air quality plan?**

Threshold AQ-2: **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?**

Threshold AQ-3: **Expose sensitive receptors to substantial pollutant concentrations?**

Threshold AQ-4: **Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

The SCAQMD has established significance thresholds to assess the regional and localized impacts of project-related air pollutant emissions. These significance thresholds are updated as needed to appropriately represent the most current technical information and attainment status in the Basin. The City of Rancho Cucamonga uses the current SCAQMD thresholds to determine whether a proposed project would have a significant impact.

Table 4.2-3: SCAQMD Criteria Pollutant Significance Emissions Thresholds, presents the current SCAQMD significance thresholds, including regional daily thresholds for short-term construction and long-term operational emissions; maximum incremental cancer risk and hazard indices for TACs; and a maximum ambient concentration for exposure of sensitive receptors to localized pollutants. A project with daily emission rates, risk values, or concentrations below these thresholds is generally considered to have a less than significant effect on air quality.

Table 4.2-3
SCAQMD Criteria Pollutant Significance Emissions Thresholds

Mass Daily Thresholds[a]		
Pollutant	**Construction**	**Operation**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

TACs, Odor, and GHG Thresholds	
TACs (including carcinogens and noncarcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic and Acute Hazard Index ≥ 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
GHG	10,000 MT/yr CO_2eq for industrial

Ambient Air Quality Standards for Criteria Pollutants[b,c]		
NO2	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards	
	1-hour average	0.18 ppm (state)
	Annual arithmetic mean	0.03 ppm (state) and 0.0534 ppm (federal)
PM_{10}	24-hour average	10.4 µg/m^3
	Annual average	1.0 µg/m^3
$PM_{2.5}$	24-hour average	10.4 µg/m^3 (construction) & 2.5 1.0 µg/m^3 (operation)
SO_2	1-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99th percentile)
	24-hour average	0.04 ppm (state)
Sulfate	24-hour average	25 µg/m^3 (state)
CO	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards	
	1-hour average	20.0 ppm (state) and 35 ppm (federal)
	8-hour average	9.0 ppm (state/federal)
Lead	30-day average	1.5 µg/m^3 (state)
	Rolling 3-month average	0.15 µg/m^3 (federal)

Source: SCAQMD, http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf
NOx: nitrogen oxides, lb/day, VOC: volatile organic compound, PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5 fine particulate matter with a diameter of 2.5 microns or less; SOx: sulfur oxides; CO: carbon monoxide, TACs toxic air contaminants

Impact Analysis

Threshold AQ-1: Conflict with or obstruct implementation of the applicable air quality plan?

The 2016 Final Draft AQMP was prepared to accommodate growth, reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, return clean air to the region, and to minimize the impact on the economy. Projects considered to be consistent with the AQMP do not interfere with attainment because this growth is included in the projections utilized in the formulation of the AQMP. Therefore, projects, uses, and activities that are consistent with the applicable assumptions used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP.

In accordance with the SCAQMD *CEQA Air Quality Handbook*, the following criteria were used to evaluate the Plan's consistency with SCAQMD and SCAG regional plans and policies, including the AQMP:

1. Will the project result in any of the following:
   - An increase in the frequency or severity of existing air quality violations;
   - Cause or contribute to new air quality violations; or
   - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP?

2. Will the project exceed the assumptions utilized in preparing the AQMP?
   - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
   - Does the project include air quality mitigation measures; or
   - To what extent is project development consistent with the AQMP land use policies?

The Air Basin is designated by the USEPA as nonattainment for O_3 and $PM_{2.5}$ and by the State as nonattainment for O_3, PM_{10}, and $PM_{2.5}$. SCAQMD developed regional emissions thresholds, as shown in **Table 4.2-3**, to determine whether a project would contribute to air pollutant violations. If a project exceeds the regional air pollutant thresholds, then it would significantly contribute to air quality violations in the Air Basin.

Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment), developed by SCAG for their 2016 RTP/SCS were used to estimate future emissions within the 2016 AQMP (refer to the 2016 AQMP, Chapter 3). Projects that are consistent with the growth projections are considered consistent with the AQMP. The Plan would result in population growth for the region. The 2016 AQMP incorporates land use projections from the 2016 RTP/SCS and from the City for this portion of the Air Basin. The 2016 AQMP incorporates land use projects from the 2016 RTP/SCS and

from the City for this portion of the Air Basin. According to the SCAG estimates, the 2012 population within the City was 170,100 residents and 69,300 employment opportunities. Based on the current draft forecasts, the population projection for year 2035 and 2040 is 191,165 and 201,255 residents, respectively.

It is important to note SCAG projections take into account current jurisdictional boundaries. As discussed in **Section 2.0: Project Description**, the EHNCP includes 305 acres in the City and 4,088 acres currently in the County. As such, the current 2016–2040 SCAG RTP/SCS Growth Forecasts only reflect growth projected for the EHNCP, a population increase of 2,000. SCAG is currently preparing the 2020–2045 RTP/SCS which will include the projected growth within the annexation area. The draft 2020–2045 SCAG includes approximately 1,600 households with a population of 4,900 and 300 jobs within the Neighborhood Area. This projected growth, when combined with the growth already forecast on the 305 acres in the City, would account for 300 of the 415 jobs projected for the EHNCP and 6,035 persons above the projections in the City's General Plan, compared to the 9,090 for the EHNCP. However, although the population increase is incrementally above the regional growth forecasts, the impact of growth associated with the EHNCP is considered significant because all of the population and employment growth associated with the proposed EHNCP is not accounted for in the current 2016–2040 RTP/SCS and draft 2020–2045 draft SCAG Regional Growth Forecasts.

According to the 2016 AQMP, the most effective way to reduce air pollution impacts is to reduce emissions from mobile sources, the principal contributor to air quality challenges. As discussed in **Section 4.15: Transportation**, the Plan would perform better than a minimum of 15 percent below either of the comparable regions (Rancho Cucamonga, San Bernardino County, and San Bernardino County Valley Region), thus consistent with the AQMP on achieving goals related to mobile emission reductions. In addition, the Plan characteristics listed below are consistent with the CAPCOA guidance document, *Quantifying Greenhouse Gas Mitigation Measures*, which identifies the vehicle miles traveled (VMT) and vehicle trips reductions for the site. Measures applicable to the Plan include the following; a brief description of the Plan's relevance to the measure is also provided.

- **CAPCOA Measure LUT-1 – Increase Density:** Increased density, measured in terms of persons, jobs, or dwelling units per unit area, reduces emissions associated with transportation as it reduces the distance people travel for work or services and provides a foundation for the implementation of other strategies, such as enhanced transit services.
- **CAPCOA Measure LUT-3 – Increase Diversity of Urban and Suburban Developments:** The Plan would introduce new uses at the site, including high-quality, single-family neighborhoods with a range of housing opportunities—including equestrian-oriented housing—that are compatible in character with the existing surrounding neighborhoods. The Plan would improve access to the existing and new foothill neighborhoods by extending, connecting, and improving Wilson Avenue, Rochester Avenue, and Milliken Avenue, and providing a network of walkable and bikeable neighborhood streets.

- **CAPCOA Measure SDT-1 – Provide Pedestrian Network Improvements:** The Plan would improve access to the existing and new foothill neighborhoods by extending, connecting, and improving Wilson Avenue, Rochester Avenue, and Milliken Avenue, and providing a network of walkable and bikeable neighborhood streets. In addition, the Plan would include equestrian-oriented housing which would include alternatives to residence instead of driving.

Construction Emissions

Construction by Phase

The primary source of construction related NOx, CO, and SOx emissions is from construction equipment exhaust and on-road haul truck trips while the majority of particulate matter emissions would occur as a result of fugitive dust emissions generated during grading and excavation activities. Primary sources of PM_{10} and $PM_{2.5}$ emissions would be clearing activities, excavation and grading operations, construction vehicle traffic on unpaved ground, and wind blowing over exposed earth surfaces.

