4.2 Air Quality

This section describes air quality–related impacts of the proposed project. It includes a discussion of existing regulatory requirements, the existing air quality setting within the project area, and impacts on air quality that would result from implementation of the proposed project.

4.2.1 Relevant Air Pollutants

Criteria Air Pollutants

Air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants, which are known as criteria air pollutants, are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOCs), nitrogen oxides (NO_X), sulfur dioxide (SO_2), and most fine particulate matter (i.e., particulate matter 10 micrometers or less in diameter [PM10] and particulate matter 2.5 micrometers or less in diameter [PM2.5]), including lead (Pb) and fugitive dust, are primary air pollutants. Of these, CO, SO_2, PM10, and PM2.5 are criteria pollutants. VOC and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Presented below is a description of each of the primary and secondary criteria air pollutants and their known health effects (SCAQMD 2005).

Ozone

Ozone, a colorless toxic gas, is found in two regions of the earth's atmosphere: at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O_3). Although upper-atmospheric O_3 protects the earth from the sun's harmful rays, ground-level O_3 is the main component of smog. It enters the blood stream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. It also damages vegetation by inhibiting growth. Although O_3 is not directly emitted, it forms in the atmosphere through a photochemical reaction between VOCs and NO_X in the presence of sunlight. O_3 is present in relatively high concentrations within the South Coast Air Basin (Basin), and the damaging effects of photochemical smog are generally related to the concentration of O_3. Meteorology and terrain play major roles in O_3 formation. Ideal smog conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. Smog can also occur during the winter months in high-elevation areas in the western United States, in areas with high levels of local VOC and NO_X emissions, when snow is on the ground and temperatures are near or below freezing (EPA 2012a). The greatest source of smog-producing gases is the automobile (SCAQMD 2012a).

Organic Gases—Precursors to Ozone

There are several subsets of organic gases, including reactive organic gases (ROGs) and VOCs. Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. ROGs include all hydrocarbons except those exempted by the California Air Resources Board (CARB). Therefore, ROGs are a set of organic gases based on state rules and regulations. VOCs are similar to ROGs in that they include all organic gases except those exempted by federal law. Both VOCs and ROGs are

emitted from incomplete combustion of hydrocarbons or other carbon-based fuels. Combustion engine exhaust, oil refineries, and oil-fueled power plants are the primary sources of hydrocarbons. Another source of hydrocarbons is evaporation from petroleum fuels, solvents, dry-cleaning solutions, and paint. Generally speaking, and in this analysis, ROGs and VOCs are used interchangeably to refer to the hydrocarbons that are a precursor to O_3 formation. However, because the South Coast Air Quality Management District (SCAQMD) uses VOCs in the formulation of its thresholds, VOCs are presented herein.

The primary health effects of hydrocarbons result from the formation of O_3 and its related health effects. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. There are no separate National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS) for VOCs or ROGs (EPA 2012b). Carcinogenic forms of VOCs and ROGs are considered to be toxic air contaminants (TACs), which are described below. An example is benzene, which is a carcinogen.

Carbon Monoxide

Carbon monoxide is a colorless and odorless gas that can interfere with the transfer of oxygen to the brain. It can cause dizziness and fatigue and impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. In urban areas, CO is emitted by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. Automobile exhaust releases most of the CO in urban areas. CO is a non-reactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest CO concentrations measured in Los Angeles County are typically recorded during the winter (SCAQMD 2005).

Nitrogen Dioxide

Nitrogen dioxide is a brownish gas that irritates the lungs. It can cause breathing difficulties at high concentrations. Similar to O_3, NO_2 is not directly emitted but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM10 (see discussion of PM10 below). At atmospheric concentrations, NO_2 is only potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 to 3 years old) has also been observed at concentrations below 0.3 part per million (ppm) (SCAQMD 2005).

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air. These can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. PM10 and PM2.5 represent fractions of particulate matter. PM10 refers to particulate matter less than 10 microns in diameter, about $1/7$ the thickness of a human hair. PM2.5 refers to particulate matter

that is 2.5 microns or less in diameter, roughly 1/28 the diameter of a human hair. Major sources of PM10 include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM2.5 results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM10 and PM2.5 can be formed in the atmosphere from gases such as SO_2, NO_X, and VOCs.

PM10 and PM2.5 pose a greater health risk than larger size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM10 and PM2.5 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly. These substances can be absorbed into the bloodstream and cause damage elsewhere in the body; they can also transport absorbed gases such as chlorides or ammonium into the lungs and cause injury. Whereas particles measuring 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles measuring 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle and contribute to haze and reduce regional visibility.

Secondary PM2.5 Formation

PM2.5 particles are both emitted directly into the atmosphere (i.e., primary particles) and formed through atmospheric chemical reactions from precursor gases (i.e., secondary particles). Primary PM2.5 includes diesel soot, combustion products, road dust, and other fine particles. Secondary PM2.5, which includes products such as sulfates, nitrates, and complex carbon compounds, are formed from reactions with directly emitted NO_X, sulfur oxides (SO_X), VOCs, and ammonia. Secondary formation of smaller particles can lead to elevated PM2.5 concentrations in the inland valley areas of the Basin (SCAQMD 2012a). The analysis herein focuses on the effects of direct PM2.5 emissions, consistent with the recommendations of SCAQMD (SCAQMD 2006).

Sulfur Dioxide

Sulfur dioxide is a product of high-sulfur-fuel combustion. The main sources of SO_2 are coal and oil used in power stations, industries, and domestic heating. Industrial chemical manufacturing is another source of SO_2. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also cause plant leaves to turn yellow and erode iron and steel. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary-source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 concentrations have been reduced to levels well below the state and national standards, but further reductions are needed to attain compliance with standards for sulfates and PM10, to which SO_2 is a contributor (SCAQMD 2012a).

Lead

Lead is a natural constituent of air, water, and the biosphere and is listed as both a criteria pollutant and a carcinogenic TAC. Pb is neither created nor destroyed in the environment, so it essentially persists forever. Decades ago, Pb was used to increase the octane rating of automotive fuel. Gasoline-powered automobile engines were a major source of airborne Pb through their use of

leaded fuels. However, most leaded fuel has been phased out, and ambient concentrations of Pb have dropped dramatically. Short-term exposure to high levels of Pb can cause vomiting, diarrhea, convulsions, coma, or even death. Even small amounts of Pb can be harmful, especially to infants, young children, and pregnant women. Symptoms of long-term exposure to lower Pb levels may be less noticeable but are still serious. Anemia is common, and damage to the nervous system may cause impaired mental function. Other symptoms are appetite loss, abdominal pain, constipation, fatigue, sleeplessness, irritability, and headache. Continued excessive exposure, as in an industrial setting, can affect the kidneys.

Emissions of Pb have dropped substantially over the past 40 years. However, sources of Pb emissions within the Basin remain, primarily the lead-acid battery recycling industry. Monitoring at two large battery recycling facilities resulted in the Basin's recent nonattainment designation under the NAAQS for Pb (SCAQMD 2012b).

Toxic Air Contaminants

With respect to criteria pollutants, federal and/or state ambient air quality standards represent the exposure level (with an adequate margin of safety) deemed safe for humans. No ambient air quality standards exist for TACs because no exposure level has been deemed safe for humans. Pollutants are identified as TACs because of their potential to increase the risk of developing cancer or their acute or chronic health risks. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor, called a Hazard Index, is used to evaluate risk. In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (Assembly Bill [AB] 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks (CARB 2010).

To date, CARB has identified 21 TACs and adopted the U.S. Environmental Protection Agency's (EPA's) list of hazardous air pollutants as TACs. In August 1998, CARB identified diesel exhaust particulate matter (DPM) emissions as a TAC (CARB 1998). In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan was to reduce DPM emissions and the associated health risk by 75% by 2010 and by 85% by 2020 (CARB 2000).

4.2.2 Regulatory Setting

At the federal level, EPA is responsible for implementing the Clean Air Act (CAA). Some portions of the CAA (e.g., certain mobile-source and other requirements) are implemented directly by EPA. Other portions of the CAA (e.g., stationary-source requirements) are implemented by state and local agencies.

