4.2

AIR QUALITY

4.2.1 Introduction

This chapter describes the existing air quality conditions, applicable air quality regulations, potential impacts on air quality that may result from implementing the General Plan Update, and mitigation measures that would reduce the significance of these impacts. Cumulative air quality impacts are discussed near the end of the chapter. The air quality worksheets are included as Appendix B.

4.2.2 Existing Conditions

The city is located in the South Coast Air Basin (SCAB), an area of approximately 6,745 square miles 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 SCAB includes all of Orange County and the nondesert 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 SCAB, 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, 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 SCAB 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 SCAB, making it an area of high pollution potential.

The greatest air pollution impacts in the SCAB occur from June through September, mainly because of the combination of large amounts of pollutant emissions, light winds, and shallow vertical atmospheric mixing. This frequently reduces pollutant dispersion, causing elevated air pollution levels.

Pollutant concentrations in the SCAB vary with location, season, and time of day. Ozone 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 SCAB and adjacent desert.

The South Coast Air Quality Management District (SCAQMD) has recently completed the Multiple Air Toxics Exposure Study III (MATES III), which was an ambient air monitoring and evaluation study conducted in the SCAB. MATES III was a follow up to previous air toxics studies in the SCAB and is part of the South Coast Air Quality Management District Governing Board Environmental Justice Initiative.

Compared to previous studies of air toxics in the SCAB, MATES III found a decreasing risk for air toxics exposure, with the population-weighted risk down by 17% from the analysis in MATES II. Therefore, there has been improvement in air quality regarding air toxics; however, the risks are still unacceptable and are higher near sources of emissions such as ports and transportation corridors. Diesel particulate continues to dominate the risk from air toxics, and the portion of air toxic risk attributable to diesel exhaust is increasing compared to the results in MATES II. The highest risks are found near the port area, central Los Angeles, and transportation corridors. The MATES III results underscore that a continued focus on reduction of toxic emissions, particularly from diesel engines, is needed to reduce air toxics exposure.

MATES III concluded that the average carcinogenic risk throughout the SCAB, attributed to toxic air contaminants, is approximately 1,194 in 1 million. This cancer risk has declined by more than 15% decline over the past 7 years but is still one of the highest in the nation. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. About 83.6% of all risk is attributed to Diesel Particulate Matter (DPM) emissions.

Local Climate

Data from the Western Regional Climate Center's Altadena climate monitoring station was used to characterize Project vicinity climate conditions because it is nearest to the Project area. The average Project-area summer (August) high and low temperatures are 86.8 and 59.1°F, respectively, while the average winter (January) high and low temperatures are 64.3 and 42.3°F, respectively. The mean annual temperature is 62.0°F. The average annual rainfall is 21.86 inches (WRCC 2010).

The wind monitoring station located nearest to the Project site is the Burbank Airport; therefore, that data used to characterize project area wind conditions. Wind patterns in the Project vicinity display a nearly unidirectional flow, primarily from the south, at an average speed of 5.6 miles per hour (mph) (WRCC 2010).

Air Quality in the Vicinity

The SCAQMD has divided the SCAB into air monitoring areas and maintains a network of air quality monitoring stations located throughout the SCAB. The Project site is located in the West San Gabriel Valley Monitoring Area (i.e., Source Receptor Area [SRA] 8). The nearest monitoring station is the Pasadena Monitoring Station (ARB 70088), in the City of Pasadena. Criteria pollutants monitored at the Pasadena Station include Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Ozone (O_3), and Fine Particulate Matter ($PM_{2.5}$). There are no monitoring stations within SRA 8 that monitor Respirable Particulate Matter (PM_{10}). The nearest monitoring stations that monitor PM_{10} are the Burbank–West Palm Avenue Monitoring Station (SRA 7, ARB 70069) and the Azusa Monitoring Station (SRA 9, ARB 70060). Of these, the Azusa Monitoring Station is located within the same General Forecast Area and Air Monitoring Area (San Gabriel Valley). However, since the Burbank Monitoring Station is closer to the Project site, data from both stations are presented below.