The estimated maximum daily emissions for the Plan during the entire duration of construction are listed in **Table 4.2-4: Unmitigated Maximum Construction Emissions**. The analysis assumes that all of the construction equipment and activities would occur continuously over the day. In reality, this would not occur, as most equipment operates only a fraction of each workday and many of the activities would not overlap on a daily basis. In addition, the emission results provided below do not include implementation of regulatory compliance measures such as SCAQMD Rules 402 and 403, which minimize short-term emissions of dust and particulate. Therefore, this analysis of construction emissions is considered a worst-case analysis. As shown in **Table 4.2-4**, construction activity associated with the development of the Plan would not exceed regional concentration thresholds.

Exceedances would occur if concurrent grading and building in each individual phase were to take place. Based on the recommendation provided by the SCAQMD, implementation of Mitigation Measure **MM AQ-1** would require the use of Tier 3 off-road diesel-powered construction equipment equipped with any emissions-control device such as a Level 3 Diesel Particulate Filter (DPF). The measure would be expected to reduce diesel particulate matter by approximately 85 percent or more. SCAQMD Rule 1113 would limit the amount of VOCs in architectural coatings and solvents. In addition, the Plan would comply with the applicable provisions of the CARB Air Toxics Control Measure regarding idling limitations for diesel trucks. Through mandatory compliance with SCAQMD Rules and implementation of **MM AQ-1**, construction-related impacts would be less than significant.

Table 4.2-4
Unmitigated Maximum Construction Emissions

Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	pounds/day					
Phase I	65	25	44	<1	4	2
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase II	68	32	42	<1	10	5
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase III	42	69	86	<1	22	9
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase IV	66	60	69	<1	22	8
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase V	67	51	61	<1	19	7
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase VI	70	15	28	<1	11	5
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase VII	40	18	37	<1	9	4
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase VIII	14	38	56	<1	14	4
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***
Phase IX	73	53	73	<1	29	10
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

Source: Refer to Table 2-2: Phasing Summary in Section 2.0 Project Description in ***Appendix C: CalEEMod Output Sheets.***
Abbreviations: CO = carbon monoxide; NOx = nitrogen oxide; PM10 = particulate matter less than 10 microns; PM2.5 = particulate matter less than 2.5 microns; VOC = volatile organic compound; SCAQMD = South Coast Air Quality Management District; SOX = sulfur oxide.

Concurrent Construction

Table 4.2-5: Unmitigated Maximum Concurrent Construction, estimates regional construction emissions based on the expected location, size, and development of the Plan if construction of all Phases were to occur concurrently. The analysis assumes that all of the construction equipment activities would occur continuously over the day and that activities would overlap. In reality, this would not occur, as most equipment would operate only a fraction of each workday and many of the activities would not overlap on a daily basis. As shown in **Table 4.2-5**, construction activities associated with concurrent development would exceed regional VOC and NOx concentration thresholds. Implementation of Mitigation Measure **MM AQ-2**, would require construction to be phased as described in **Section 2.0: Project Description**. As shown in **Table 4.2-4** above, phased development would not exceed regional construction concentration thresholds. As such, impacts would be less than significant with mitigation incorporated.

Table 4.2-5
Unmitigated Maximum Concurrent Construction

Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	pounds/day					
Unmitigated Maximum	90	149	162	1	83	23
SCAQMD Threshold	75	100	550	150	150	55
Threshold Exceeded?	**Yes**	**Yes**	***No***	***No***	***No***	***No***

*Source: Refer to **Appendix C: CalEEMod Output Sheets.***
Abbreviations: CO = carbon monoxide; NOx = nitrogen oxide; PM10 = particulate matter less than 10 microns; PM2.5 = particulate matter less than 2.5 microns; VOC = volatile organic compound; SCAQMD = South Coast Air Quality Management District; SOX = sulfur oxide.