Responsibility for attaining and maintaining air quality in California is divided between CARB and the regional air quality districts. Areas of control for the regional districts are set by CARB, which divides the state into air basins.

Plans, policies, and regulations at the federal, state, and local levels relevant to the proposed project are discussed below.

Federal Regulations

Clean Air Act

The CAA was first enacted in 1963 but has been amended numerous times in subsequent years (1967, 1970, 1977, and 1990). The CAA establishes the NAAQS and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas that fail to meet the standards. The plans must include pollution control measures that demonstrate how the standards will be met. LCF is within a basin that is designated as a nonattainment area for certain pollutants that are regulated under the CAA.

The 1990 amendments to the CAA identify specific emissions-reduction goals for areas that fail to meet the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect development of the proposed project include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for criteria pollutants. Table 4.2-1 shows the NAAQS that are currently in effect for each criteria pollutant. The NAAQS were amended in July 1997 to include an 8-hour standard for O_3 and adopt a standard for PM2.5. The Los Angeles County portion of the basin fails to meet national standards for O_3, PM10, PM2.5, and Pb and therefore is considered a federal nonattainment area for those pollutants. Table 4.2-2 lists each criteria pollutant and its related attainment status.

State Regulations

The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants recognized by the State. In general, the California standards are more health protective than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The Basin is in compliance with the California standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. Table 4.2-1 details the current NAAQS and CAAQS, and Table 4.2-2 provides the Los Angeles County portion of the Basin's attainment status with respect to NAAQS and CAAQS.

Local Regulations

South Coast Air Quality Management District

The project lies within the Los Angeles County portion of the Basin, which is under the jurisdiction of SCAQMD. SCAQMD has jurisdiction over an area of approximately 10,743 square miles, including all of Orange County; Los Angeles County, except for the Antelope Valley; the non-desert portion of western San Bernardino County; and the western and Coachella Valley portions of Riverside County. The Basin is a sub-region of SCAQMD's jurisdiction. Although air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

Table 4.2-1: Federal and State Ambient Air Quality Standards

Pollutant	Symbol	Average Time	Standard (ppm)		Standard (µg/m³)		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	–	180	–	If exceeded	–
		8 hours	0.070	0.075	137	147	If exceeded	If fourth-highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor in an area
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
(Lake Tahoe only)		8 hours	6	–	7,000	–	If equaled or exceeded	–
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.18	0.100	339	188	If exceeded	–
Sulfur dioxide	SO_2	24 hours	0.04	0.14[1]	105	3651	If exceeded	–
		1 hour	0.25	0.075	655	196	If exceeded	If exceeded on more than 1 day per year
		3 hours	–	0.5[a,b]	–	1,300[a,b]	–	–
		Annual arithmetic mean	–	0.030[a]	–	801	–	If exceeded on more than 1 day per year
Hydrogen sulfide	H_2S	1 hour	0.03	–	42	–	If equaled or exceeded	–
Vinyl chloride	C_2H_3Cl	24 hours	0.01	–	26	–	If equaled or exceeded	–
Inhalable particulate matter	PM10	Annual arithmetic mean	–	–	20	–	–	–
		24 hours	–	–	50	150	If exceeded	If exceeded on more than 1 day per year
	PM2.5	Annual arithmetic mean	–	–	12	12.0[c]	If exceeded	If 3-year average from single or multiple community-oriented monitors is exceeded
		24 hours	–	–	–	35	–	If 3-year average of 98th percentile at each population-oriented monitor in an area is exceeded
Sulfate particles	SO_4	24 hours	–	–	25	–	If equaled or exceeded	–

Pollutant	Symbol	Average Time	Standard (ppm)		Standard (µg/m³)		Violation Criteria	
			California	National	California	National	California	National
Lead particles	Pb	Calendar quarter	–	–	–	1.5	–	If exceeded no more than 1 day per year
		30-day average	–	–	1.5	–	If equaled or exceeded	–
		Rolling 3-month average	–	–	–	0.15	If equaled or exceeded	Averaged over a rolling 3-month period

Notes:
[a] The final 1-hour SO_2 rule was signed June 2, 2010. The annual and 24-hour SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.
[b] Secondary standard.
[c] EPA finalized the new PM2.5 annual arithmetic mean standard of 12.0 µg/m³ on December 14, 2012, which went into effect March 18, 2013.
ppm = parts per million; µg/m³ = micrograms per cubic meter
Sources: CARB 2013a .

Table 4.2-2: Federal and State Attainment Status for Los Angeles County Portion of the South Coast Air Basin

Pollutants	Federal Classification	State Classification
O_3 (1-hour standard)	—	Nonattainment
O_3 (8-hour standard)	Nonattainment, Extreme	Nonattainment
PM10	Attainment/Maintenance	Nonattainment
PM2.5	Nonattainment	Nonattainment
CO	Attainment/Maintenance	Attainment
NO_2	Attainment/Maintenance	Attainment
SO_2	Attainment	Attainment
Pb	Nonattainment	Attainment
Sources: CARB 2013b; EPA 2013.		

SCAQMD has adopted a series of air quality management plans (AQMPs) to meet the CAAQS and NAAQS. These plans require, among other emissions-reducing activities, control technology for existing sources, control programs for area sources and indirect sources, an SCAQMD permitting system that allows no net increase in emissions from any new or modified (i.e., previously permitted) emissions sources, and transportation control measures. The most recent AQMP is the 2012 AQMP. The Final 2012 AQMP was adopted by the SCAQMD Governing Board on December 7, 2012. Control measure IND-01 was approved for adoption and inclusion in the Final 2012 AQMP at the February 1, 2013 Governing Board meeting. CARB approved the 2012 AQMP on January 25, 2013, and the AQMP has been submitted to EPA as a revision to the California SIP (CARB 2013a). The 2012 AQMP addresses CAA requirements and includes a 24-hour PM2.5 plan; additional 8-hour O_3 measures, with a vehicle-miles-traveled (VMT) offset demonstration; and a 1-hour O_3 attainment demonstration with VMT offset demonstration. SCAQMD recently initiated development of the 2016 AQMP, which will be primarily focused on addressing the ozone standards.

SCAQMD published the *CEQA Air Quality Handbook* in November 1993[1] to help local governments analyze and mitigate project-specific air quality impacts. This handbook provides standards, methodologies, and procedures for conducting air quality analyses as part of CEQA documents prepared within SCAQMD's jurisdiction. In addition, SCAQMD has published two additional guidance documents, *Localized Significance Threshold Methodology for CEQA Evaluations* (2003, revised 2008) and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* (2006). These publications provide guidance for evaluating localized effects from mass emissions during construction. Both were used in the preparation of this analysis (SCAQMD 2006, 2008a).

Through the attainment planning process, SCAQMD develops rules and regulations to regulate sources of air pollution in the Basin (SCAQMD 2011a). Emissions sources associated with the proposed project are considered mobile sources and therefore are not subject to SCAQMD stationary-source rules, such as Regulation XIII (New Source Review), Rule 1401 (New Source Review of Toxic Air Contaminants), or Rule 431.2 (Sulfur Content of Liquid Fuels). However, the proposed project may be subject to the adopted SCAQMD rules and regulations listed below (as well as others).

[1] Section updates provided on the SCAQMD website: http://www.aqmd.gov/ceqa/hdbk.html

SCAQMD Rule 402—Nuisance. This rule prohibits the discharge of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; endanger the comfort, repose, health, or safety of any such persons or the public; or cause, or have a natural tendency to cause, injury or damage to business or property.

SCAQMD Rule 403—Fugitive Dust. This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the property line of the emission's source. During construction of the project, best available control measures identified in the rule would be required to minimize fugitive dust emissions from proposed earthmoving and grading activities. These measures would include site pre-watering and re-watering as necessary to maintain sufficient soil moisture content. Additional requirements apply to construction projects on property with 50 or more acres of disturbed surface area or any earthmoving operation with a daily earthmoving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintenance of dust control records, and designation of a SCAQMD-certified dust control supervisor.

SCAQMD Rule 1108—Cutback Asphalt. This rule specifies VOC content limits for cutback asphalt.

SCAQMD Rule 1113—Architectural Coatings. This rule limits the VOC content of architectural coatings used in the district. Any person who supplies, sells, offers for sale, or manufactures any architectural coating for use in the district must comply with the current VOC standards.