Operational Emissions

The estimated operational emissions are based on the development of the Plan and presented in **Table 4.2-6: Maximum Operational Emissions**. Operational emissions are comprised of area, energy and mobile source emissions. Area source emissions would result from the use of consumer products, natural gas fireplaces, landscaping equipment, and periodic repainting of buildings. Consumer products include cleaning supplies, kitchen aerosols, cosmetics and toiletries. Energy emissions come from the use of natural gas for heating and hot water. All fireplaces would be gas-fueled; in accordance with SCAQMD Rule 445, there would be no wood burning fireplaces. Mobile source emissions are based on project-related trip generation forecasts, as discussed further in **Section 4.15: Transportation**. The Plan would generate an estimated 35,446 gross tripends per day, which includes both internal and external trips. As shown in **Table 4.2-6**, the Plan would exceed daily operational emissions for VOC, NOx, CO, PM_{10} and $PM_{2.5}$. The primary source of VOC would be from consumer products from residential land uses, an area source. The primary source of NOx, CO, PM_{10}, and $PM_{2.5}$ emissions would be from the 35,446 gross tripends per day from mobile sources

Reduction from compliance with local and State standards are not reasonably quantifiable in the CalEEMod model and would provide additional emissions reductions that are not accounted for. The Plan would be required to comply with California Building Code requirements for energy efficiency which would reduce natural gas emissions. The Plan would be designed in accordance with applicable residential and nonresidential sections of the CALGreen Building Code as designed by the City and required by Section 17.50 of the City's Municipal Code. The Plan would comply with Section 17.50 of the City's Municipal Code to install recycled water systems for all projects with a total landscape area equal to or greater than 2,500 square feet. The Plan would be designed in accordance with the applicable Title 24 Energy Efficiency Standards for Residential and Nonresidential Buildings. These standards are updated, nominally every three years to incorporate improved energy efficiency technologies and methods. The current 2016 standards were effective January 1, 2017 with the 2019 standards to be effective January 1, 2020.

There are no feasible Plan-level mitigation measures for consumer product VOC emission reductions. Implementation of Mitigation Measure **MM AQ-3** would require preferential parking for alternative fueled vehicles and electric vehicle charging facilities for nonresidential buildings, residential buildings, parking garages and parking lots. In addition, this measure would require bicycle parking for residential building and parking facilities. Mitigation Measure **MM AQ-4** would limit truck idling and would provide incentives for employees of commercial business to commute by Metrolink or bus.

Although implementation of Mitigation Measure **MM AQ-3** and **MM AQ-4** would reduce project-related VMT long-term emissions of mobile source pollutants, estimates of the amount of emissions reductions are not feasible. These measures provide incentives to reduce the number of vehicle trips with fossil-fuel-only vehicles, but do not guarantee any reductions. Therefore, operational impacts would be significant and unavoidable.

Table 4.2-6
Maximum Operational Emissions

Source	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
	pounds/day					
Area	212	45	209	<1	4	4
Energy	3	25	12	<1	2	2
Mobile	29	192	379	2	257	69
Total	244	262	599	3	263	76
SCAQMD Threshold	55	55	550	150	150	55
Threshold Exceeded?	***Yes***	***Yes***	***Yes***	***No***	***Yes***	***Yes***

*Note: Refer to **Appendix C: CalEEMod Output Data.***
Abbreviations: CO = carbon monoxide; NOx = nitrogen oxide; PM10 = particulate matter less than 10 microns; PM2.5 = particulate matter less than 2.5 microns; VOC = volatile organic compound; SCAQMD = South Coast Air Quality Management District; SOX = sulfur oxide.

Regional Health

At the state level, CARB is primarily responsible for reducing emissions from motor vehicles and consumer products. SCAQMD has authority over most area sources and all point sources. Approximately 90 percent of NOx and 75 percent of VOC emissions from the 2012 inventory are from sources primarily under CARB and U.S. EPA control. Conversely, 56 percent of SOx emissions and 66 percent of the directly emitted $PM_{2.5}$ emissions are from sources under SCAQMD control.[32] NOx and VOC are important precursors to zone and $PM_{2.5}$ formation, and SOx along with directly emitted $PM_{2.5}$, contribute to the region's $PM_{2.5}$ nonattainment challenges. This illustrates that actions at the local, State, and federal level are needed to ensure the region attains the federal ambient air quality standards.

The peak daily construction regional emissions for the Plan would result in approximately 189 pounds per day of VOC, 207 pounds per day of NOx, 49 pounds per day of CO, and 113 pounds per day of PM_{10} over the SCAQMD's significance thresholds. Approximately 73 percent of NOx, 63 percent of CO and 98 percent of PM_{10} would be regional (e.g., emitted by mobile sources distributed across region's roadway network) and different than the identified stationary sources as modeled in SCAQMD's analysis of Rule 1315, which would add to the difficulties of modeling Plan-related emissions. To provide additional context to the Plans emissions, SCAQMD's 2016 AQMP provides 162.4 tons per day (324,800 pounds) of VOC, and 293.1 tons per day (586,200 pounds) of NOx emissions basin-wide for the baseline year of 2012.33 Consumer products remain as high-emitting categories over time, with consumer products accounting 87 percent of total VOC inventory in 2012 to 91 percent in 2031.

Since SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by criteria pollutant emissions, than a general description of the adverse health impacts resulting from the pollutants at issue is all that can be provided at this time. See above description of general adverse health impacts resulting from criteria pollutants (refer to subheading Criteria Air Pollutants of this section). Therefore, consistent with the California Supreme Court's Friant Ranch decision, the above information provides details regarding the potential health effects from the Plan's significant and unavoidable criteria pollutant emissions. The analysis adequately explains why it is not scientifically feasible at this time to substantively connect the Plan's air quality impacts to likely health consequences.

32 SCAQMD, *Final 2016 AQMP, Table 3-1a,* March 2017, accessed April 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.

33 SCAQMD, *Final 2016 AQMP, Figure 3-1,* March 2017, accessed April 2019, http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.

Threshold AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?

According to SCAQMD, if an individual project results in air emissions of criteria pollutants that exceed SCQMD's recommended daily thresholds for project-specific impacts, then the project would also result in a cumulatively considerable net increase of these criteria pollutants. As shown in **Table 4.2-1**, the Basin is currently nonattainment for federal ozone and $PM_{2.5}$ and for state ozone, PM_{10}, and $PM_{2.5}$. By applying SCAQMD's cumulative air quality impact methodology, implementation of the Plan would result in an increase of regional VOC, NOx, CO, PM_{10} and $PM_{2.5}$ and localized $PM_{2.5}$, as shown and discussed in **Table 4.2-6** previously and **Table 4.2-8: Unmitigated Maximum Localized Concurrent Construction**, respectively. Emissions would contribute to existing violations of the criteria pollutants in exceedance and are considered significant for this reason.

Threshold AQ-3: Expose sensitive receptors to substantial pollutant concentrations?

Construction

Localized Construction by Phase

The localized effects from the on-site portion of daily emissions were evaluated at sensitive receptor locations potentially impacted by the Plan according to the SCAQMD's LST methodology. In addition, because completed and occupied residences on site could be adjacent to subsequent construction activities, the distance to the receptor is assumed to be 50 meters.[34] **Table 4.2-7: Unmitigated Maximum Localized Construction Emissions**, shows the maximum calculated on-site emissions during each of the nine construction phases. As shown, emissions would not exceed the localized threshold emissions for NOx, CO, PM_{10}, and $PM_{2.5}$.