SCAQMD Rule 1403—Asbestos Emissions from Demolition/Renovation Activities. The purpose of this rule is to limit emissions of asbestos, a TAC, from structural demolition/renovation activities. The rule requires people to notify SCAQMD of proposed demolition/renovation activities and survey structures for the presence of asbestos-containing materials (ACMs). The rule also includes notification requirements for any intent to disturb ACM, emissions control measures, and ACM removal, handling, and disposal techniques. All proposed structural demolition activities associated with proposed construction would need to comply with the requirements of Rule 1403.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. SCAG addresses regional issues related to transportation, the economy, community development, and the environment. SCAG is the federally designated metropolitan planning organization (MPO) for the majority of the Southern California region and the largest MPO in the nation. As required by federal and State law, SCAG develops plans pertaining to transportation, growth management, hazardous waste management, housing, and air quality. With respect to air quality planning, SCAG has prepared the *Regional Comprehensive Plan and Guide*, which includes Growth Management and Regional Mobility chapters that support the land use and transportation components of the AQMP. These chapters are used in the preparation of air quality forecasts and the consistency analysis included in the AQMP.

4.2.3 Environmental Setting

Regional Context

The project site is within the Basin, which covers approximately 6,745 square miles and is bounded by the Pacific Ocean to the west and south and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The terrain and geographical location determine the distinctive climate of the Basin, which is a coastal plain with connecting broad valleys and low hills.

The Southern California region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography) as well as human-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and dispersion of pollutants throughout the Basin, making it an area of high pollution potential.

The greatest air pollution impacts in the Basin occur from June through September. These are generally attributed to the large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing. This condition frequently reduces pollutant dispersion, thereby causing elevated air pollution levels. Pollutant concentrations in the Basin vary with location, season, and time of day. O_3 concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Basin and adjacent desert.

SCAQMD completed an ambient air monitoring and evaluation study in the Basin (i.e., the Multiple Air Toxics Exposure Study III [MATES III]). MATES III was a follow-up to previous air toxics studies in the Basin and part of the SCAQMD Governing Board's Environmental Justice Initiative.

The MATES III study concluded that the average carcinogenic risk throughout the Basin, which was attributed to TACs, is approximately 1,194 in one million. Mobile sources (e.g., cars, trucks, trains, ships, aircraft) are the greatest contributors. About 83.6% of all risk is attributed to DPM emissions (SCAQMD 2008b).

SCAQMD has initiated its MATES IV study, which is currently holding Technical Advisory Group meetings.

Local Climate

Data from the closest climate monitoring station, the Western Regional Climate Center's (WRCC's) Altadena Center Station (COOPID 040144), were used to characterize climate conditions in the project vicinity. Over the period of record (1922–2012), the average project area summer (August) high and low temperatures were 87 degrees Fahrenheit (°F) and 59°F, respectively; temperatures exceeded 90°F an average of 38 times per year. The average winter (January) high and low temperatures were 64°F and 42°F, respectively; temperatures rarely dropped below 32°F. Rainfall varies widely from year to year, with an annual average of 22 inches and an average of 39 days with measureable rainfall (greater than or equal to 0.01 inch) (WRCC 2013).

The closest wind monitoring station, approximately 7 miles west of the project area, is the Burbank wind monitoring station. Wind patterns in the project vicinity arise primarily from the east-southeast, with seasonal and diurnal variations due to local topography, pacific storms, and regional wind events (e.g., Santa Ana winds and Catalina eddy) (NOAA n.d.). Over the period of record (January 1, 2005 to December 31, 2009), winds at the Burbank station averaged 1.83 meters per second (4.09 miles per hour); calm wind conditions were present only 1.37% of the time. The strongest wind events were from the east during Santa Ana events (SCAQMD 2011b).

Local Air Quality

SCAQMD, which divides the Basin into air monitoring areas, maintains a network of air quality monitoring stations throughout the Basin. The project site is in the West San Gabriel Valley Monitoring Area (Source Receptor Area [SRA] 8). The nearest monitoring station is the Pasadena Monitoring Station (CARB 70088, 752 South Wilson Avenue, Pasadena), approximately 4.5 miles southeast of the project site. Criteria pollutants monitored at the Pasadena Monitoring Station include CO, NO_2, O_3, and PM2.5. There are no monitoring stations within SRA 8 that monitor PM10. The nearest monitoring stations that monitor PM10 are the Burbank–West Palm Avenue Monitoring Station (SRA 7, CARB 70069) and the Azusa Monitoring Station (SRA 9, CARB 70060). Of these, the Azusa Monitoring Station is within the same General Forecast Area and Air Monitoring Area (i.e., the San Gabriel Valley). Therefore, PM10 monitoring data from Azusa are presented below. Pb was monitored at Azusa from 1980 to 2009 but is now monitored only near major lead sources (i.e., near battery recycling facilities and airports).

Information regarding concentrations of pollutants over the last 3 years (2011–2013) has been compiled from the stations' data (see Table 4.2-3). The monitoring data show the following trends for pollutant concentrations: The 1-hour O_3 CAAQS were exceeded at least once each year, the 8-hour O_3 CAAQS and NAAQS were exceeded several times per year, the 24-hour PM10 CAAQS were exceeded several times per year, the 24-hour PM10 NAAQS were not exceeded in any year, and the 1-hour NO_2 NAAQS was exceeded once in 2011. In addition, no violations of the CO CAAQS or NAAQS occurred, and no violations of the NO_2 CAAQS occurred.

Local Health Risk

According to SCAQMD inhalation cancer risk data (MATES III), the project area is within a cancer risk zone of approximately 508 in one million (SCAQMD 2008b). For comparison, the average cancer risk in the Basin is approximately 1,200 in one million.

Sensitive Receptors and Locations

SCAQMD defines sensitive receptor locations as residential, commercial, and industrial land use areas as well as other locations where sensitive populations may be located. Other sensitive receptor locations include schools, hospitals, convalescent homes, day care centers, and other locations where children, chronically ill individuals, or other sensitive persons could be exposed (SCAQMD 2005).

Sensitive receptors within the project vicinity include the surrounding residences (homes are immediately west, north, and east of the project area) as well as students and workers on the project site itself. Land uses within the project vicinity are shown in Figure 4.2-1.

Table 4.2-3: Ambient Background Concentrations from the Pasadena (CARB 70088) and Azusa (CARB 70060) Monitoring Stations

Pollutant Standards		2011	2012	2013
1-Hour Ozone (O_3) – Pasadena				
	State Maximum Concentration (ppm)	0.107	0.111	0.099
Number of Days Standard Exceeded				
	CAAQS 1-hour Standard (> 0.09 ppm)	5	8	2
8-Hour Ozone (O_3) – Pasadena				
	State Maximum Concentration (ppm)	0.085	0.087	0.075
	National Maximum Concentration (ppm)	0.084	0.086	0.075
	National Fourth-Highest Concentration (ppm)	0.077	0.080	0.070
	National Design Value (ppm)	0.082	0.077	--
Number of Days Standard Exceeded				
	CAAQS 8-hour Standard (> 0.070 ppm)	13	20	2
	NAAQS 8-hour Standard (> 0.075 ppm)	5	9	0
Carbon Monoxide (CO) – Pasadena				
	Maximum Concentration 1-hour Period (ppm)	2.9	2.4	2.5
	Maximum Concentration 8-hour Period (ppm)	2.2	1.6	1.7
Number of Days Standard Exceeded				
	NAAQS 8-hour Standard (≥ 9 ppm)	0	0	0
	CAAQS 8-hour Standard (≥ 9.0 ppm)	0	0	0
	NAAQS 1-hour Standard (≥ 35 ppm)	0	0	0
	CAAQS 1-hour Standard (≥ 20 ppm)	0	0	0
Nitrogen Dioxide (NO_2) – Pasadena				
	Maximum 1-hour Concentration (ppb)	101.5	71.2	66.7
	Annual Average Concentration (ppm)	20	NA	NA
Number of Days Standard Exceeded				
	CAAQS 1-Hour Standard (0.18 ppm)	0	0	0
	NAAQS 1-Hour Standard (100 ppb)	1	0	0
Suspended Particulates (PM10) – Azusa				
	Maximum State 24-hour Concentration (μg/m^3)	63.0	77.0	74.0
	Maximum National 24-hour Concentration (μg/m^3)	65.0	78.0	76.0
	State Annual Average Concentration (μg/m^3)	31.9	29.6	32.3
Number of Days Standard Exceeded				
	CAAQS 24-hour Standard (> 50 μg/m^3)	8	6	6
	NAAQS 24-hour Standard (> 150 μg/m^3) *(Estimated)*	0.0	0.0	0.0

Pollutant Standards		2011	2012	2013
Suspended Particulates (PM2.5) – Pasadena				
	Maximum 24-hour Concentration (µg/m^3)	43.8	30.5	25.7
	24-hour Standard 98th Percentile (µg/m^3)	NA	NA	NA
	National Annual Average Concentration (µg/m^3)	NA	NA	NA
	State Annual Average Concentration (µg/m^3)	NA	NA	NA
Number of Days Standard Exceeded				
	NAAQS 24-hour Standard (> 35 µg/m^3)	1	0	0
ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; NA = data not available. Sources: CARB 2014; EPA 2014. Data compiled by ICF.				

4.2.4 Environmental Impact Analysis

Methodology

The methodology for identifying construction emissions, operational emissions, and pollutant concentrations is presented below.

Construction Emissions

Construction of the proposed project would result in the short-term generation of criteria pollutant and TAC emissions. Mass daily combustion exhaust, fugitive dust (PM10 and PM2.5), and fugitive off-gassing from paving emissions were estimated using a combination of off-road emissions factors and calculation methodologies from SCAQMD (i.e., California Emissions Estimator Model [CalEEMod] version 2013.2.2; SCAQMD 2013), CARB, and EPA.

Construction of the project is proposed to include four major Plan Areas over a period of a few years. (One additional Plan Area would include only minor construction and the final Plan Area would be left in a natural, unchanged condition.) However, the exact schedule is unknown at this point. For purposes of providing a conservative, yet realistic, analysis, it was assumed that construction would begin in November 2014 and construction of each element would occur sequentially until the Specific Plan is built out. Assumed construction phasing information, including construction equipment, demolition and excavation quantities, and truck trips, was obtained from the project applicant. It was assumed that sub-phases within each phase (e.g., demolition, excavation, construction, landscaping) would occur sequentially, except for construction and landscaping, which would overlap and occur concurrently on the "maximum" day. Construction quantities obtained from the project applicant are summarized in Table 4.2-4.

For purposes of analysis, it was assumed that construction of the Southern California Edison (SCE) subtransmission line would begin in November 2014[2], the same time period that specific plan

[2] Since the exact construction date was not known at the time of analysis, the same start date assumed for specific plan construction was used for purposes of analysis. The November 2014 construction start date represents a conservative scenario in that emission rates from fuel combustion (on a per-unit-of-activity basis) are projected to steadily decline over time. Therefore, if construction does not occur until year 2015 or later, emissions would likely be reduced over those presented in the analysis herein, which assumes a calendar year 2014 construction fleet.

construction is anticipated to begin, and is anticipated to last approximately 8 to 12 weeks. Each phase (e.g., right-of-way clearing, guard structure removal) is expected to occur sequentially and not overlap with phases of SCE construction (e.g., right-of-way clearing would not overlap with any other SCE phase). However, to provide a conservative analysis, it was assumed that the unmitigated maximum day of SCE construction would occur on the same day as the maximum day of construction for the Specific Plan.

Table 4.2-4: Construction Quantities

Plan Area	Assumed Construction Length	Demolition Quantities (square feet)	Cut-and-Fill Quantities (cubic yards)	Peak Daily Truck Trips
Parking Garage	9 months	0	13,780	28
Arts and Humanities Building	18 months	18,311	14,108	114
High School Remodeling	12 months	5,069	5,589	31
Athletic Concourse	7 months	0	0	5

Criteria pollutant and TAC emissions estimates were based on a combination of client input and emissions calculation defaults within the emissions calculation models. Below is a detailed description of the various emissions sources and the methods used to estimate emissions.

- Emissions from off-road construction equipment (e.g., loaders, cranes) were obtained from the CalEEMod User's Guide appendix, which provides emission factors per unit of activity (in grams per horsepower-hour) for each calendar year. Emissions estimates associated with off-road construction equipment are based on CalEEMod default horsepower ratings and load factors. Emissions factors for the gasoline-powered auger were obtained from the OFFROAD2007 model, assuming a 2.5-horsepower, handheld piece of "other lawn and garden equipment," since CalEEMod does not include auger emissions factors.
- Emissions from on-road sources (haul trucks, material deliveries, commuting employees) were estimated using exhaust emissions factors (in grams per mile) from the EMFAC2011 web tool and vehicle activity data from the project applicant. Emissions factors from the EMFAC2011 web tool are based on an annual average fleet operating at all speeds during each construction year. Emissions factors for haul trucks are based on the EMFAC T7 Tractor Trailer category, emissions factors for material deliveries are based on an average of the EMFAC T6 small and heavy category, and emissions factors for commuting employees are based on an average of the EMFAC LDA and LDT1 categories. Daily activity associated with haul and delivery trips was obtained from the project applicant. Estimates of employees' daily commute trips were based on CalEEMod methodology, which assumes the number of workers is 1.25 times the number of pieces of equipment for all phases, except building construction and architectural coating. Vehicle one-way trip lengths are based on CalEEMod defaults, which are 20 miles for truck hauling, 7.4 miles per vendor trips (Los Angeles County portion of South Coast, commercial-nonwork trip), and 12.7 miles per employee trips (Los Angeles County portion of South Coast, home-work trip) (CalEEMod User's Guide appendix).
- Emissions from the use of large trucks on site (e.g., boom/crane truck, water trucks, auger trucks) and crew trucks were estimated assuming these large on-road trucks idle on site for the duration of their respective daily activity. Idling emission factors for large diesel trucks were obtained from the CARB's idling emission factors for diesel trucks. Idling emission factors for

crew trucks were obtained according to CARB methodology, which states to multiply emission rates for 5 miles per hour vehicle travel by 5 to obtain a grams per idle-hour factor.

- Fugitive PM10 and PM2.5 dust emissions associated with demolition and earthwork are based on the demolition and fugitive dust emissions calculation methodologies contained in the CalEEMod User's Guide appendix and demolition and earthwork activity data from the project applicant. Emissions calculations take into account compliance with SCAQMD Rule 403.
- Emissions associated with architectural coatings on new structures (e.g., Arts and Humanities building) and paving for the parking structure were calculated using emissions factors and calculation methodologies contained in the CalEEMod User's Guide appendix. The architectural coatings emissions estimates are based on 44,200 square feet of net new construction for Plan Area 2 and 13,482 square feet of net new construction for Plan Area 3. Emissions calculations assume SCAQMD's default non-residential VOC content of 250 grams per liter for both interior and exterior coatings under the unmitigated scenario. It was assumed that the parking structure would not be painted. For paving, it was assumed that paving operations would be limited to the 99,000-square-foot parking lot over the CalEEMod default 10-day paving period.
- Helicopters would be used to bring in up to eight poles during SCE construction. It was assumed that a single light-duty helicopter would be used and would operate up to 4 hours per day for up to 5 days. Helicopter emissions were estimated using expected fuel consumption for an MD 500 D/E (U.S. Department of the Interior National Business Center 2006) and emission factors derived from the California Public Utilities Commission (2006 and 2007), U.S. Department of Energy (2008), and the Climate Registry (2014).

Emissions from each of the above sources are presented at the daily time scale and compared with the SCAQMD construction thresholds discussed below. All emissions calculation worksheets and modeling output files are provided in Appendix B.

Operational Emissions

Operation of the proposed project would result in a long-term source of criteria pollutant emissions. Expansion at the school (i.e., the addition of 40 new students) would increase the number of motor vehicle trips. Furthermore, the auditorium would have a larger seating capacity (i.e., room for 200 additional guests to attend events). The additional building square footage and visitation would also increase the level of emissions from area sources on-site (e.g., natural gas for space and water heating, consumer products [cleaning supplies, kitchen aerosols, cosmetics, toiletries], architectural coatings, landscaping). For purposes of a conservative analysis, it was assumed that the proposed specific plan would be fully built out and operational by 2019[3], which is the earliest possible year construction could be completed.