34 The LST method uses the metric system for receptor distances.

Table 4.2-7
Unmitigated Maximum Localized Construction Emissions

Source	NOx	CO	PM_{10}	$PM_{2.5}$
	pounds/day			
Phase I	35	28	10	5
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase II	32	28	10	5
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase III	28	26	10	5
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase IV	28	26	10	5
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase V	28	26	10	5
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase VI	14	23	10	4
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase VII	14	23	9	4
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase VIII	14	23	10	4
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***
Phase IX	14	23	10	4
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***

*Note: Refer to **Appendix C: CalEEMod Output Sheets.***

Localized Concurrent Construction

Table 4.2-8: Unmitigated Maximum Localized Concurrent Construction estimates localized construction emissions based on the expected location, size, and development of the Plan if construction of all Phases were to occur concurrently. As shown in **Table 4.2-8,** emissions would not exceed the localized threshold emissions for NOx, CO, PM10, and PM2.5 during concurrent construction.

Table 4.2-8
Unmitigated Maximum Localized Concurrent Construction

Source	NOx	CO	PM10	PM2.5
	pounds/day			
Unmitigated Maximum	35	28	10	5
SCAQMD Screening Threshold	303	2,978	50	12
Exceeds Threshold?	***No***	***No***	***No***	***No***

*Note: Refer to **Appendix C: CalEEMod Output Sheets.***

Operation

Carbon Monoxide Hotspot

A CO hotspot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. If a project increases average daily at signalized intersections operating at Level of Service (LOS) E or F or causes an intersection that would operate at LOS D or better without the project to operate at LOS E or F with the project, further screening is required. As discussed in **Section 4.15: Transportation**, implementation of Mitigation Measures **MM TRAF-1** through **MM TRAF-3** would improve intersection operations to either an acceptable LOS or to pre-Plan conditions. Therefore, the Plan would not result in the creation of a CO hotspot.

Localized Operation

Similar to localized construction, localized effects from the on-site portion of operational daily emissions were evaluated at sensitive receptor locations potentially impacted by the Plan according to the SCAQMD's LST methodology. The maximum daily operational localized emissions are presented in **Table 4.2-9: Maximum Localized Operational Emissions**. As shown, localized thresholds emissions for NOx, CO, PM10 would not exceed localized operational emissions. However, localized PM2.5 emissions would exceed emissions primarily due to the contribution of area sources (hearth and landscaping) and energy sources (natural gas).

The Plan would be required to comply with SCAQMD Rules 201 and 203, which requires that any facility with the potential to emit substantial amounts of air pollutants must receive permits to construct and

operate the facility. Depending on the nature of the business and the associated emissions sources and pollutants, the standard permitting processes may require an emissions analysis and/or a health risk analysis to demonstrate that emissions would not exceed SCAQMD specific rules requirements and there would not be unacceptable health risks to on- and off-site receptors (refer to Mitigation Measure **MM AQ-5**). Additional controls on pollutant and odor emissions are provided in Section 17.66.060 of the Development Code. The permitting process thereby ensures that facilities would not emit criteria pollutants that would result in a significant impact.

Reduction from compliance with local and state standards are not reasonably quantifiable in the CalEEMod model and would provide additional emissions reductions that are not accounted for. As mentioned previously, the Plan would be required to comply with the applicable building requirements including the CALGreen Building Code and the City's Development Code. Consequently, impacts would be considered significant and unavoidable.

Table 4.2-9
Maximum Localized Operational Emissions

Source	NOx	CO	PM_{10}	$PM_{2.5}$
	pounds/day			
Maximum Daily On-Site Emissions	70	221	7	7
SCAQMD Screening Threshold	303	2,978	12	3
Exceeds Threshold?	***No***	***No***	***No***	***Yes***

*Note: Refer to **Appendix C: CalEEMod Output Data.***

Threshold AQ-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction

During the Project's construction phase, activities associated with the operation of construction equipment, the application of asphalt, the application of architectural coatings and other interior and exterior finishes, and roofing may produce discernible odors typical of most construction sites. SCAQMD Rule 1113 limits the amount of VOCs in architectural coatings and solvents to further reduce the potential for odiferous emissions. Although these odors could be a source of nuisance to adjacent uses, they would be temporary and intermittent in nature. As construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. Accordingly, impacts would be less than significant.