Mass daily operational emissions associated with buildout of the proposed project were estimated with CalEEMod, using both motor vehicle trip estimates from the traffic impact analysis (Linscott, Law & Greenspan 2013) and CalEEMod defaults. Emissions are presented at the daily time scale and compared with the SCAQMD operational thresholds discussed below. All emissions calculation worksheets and modeling output files are provided in Appendix B.

[3] Note that vehicle emission rates (on a per-mile basis) are projected to steadily decline over time due to implementation of federal and state emission standards. Assuming an earlier buildout year (for example, year 2019 versus year 2029) presents a conservative scenario, and emissions would likely be reduced over those presented in the analysis herein if buildout occurs later than 2019.

Thresholds of Significance

For the purposes of the analysis in this EIR, which is made in accordance with Appendix G of the State CEQA Guidelines, the proposed project would have a significant environmental impact related to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is a nonattainment area with respect to the applicable federal or state ambient air quality standard (this includes releasing emissions that would exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors that would affect a substantial number of people.

Appendix G, Section III, of the State CEQA Guidelines specifies that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding air quality impacts. Given SCAQMD's regulatory role in the Basin, the significance thresholds and analysis methodologies established by SCAQMD are relied upon to make determinations regarding air quality impacts.

Criteria Pollutants

The significance thresholds and analysis methodologies outlined in SCAQMD's CEQA Air Quality Handbook, *Localized Significance Threshold Methodology for CEQA Evaluations*, and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* guidance documents were used in evaluating project impacts. Specifically, SCAQMD construction and operational regional mass emissions thresholds identified in Table 4.2-5 were used for the regional assessment of criteria pollutants herein.

Table 4.2-5: SCAQMD Significance Thresholds (pounds per day)

Pollutant	Regional Significance Thresholds		Localized Significance Thresholds[a]	
	Construction	Operation	Construction	Operation
Nitrogen Oxides (NO_X)	100	55	148	148
Volatile Organic Compounds (VOC)	75	55	N/A	N/A
Suspended Particulate Matter (PM10)	150	150	12	3
Fine Particulate Matter (PM2.5)	55	55	4	2
Sulfur Oxides (SO_X)	150	150	N/A	N/A
Carbon Monoxide (CO)	550	550	1,540	1,540
Lead (Pb)[b]	3	3	N/A	N/A

[a] Localized thresholds derived from SCAQMD's most recent localized significance threshold tables are based on the project location (SRA 8, West San Gabriel Valley), the area disturbed on any given day (5 acres), and the distance to the nearest sensitive receptor (25 meters). SCAQMD has not developed localized significance thresholds for VOC, SO_X, or Pb emissions.

[b] The proposed project would result in no lead emissions during construction or operations. As such, lead emissions are not evaluated herein.

Source: SCAQMD 2009, 2011c.

With respect to localized emissions, SCAQMD has developed localized significance thresholds (LSTs) and mass rate look-up tables to help public agencies analyze the project-related effects of pollutants on nearby receptors. LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable NAAQS or CAAQS (see Table 4.2-1), and are based on the size or total area of the emissions source, the ambient air quality in each SRA where the emissions source is located, and the distance to nearby sensitive receptor locations.

The FSHA property lies within the West San Gabriel Valley Monitoring Area (SRA 8). The entire FSHA property is approximately 42 acres in size; most if not all of the phased improvements and modernization associated with the proposed specific plan would take place within currently developed areas that total approximately 17.87 acres (i.e., 42 acres minus the 24.13 undeveloped acres to be annexed from the City of Pasadena). Additionally, construction would occur in four phases, spanning multiple years. Each phase would occur within an area less than or equal to 5 acres in size. Therefore, because LSTs are based on the potential area disturbed on any given day, the LST analysis herein assumes 5 disturbed acres per day. Additionally, receptors are immediately adjacent to the proposed project area; therefore, the most conservative 25-meter receptor distance was assumed.

Toxic Air Contaminants

Regarding sensitive receptors' exposure to substantial pollutant concentrations, SCAQMD states that the project would have a significant impact from TACs if:

- TACs increase the non-cancer health risk due to short-term (acute) or long-term (chronic) exposures. The screening risk assessment for those TACs must estimate the acute and/or chronic Hazard Index, as applicable. On-site stationary sources emit carcinogenic or TACs that individually or cumulatively exceed the maximum incremental cancer risk of 10 in 1 million (1.0×10^{-5}) or an acute or chronic Hazard Index of 1.0 (SCAQMD 2005, 2011c).

- Hazardous materials associated with on-site stationary sources result in an accidental release of air toxic emissions or acutely hazardous materials, posing a threat to public health and safety (SCAQMD 1993).

Note that the project would not result in any stationary sources of emissions.

Carbon Monoxide Hot Spots

Regarding carbon monoxide hot spots, SCAQMD states that a project impact is significant if it causes or contributes to an exceedance of the following attainment standards:

- 1-hour standards of 20 ppm (state) and 35 ppm (federal), and
- 8-hour standards of 9.0 ppm (state) and 9 ppm (federal).

Cumulative Impacts

Potential cumulative air quality impacts would result when other projects' pollutant emissions combine to degrade air quality conditions below acceptable levels. This could occur on a local level (e.g., increased vehicle emissions at congested intersections or concurrent construction activities at sensitive receptor locations), a regional level (e.g., potential O_3 impacts from multiple past, present, and reasonably foreseeable projects within the Basin), or globally (e.g., the potential impact of greenhouse gas [GHG] emissions on global climate change [GHGs are analyzed in Section 4.6, *Greenhouse Gases*]).

The Basin experiences chronic exceedances of the NAAQS and CAAQS and is currently in nonattainment status for various pollutants. These nonattainment conditions within the region are considered cumulatively significant. SCAQMD thresholds have been established to ensure attainment of the NAAQS and CAAQS; therefore, an exceedance of SCAQMD threshold levels must be considered a significant cumulative impact and an adverse cumulative consequence.

Construction Impacts

Air Quality Standards

The project site is within an area where state and federal air quality standards are often exceeded. SCAQMD has promulgated significance thresholds to help the Basin attain the federal and state air quality standards and protect public health. The proposed project would contribute to regional air pollutant emissions during short-term construction. An analysis of the construction-related effects of the proposed project is presented below.

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources. Fugitive PM10 and PM2.5 emissions estimates take into account compliance with SCAQMD Rule 403.

Buildout of the Specific Plan has the potential to create air quality impacts through the use of heavy-duty construction equipment, construction workers' vehicle trips, material deliveries, and trips by heavy-duty haul trucks. In addition, earthwork and demolition activities would result in fugitive dust emissions, and architectural coating would release VOCs from off-gassing. To provide a realistic, yet conservative, scenario, the estimate of maximum daily emissions for each element assumes that sub-phases within each phase would occur sequentially, except for construction and

finishes, which would overlap. An estimate of construction-related emissions is provided in Table 4.2-6. It was also assumed that construction of each element (e.g., Parking Garage, Arts and Humanities Building) would occur sequentially and would not overlap with construction of another element.

As shown in Table 4.2-6, maximum daily project-related criteria pollutant emissions are not expected to exceed SCAQMD construction-period thresholds for any pollutant during buildout of the Specific Plan. Consequently, the impact of construction-related emissions for this portion is considered less than significant. However, as shown in Table 4.2-7, maximum daily project-related criteria pollutant emissions are expected to exceed SCAQMD construction-period thresholds during the "R/W Clearing" phase of construction for the SCE subtransmission line. Therefore, mitigation is proposed to reduce emissions.

Mitigation Measures AQ-1 and AQ-2 would reduce NO_X emissions to below SCAQMD construction-period thresholds. Mitigation Measure AQ-1 would reduce NO_X emissions during the "R/W Clearing" phase. However, Mitigation Measure AQ-1 by itself would not succeed in reducing NO_X emissions during the overlapping Specific Plan and SCE construction. Therefore, Mitigation Measure AQ-2 would ensure that Specific Plan and SCE construction would not overlap. As shown in Table 4.2-8, implementation of Mitigation Measures AQ-1 and AQ-2 would reduce emissions to below SCAQMD thresholds. Impacts are considered less than significant with mitigation incorporated.

Table 4.2-6: Estimate of Unmitigated Regional Construction Emissions for the Specific Plan Build-out (pounds per day)

Plan Area	VOC	NO_X	CO	SO_X	PM10	PM2.5
Parking Garage						
Demolition and Site Preparation	2	16	10	<1	1	1
Excavation and Shoring	4	39	25	<1	6	3
Garage Construction	2	21	17	<1	2	1
Finishes and Landscaping	2	11	7	<1	1	1
Maximum Daily	**5**	**39**	**25**	<1	**6**	**3**
Arts and Humanities Building						
Demolition and Site Preparation	3	40	19	<1	6	2
Excavation and Shoring	3	33	20	<1	2	2
Basement Construction	3	25	24	<1	1	1
Building Construction	2	16	8	<1	2	1
Finishes and Landscaping	28	25	14	<1	<1	<1
Maximum Daily	**30**	**41**	**24**	<1	**6**	**2**
High School Remodeling						
Demolition and Site Preparation	3	29	17	<1	1	1
Excavation and Shoring	3	33	20	<1	2	1
Basement Construction	2	16	10	<1	1	1
Building Construction	2	17	17	<1	<1	<1
Finishes and Landscaping	14	21	12	<1	2	1
Maximum Daily	**16**	**38**	**29**	<1	**2**	**1**
Athletic Concourse						
Demolition and Site Preparation	2	26	10	<1	<1	<1
Excavation and Grading	2	22	12	<1	<1	<1
Building and Tennis Courts	1	9	8	<1	<1	<1
Finishes and Landscaping	<1	1	2	<1	<1	<1
Maximum Daily	**2**	**26**	**12**	<1	**<1**	**<1**
Maximum Daily Emissions	***30***	***41***	***29***	<1	***6***	***3***
SCAQMD Regional Construction Threshold	75	100	550	150	150	55
Exceed Significant Threshold?	No	No	No	No	No	No

Emissions may not add up because of rounding.
Source: Emissions modeling by ICF 2014 (Appendix B).

Table 4.2-7: Estimate of Unmitigated Regional Construction Emissions for SCE Subtransmission Line (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM10	PM2.5
Survey	1	1	7	<1	<1	<1
R/W Clearing	10	113	71	<1	4	4
Temporary Guard Structure Installation	5	35	30	<1	2	2
Transfer Existing Conductor	3	24	23	<1	<1	<1
Wood/H-Frame/LWS Pole Removal	1	6	6	<1	<1	<1
LWS Pole/H-Frame Haul	<1	1	1	<1	<1	<1
LWS, FRC, Wood, TSP Assembly	1	7	7	<1	<1	<1
Install LWS, FRC, Wood, TSP	4	27	19	1	1	1
Guard Structure Removal	8	55	45	<1	4	4
Restoration	4	44	24	<1	2	2
Install 16 kV Distribution Conductor	2	28	16	<1	1	1
TSP Foundation	2	27	14	0	1	1
Maximum Daily	10	113	71	1	4	4
Maximum Daily Overlapping with Maximum Day Specific Plan Construction	***39***	***154***	***100***	***1***	***4***	***4***
SCAQMD Regional Construction Threshold	75	100	550	150	150	55
Exceed Significant Threshold?	No	**Yes**	No	No	No	No

Emissions may not add up because of rounding.
Source: Emissions modeling by ICF 2014 (Appendix B).

Table 4.2-8: Estimate of Mitigated Regional Construction Emissions for SCE Subtransmission Line (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM10	PM2.5
Survey	1	1	7	<1	<1	<1
R/W Clearing	8	98	59	<1	4	3
Temporary Guard Structure Installation	5	35	30	<1	2	2
Transfer Existing Conductor	3	24	23	<1	<1	<1
Wood/H-Frame/LWS Pole Removal	1	6	6	<1	2	<1
LWS Pole/H-Frame Haul	<1	1	1	<1	<1	<1
LWS, FRC, Wood, TSP Assembly	1	7	7	<1	1	<1
Install LWS, FRC, Wood, TSP	4	27	19	1	1	1
Guard Structure Removal	8	55	45	<1	4	4
Restoration	4	44	24	<1	2	2
Install 16 kV Distribution Conductor	2	28	16	<1	1	1
TSP Foundation	2	27	14	0	1	1
Maximum Daily	***8***	***98***	***59***	***1***	***4***	***4***
Maximum Daily Overlapping with Maximum Day Specific Plan Construction	***8***	***98***	***59***	***1***	***6***	***4***
SCAQMD Regional Construction Threshold	75	100	550	150	150	55
Exceed Significant Threshold?	No	No	No	No	No	No

Emissions may not add up because of rounding.
Source: Emissions modeling by ICF 2014 (Appendix B).

Nonattainment Criteria Pollutants

The Basin is currently in nonattainment status for O_3, PM10, PM2.5, and Pb under the NAAQS and O_3, PM10, PM2.5, and NO_2 under the CAAQS. This is the result of past and present projects, and progress toward attainment will be further impeded by reasonably foreseeable future projects. As discussed above, SCAQMD has developed thresholds to ensure attainment of the NAAQS and CAAQS; therefore, exceedance of SCAQMD threshold levels must be considered a significant cumulative impact and an adverse cumulative consequence. As discussed above and shown in Table 4.2-6 through Table 4.2-8, criteria pollutant emissions would not exceed SCAQMD regional thresholds during construction of the proposed project. Therefore, because the proposed project would not exceed the thresholds for a nonattainment pollutant (in this case, an ozone precursor [VOC and NO_X], PM10, PM2.5, or Pb), the proposed project would result in a net increase in pollutants (including ozone precursors) that would be less than cumulatively considerable (see Section 4.2.7, *Cumulative Impacts*, for a complete discussion of the proposed project's cumulative air quality impacts).

Exposure of Sensitive Receptors

The proposed project would contribute to localized air pollutant emissions during construction. The analysis of receptor pollutant exposure includes a discussion of short-term exposure to criteria pollutants and TACs.

Project construction would emit localized pollutants through the use of heavy-duty construction equipment on site and ground-disturbing and demolition activities that release fugitive dust. These localized emissions could expose nearby sensitive receptors to substantial pollutant concentrations.

SCAQMD has developed a set of localized mass emissions rate look-up tables that can be used to evaluate localized impacts resulting from construction- and operations-period emissions. According to SCAQMD, only those criteria pollutant emissions that occur on site are to be considered in the LST analysis. Consistent with SCAQMD LST guidelines, criteria pollutant emissions related to haul truck and employee commuting activity during construction are not considered in the evaluation of localized impacts.

As shown in Table 4.2-9, maximum daily localized emissions during construction are not expected to exceed the appropriate LSTs for the project area during buildout of the Specific Plan. Therefore, the project would not create substantial pollutant concentrations with respect to LSTs for this portion of the project. However, as shown in Table 4.2-10, maximum daily localized emissions are expected to exceed SCAQMD localized thresholds for PM2.5 during the "R/W Clearing" phase of construction for the SCE subtransmission line. Therefore, mitigation is proposed to reduce emissions.

Mitigation Measures AQ-1 and AQ-2 would reduce emissions to below SCAQMD construction-period localized thresholds. Mitigation Measure AQ-1 would reduce PM2.5 emissions during the "R/W Clearing" phase. However, similar to the analysis of regional criteria pollutant emissions under *Air Quality Standards* above, Mitigation Measure AQ-1 by itself would not succeed in reducing PM2.5 emissions during the overlapping Specific Plan and SCE subtransmission line construction. Therefore, Mitigation Measure AQ-2 would ensure that Specific Plan and SCE construction would not overlap. As shown in Table 4.2-11, implementation of Mitigation Measures AQ-1 and AQ-2 would reduce emissions to below localized thresholds. Impacts are considered less than significant with mitigation incorporated.