Operation

The residential, retail commercial, and public facility uses that would be permitted by the Plan are not expected to be a source of persistent odors. Refuse generated would be disposed of in accordance with all applicable regulations. Any unforeseen odors generated by the Plan will be controlled in accordance with SCAQMD Rule 402 (Nuisance). Rule 402 prohibits the discharge of air contaminants that cause "injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." Failure to comply with Rule 402 could subject the offending facility to possible fines and/or operational limitations in an approved odor control or odor abatement plan. Consequently, no significant impacts from odors are anticipated.

CUMULATIVE IMPACTS

The cumulative significance methodologies contained in the *CEQA Air Quality Handbook*, SCAQMD staff has suggested that the emissions-based thresholds be used to determine if a project's contribution to regional cumulative emissions is cumulatively considerable. Individual projects that exceed SCAQMD-recommended daily thresholds for project-specific impacts would be considered to cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment. As discussed in **Threshold AQ-2** and presented above in **Table 4.2-6** and **Table 4.2-9**, operation of the Plan would result in an increase of regional VOC, NOx, CO, PM_{10} and $PM_{2.5}$ and localized $PM_{2.5}$. Contribution of these emission to air quality would be considered cumulatively considerable.

MITIGATION MEASURES

MM AQ-1 All off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by the California Air Resources Board (CARB). Any emissions-control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 Diesel Particulate Filter (DPF) for a similarly sized engine as defined by CARB regulations.

MM AQ-2 The Plan shall be developed in nine phases over approximately 13 years, as described in **Section 2.0: Project Description**, to minimize concurrent development.

MM AQ-3 Preferential parking for low-emitting, fuel-efficient, and carpool/van vehicles shall be provided as specified in Nonresidential Voluntary Measures of the CALGreen Code

One- and two-family dwellings and facilities shall be installed to support future electric vehicle charging at each residential building and nonresidential building with 30 or more parking spaces. Installation shall be consistent with the Residential and Nonresidential Voluntary Measures of the CALGreen Code

MM AQ-4 Post signs requiring that trucks shall not be left idling for prolonged periods (i.e., in excess of 5 minutes).

Post both bus and Metrolink schedules in conspicuous areas.

MM AQ-5 Preparation of a Health Risk Assessment (HRA) of the proposed Sub-Area 1 to the southwest and Sub-Area 8 to the southeast if housing development were to occur within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.

Disclose the potential health impacts to prospective residents from living in a close proximity of I-210 and the reduced effectiveness of air filtration system when windows are open and/or when residents are outdoor (e.g., common usable open space areas).

Many strategies are available to reduce exposure, including, but are not limited to: building filtration systems with MERV 13 or better; building design, orientation, location; and vegetation barriers or landscape screening.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Threshold AQ-1 Construction regional and local criteria pollutant emissions would be less than significant with incorporation of Mitigation Measures **MM AQ-1** and **MM AQ-2**.

Long-term operational criteria pollutant regional emissions would be reduced with implementation of Mitigation Measures **MM AQ-3** and **MM AQ-4**; however, impacts would remain significant and unavoidable.

Threshold AQ-2 The plan would result in less than significant cumulative regional and local construction emissions. The Plan would result in significant and unavoidable cumulative long-term regional emissions of O_3 precursors (VOC and NOx), PM_{10} and $PM_{2.5}$, all nonattainment pollutants, due to mobile and area sources.

Threshold AQ-3 The Plan would result in less than significant local operational emissions for the residential uses in Sub-Areas 1 and 8 with implementation of Mitigation Measure **MM AQ-5**.

Threshold AQ-4 The Plan would result in less than significant impacts related to construction and operational odors.