With respect to exposure to TACs, the closest sensitive land uses are the students and residents on the FSHA campus; the residential areas surrounding the project site to the north, west, and east; and a few residences along the SCE right-of-way. Construction would be sporadic in both duration and location, and activities are assumed to last approximately 4 years (46 months) for the specific plan improvements and up to 12 weeks for SCE improvements, which is much shorter than the assumed 70-year exposure period used to estimate lifetime cancer risks. Furthermore, SCAQMD does not consider diesel-related cancer risks from construction equipment to be an issue because of the short-term nature of construction activities. Construction activities associated with the proposed project would be sporadic, transitory (i.e., occurring over the entire FSHA property and off site along the existing SCE right-of-way), and short term in nature. As such, construction of the proposed project alone is not anticipated to result in an elevated health risk to exposed persons because of the short-term nature of construction-related diesel exposure.

Table 4.2-9: Estimate of Unmitigated Localized Construction Emissions for the Specific Plan (pounds per day)

Plan Area	VOC	NO_X	CO	SO_X	PM10	PM2.5
Parking Garage						
Demolition and Site Preparation	2	16	10	< 1	1.3	1.2
Excavation and Shoring	4	39	25	< 1	6.2	2.8
Garage construction	2	16	9	< 1	1.0	1.0
Finishes and Landscaping	2	10	7	< 1	0.5	0.5
Max Daily	**4**	**39**	**25**	< 1	**6.2**	**2.8**
Arts and Humanities Building						
Demolition and Site Preparation	3	29	17	< 1	2.7	1.9
Excavation and Shoring	3	33	20	< 1	5.7	2.3
Basement Construction	2	21	13	< 1	1.4	1.3
Building Construction	2	13	7	< 1	0.8	0.8
Finishes and Landscaping	28	24	14	< 1	1.6	1.4
Max Daily	**30**	**37**	**21**	< 1	**5.7**	**2.3**
High School Remodeling						
Demolition and Site Preparation	3	29	17	< 1	2.1	1.8
Excavation and Shoring	3	33	20	< 1	5.7	2.3
Basement Construction	2	14	10	< 1	1.0	1.0
Building Construction	2	13	7	< 1	0.8	0.8
Finishes and Landscaping	14	19	12	< 1	1.2	1.1
Max Daily	**16**	**33**	**20**	< 1	**5.7**	**2.3**
Athletic Concourse						
Demolition and Site Preparation	1	12	8	< 1	1.0	1.0
Excavation and Grading	2	22	12	< 1	4.9	1.7
Building and Tennis Courts	1	8	5	< 1	0.6	0.6
Finishes and Landscaping	0	0	2	< 1	0.0	0.0
Max Daily	**2**	**22**	**12**	< 1	**4.9**	**1.7**
Maximum Daily Emissions	***30***	***39***	***25***	***< 1***	***6.2***	***2.8***
SCAQMD Localized Significance Threshold	—	*148*	*1,540*	—	*12.0*	*4.0*
Exceed Significant Threshold?	—	*No*	*No*	—	*No*	*No*

Emissions may not add up because of rounding.
Source: Emissions modeling by ICF 2014 (Appendix B).

Table 4.2-10: Estimate of Unmitigated Localized Construction Emissions for SCE Subtransmission Line (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM10	PM2.5
Survey	1	1	7	<1	0.0	0.0
R/W Clearing	10	113	71	<1	4.3	4.0
Temporary Guard Structure Installation	5	34	30	<1	1.8	1.8
Transfer Existing Conductor	3	23	23	<1	0.1	0.1
Wood/H-Frame/LWS Pole Removal	1	6	6	<1	5.1	0.8
LWS Pole /H-Frame Haul	0	1	1	<1	0.0	0.0
LWS, FRC, Wood, TSP Assembly	1	7	7	<1	3.5	0.7
Install LWS, FRC, Wood, TSP	4	26	19	1	0.8	0.7
Guard Structure Removal	8	52	44	<1	5.2	3.8
Restoration	4	44	24	<1	1.9	1.7
Install 16 kV Distribution Conductor	2	28	16	<1	0.8	0.8
TSP Foundation	2	27	14	<1	0.8	0.7
Maximum Daily	***10***	***113***	***71***	***1***	***5.2***	***4.0***
SCAQMD Localized Significance Threshold	—	*148*	*1,540*	—	*12.0*	*4.0*
Exceed Significant Threshold?	—	*No*	*No*	—	*No*	***Yes***
Maximum Daily overlapping with Maximum Day Specific Plan Construction	***39***	***152***	***95***	***1***	***11.3***	***6.8***
SCAQMD Localized Significance Threshold	—	*148*	*1,540*	—	*12.0*	*4.0*
Exceed Significant Threshold?	—	*No*	*No*	—	*No*	***Yes***

Emissions may not add up because of rounding.
Source: Emissions modeling by ICF 2014 (Appendix B).

Table 4.2-11: Estimate of Mitigated Localized Construction Emissions for SCE Subtransmission Line (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM10	PM2.5
Survey	1	1	7	<1	0.0	0.0
R/W Clearing	8	98	59	<1	3.6	3.3
Temporary Guard Structure Installation	5	34	30	<1	1.8	1.8
Transfer Existing Conductor	3	23	23	<1	0.1	0.1
Wood/H-Frame/LWS Pole Removal	1	6	6	<1	1.5	0.5
LWS Pole /H-Frame Haul	0	1	1	<1	0.0	0.0
LWS, FRC, Wood, TSP Assembly	1	7	7	<1	1.2	0.5
Install LWS, FRC, Wood, TSP	4	26	19	1	0.8	0.7
Guard Structure Removal	8	52	44	<1	4.0	3.6
Restoration	4	44	24	<1	1.9	1.7
Install 16 kV Distribution Conductor	2	28	16	<1	0.8	0.8
TSP Foundation	2	27	14	<1	0.8	0.7
Maximum Daily	***8***	***98***	***59***	***1***	***4.0***	***3.6***
SCAQMD Localized Significance Threshold	—	*148*	*1,540*	—	*12.0*	*4.0*
Exceed Significant Threshold?	—	*No*	*No*	—	*No*	*No*
Maximum Daily With No Overlap with Maximum Specific Plan Construction	***30***	***98***	***59***	***1***	***4.0***	***3.6***
SCAQMD Localized Significance Threshold	—	*148*	*1,540*	—	*12.0*	*4.0*
Exceed Significant Threshold?	—	*No*	*No*	—	*No*	*No*
Emissions may not add up because of rounding. Source: Emissions modeling by ICF 2014 (Appendix B).						

Objectionable Odors

Odors resulting from construction of the proposed project are not likely to affect a substantial number of people because construction activities usually do not emit offensive odors. One potential odor emitter during construction is asphalt paving. However, SCAQMD Rule 1108 limits the amount of VOC emissions from cutback asphalt. Because of mandatory compliance with SCAQMD rules, no construction activities or materials are proposed that would create a significant level of objectionable odors. As such, potential impacts during short-term construction would be less than significant. No mitigation measures are required.

Operational Impacts

Implementation of the Applicable Air Quality Plan

SCAQMD is required, pursuant to the CAA, to reduce emissions of criteria pollutants for which the Basin is in nonattainment status. SCAQMD's most recent plan to achieve air quality standards is the 2012 AQMP, adopted by the SCAQMD Governing Board on December 7, 2012. The 2012 AQMP outlines a comprehensive control strategy to meet the requirement for expeditious progress toward attainment of the 24-hour PM2.5 NAAQS in 2014 through all feasible control measures. The 2012 AQMP also includes specific measures for implementing the O_3 strategy from the 2007 AQMP and

attaining the 8-hour ozone standard by 2023 (SCAQMD 2012a). These strategies are based, in part, on regional population, housing, and employment projections prepared by the region's cities and counties and incorporated by SCAG. As such, projects that propose development that is consistent with the growth anticipated in the relevant land use plans used in the formulation of the AQMP are considered to be consistent with the AQMP. The governing land use document relevant to the project area is the LCF General Plan. Therefore, projects that propose development consistent with the growth anticipated in the current LCF General Plan are considered consistent with the AQMP.

As discussed in Section 4.9, *Land Use and Planning*, the project would be consistent with the f LCF General Plan. The project proposes improvements and modernization at FSHA, a private educational facility, but would result in no changes to existing land uses in the project area. The proposed annexation of the 24.13-acre property within the city of Pasadena would not result in new development. Under the specific plan, FSHA would demolish some of its existing structures and construct new buildings, including a parking structure, while expanding enrollment from 385 students to 425 (365 commuters plus 60 students who would be housed on site). The FSHA Specific Plan includes a voluntary Transportation Demand Management program that aims to reduce the number of vehicle trips by at least 40% during peak periods by promoting carpooling, busing, and outreach efforts. Therefore, because the project would not result in changes in land uses, the project is considered consistent with the governing land use document, which is the LCF General Plan. Furthermore, pursuant to SCAQMD guidelines, the proposed project is considered consistent with the region's AQMP. As such, project-related emissions are accounted for in the AQMP, which has been crafted to bring the Basin into attainment status for all nonattainment pollutants and precursors thereof. Accordingly, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. This impact is considered less than significant.

Air Quality Standards

The project site is within an area where state and federal air quality standards are often exceeded. SCAQMD has promulgated significance thresholds to help the Basin attain the federal and state air quality standards and protect public health. The proposed project would contribute to regional air pollutant emissions during long-term operations. An analysis of the operations-related effects of the proposed project is presented below.

Operation of the proposed project has the potential to create air quality impacts associated with an increased number of motor vehicle trips, on-site consumption of natural gas for space and water heating, on-site use of solvents and consumer products, and emissions associated with landscaping. The operational analysis used trip generation data from the traffic analysis as well as CalEEMod (version 2013.2.2) defaults regarding area and energy sources.

As shown in Table 4.2-12, maximum daily project-related criteria pollutant emissions are not expected to exceed SCAQMD operations-period thresholds for any pollutant. Consequently, the impact of operations-related emissions from the project is considered less than significant.

Table 4.2-12: Estimate of Unmitigated Regional Operational Emissions (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM10	PM2.5
Mobile Sources	2	5	17	< 1	3	1
Natural Gas	< 1	< 1	< 1	< 1	< 1	< 1
Consumer Products	3	-	-	-	-	-

Architectural Coatings	1	-	-	-	-	-
Landscaping	< 1	< 1	< 1	< 1	< 1	< 1
Maximum Daily Emissions	**6**	**5**	**17**	**< 1**	**3**	**1**
SCAQMD Regional Operational Threshold	55	55	550	150	150	55
Exceed Significant Threshold?	No	No	No	No	No	No
Emissions may not add up because of rounding. Source: Emissions modeling by ICF 2014 (Appendix B).						

Nonattainment Criteria Pollutants

The Basin is currently in nonattainment status for O_3, PM10, PM2.5, and Pb under the NAAQS and O_3, PM10, PM2.5, and NO_2 under the CAAQS. This is the result of past and present projects, and progress toward attainment will be further impeded by reasonably foreseeable future projects. As discussed above, SCAQMD has developed thresholds to ensure attainment of the NAAQS and CAAQS; therefore, exceedance of SCAQMD threshold levels must be considered a significant cumulative impact and an adverse cumulative consequence. As discussed above and shown in Table 4.2-12, criteria pollutant emissions would not exceed SCAQMD regional thresholds during operation of the proposed project. Therefore, because the proposed project would not exceed the thresholds for a nonattainment pollutant (in this case, an ozone precursor [VOC and NO_X], PM10, PM2.5, or Pb), the proposed project would result in a net increase in pollutants (including ozone precursors) that would be less than cumulatively considerable (see Section 4.2.7, *Cumulative Impacts*, for a complete discussion of the proposed project's cumulative air quality impacts).

Exposure of Sensitive Receptors

The proposed project would contribute to localized air pollutant emissions during project operations. The analysis includes a discussion of criteria pollutants, TACs, and concentrations of CO (i.e., CO hot spots). SCAQMD's LST methodology was developed to aid operational analysis of land use development projects. It directs analyses to focus on emissions from stationary sources (e.g., natural gas furnaces, emergency generators) and mobile equipment (e.g., landscaping equipment) operating on site. Consistent with SCAQMD's LST guidelines, emissions related to vehicle travel off-site (i.e., on public roads) are not considered in the evaluation of localized impacts.

As shown in Table 4.2-13, localized emissions during operations would not exceed LSTs for the project area. Impacts would be less than significant and not adverse. Therefore, no mitigation is proposed.

Table 4.2-13: Estimate of Unmitigated Localized Operational Emissions (pounds per day)

Construction Phase	VOC	NO_X	CO	SO_X	PM10	PM2.5
Natural Gas	< 1	< 1	< 1	< 1	< 1	< 1
Consumer Products	3	—	—	—	—	—
Architectural Coatings	1	—	—	—	—	—
Landscaping	< 1	< 1	< 1	< 1	< 1	< 1
Maximum Daily Emissions	***4***	***< 1***	***< 1***	***< 1***	***< 1***	***< 1***
SCAQMD Localized Significance Threshold	—	*148*	*1,540*	—	*3*	*2*
Exceed Significant Threshold?	—	*No*	*No*	—	*No*	*No*
Emissions may not add up because of rounding. Source: Emissions modeling by ICF 2014 (Appendix B).						

With respect to potential exposure to TAC emissions associated with buildout and long-term operation of the proposed project, SCAQMD recommends that a health risk assessment be conducted for projects with substantial diesel particulate emissions (e.g., truck stops and warehouse distribution facilities) or certain industrial projects with acute and/or chronically hazardous TAC pollutants. The proposed project would not create new emissions sources, nor would it affect the distribution of diesel-powered vehicles. Therefore, the project would not expose receptors to acute and/or chronically hazardous TAC pollutants. Impacts related to potential project-generated exposure to TACs on surrounding land uses would be less than significant.

With respect to CO hot spots at nearby intersections, the project would not increase congestion. According to the traffic impact analysis (Linscott, Law & Greenspan 2013), implementation of the proposed project would not create congested conditions on nearby roadways; all study intersections would continue to operate at level of service A or B during both daily and special event peak-hour conditions. Therefore, the project is not expected to result in violations of state or federal 1- or 8-hour CO standards. The impact is considered less than significant.

Objectionable Odors

According to CARB and SCAQMD, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding facilities (SCAQMD 1993, CARB 2005). The project would not include any of these uses, so there would be no operational impacts related to objectionable odors.

4.2.5 Mitigation Measures

AQ-1: To reduce NO_X emissions during SCE construction, the construction contractor will limit the use of track-type dozers to 5 hours per day each to ensure NO_X emissions do not exceed SCAQMD regional thresholds.

AQ-2: The construction contractor will ensure that any construction associated with the Specific Plan Area does not overlap with construction associated with the off-site SCE construction.

4.2.6 Significant Unavoidable Adverse Impacts

There would be no significant unavoidable adverse impacts.

4.2.7 Cumulative Impacts

Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. The region of analysis for cumulative effects on air quality is the Basin. The Basin experiences chronic exceedances of state and federal ambient air quality standards as a consequence of past and present projects and is subject to continued nonattainment status by reasonably foreseeable future projects. These nonattainment conditions within the region are considered cumulatively significant. Therefore, SCAQMD thresholds have been established to ensure attainment of the NAAQS and CAAQS. The impacts of related projects in areas surrounding the project would be cumulatively considerable if their combined construction and operational emissions would exceed SCAQMD daily emissions thresholds for construction and operation.

As discussed above, the project is consistent with the AQMP and SIP. Furthermore, emissions would be below SCAQMD regional thresholds and would not result in substantial pollutant concentrations at nearby sensitive receptors. The proposed project would comply with SCAQMD rules and regulations, including Rule 403 (Fugitive Dust Control) and Rule 1108 (Cutback Asphalt), during construction and with all other adopted AQMP emissions control measures. Per SCAQMD rules and mandates and the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on all projects Basin-wide, which would include all nearby projects. As such, cumulative impacts with respect to criteria pollutant emissions would be less than significant. Following construction, the project would result in minor increases in motor vehicle travel and area sources, but these emissions would be far below SCAQMD thresholds. Therefore, the project's long-term contribution to cumulative air quality impacts would be less than cumulatively considerable.