Concentrations of pollutants from the three stations over the last 5 years (2004–2008) are presented in Table 4.2-1. The monitored concentrations of 1-hour O_3 exceeded the California Ambient Air Quality Standards (CAAQS) an average of 19 times per year during the 5-year period. The monitored 8-hour O_3 standards exceeded CAAQS an average of 30 times per year during the 5-year reporting period. The monitored 8-hour O_3 standards exceeded NAAQS an average of 13 times per year during the 5-year reporting period. Monitored CO and NO_2 concentrations are low, and recorded no exceedances during the 5-year reporting period. Particulate (PM_{10} and $PM_{2.5}$) concentrations are largely affected by meteorology and show some variability during the 5-year reporting period. The state 24-hour PM_{10} standard as recorded at Burbank was exceeded 6 times in 2004, 5 times in 2005, 10 times in 2006, 5 times in 2007, and 5 times in 2008, while no violation of the NAAQS was recorded during the 5-year reporting period. The state 24-hour PM_{10} standard as recorded at Azusa was exceeded 7 times in 2004, 10 times in 2005, 7 times in 2006, 11 times in 2007, and 12 times in 2008. The national PM_{10} standard was exceeded once in 2007. The national $PM_{2.5}$ standard was exceeded 7 times in 2004, 5 times in 2005, once in 2006, 3 times in 2007, and twice in 2008.

Table 4.2-1. Air Quality Monitoring Data from the Pasadena (ARB 70088), Burbank (ARB 70069), and Azusa (ARB 70060) Monitoring Stations

Pollutant Standards	**2004**	**2005**	**2006**	**2007**	**2008**
Ozone (O_3)—Pasadena					
Maximum concentration 1-hr period (ppm)	0.130	0.145	0.151	0.149	0.122
Maximum concentration 8-hr period (ppm)	0.102	0.114	0.117	0.101	0.100
Number Days Standard Exceeded					
CAAQS (1-hr standard) > 0.09 ppm	27	13	26	13	16
NAAQS (8-hr standard) > 0.075 ppm	10	5	23	11	16
CAAQS (8-hr standard) > 0.07 ppm	48	20	35	21	26
Carbon Monoxide (CO)—Pasadena					
Maximum concentration 8-hr period (ppm)	3.46	2.83	2.80	2.28	2.21
Maximum concentration 1-hr period (ppm)	5.2	4.3	4.1	3.3	2.4
Number Days Standard Exceeded					
NAAQS (8-hr standard) > 9 ppm	0	0	0	0	0
CAAQS (8-hr standard) > 9.0 ppm	0	0	0	0	0
NAAQS (1-hr standard) > 35 ppm	0	0	0	0	0
CAAQS (1-hr standard) > 20 ppm	0	0	0	0	0
Nitrogen Dioxide (NO_2)—Pasadena					
Maximum 1-hr concentration (ppm)	0.117	0.104	0.120	0.092	0.105
Annual average concentration (ppm)	0.027	0.024	0.025	0.024	0.023
Number Days Standard Exceeded					
CAAQS (1-hr standard) > 0.18 ppm	0	0	0	0	0
CAAQS (annual) > 0.030 ppm exceeded?	No	No	No	No	No
NAAQS (annual) > 0.053 ppm exceeded?	No	No	No	No	No
Respirable Particulates (PM_{10})—Burbank					
Federal Maximum 24-hr concentration ($\mu g/m^3$)	74.0	92.0	71.0	109.0	66.0
State Maximum 24-hr concentration ($\mu g/m^3$)	73.0	90.0	69.0	107.0	61.0
Annual average ($\mu g/m^3$)	36.8	33.2	31.7	24.0	35.6
Number Days Standard Exceeded					
NAAQS (24-hr standard) > 150 $\mu g/m^3$	0	0	0	0	0
CAAQS (24-hr standard) > 50 $\mu g/m^3$	6	5	10	5	5
CAAQS (annual) > 12 $\mu g/m^3$ exceeded?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Pollutant Standards	2004	2005	2006	2007	2008
Respirable Particulates (PM_{10})—Azusa					
Federal Maximum 24-hr concentration ($\mu g/m^3$)	83.0	76.0	81.0	165.0	98.0
State Maximum 24-hr concentration ($\mu g/m^3$)	82.0	75.0	79.0	161.0	96.0
Annual average ($\mu g/m^3$)	31.9	34.8	32.6	37.7	32.0
Number Days Standard Exceeded					
NAAQS (24-hr standard) > 150 $\mu g/m^3$	0	0	0	1	0
CAAQS (24-hr standard) > 50 $\mu g/m^3$	7	10	7	11	12
CAAQS (annual) > 12 $\mu g/m^3$ exceeded?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Fine Particulates ($PM_{2.5}$)—Pasadena					
Maximum 24-hr concentration ($\mu g/m^3$)	59.4	62.8	45.8	68.8	66.0
Annual average ($\mu g/m^3$)	16.6	15.0	13.3	14.3	13.5
Number Days Standard Exceeded					
NAAQS (24-hr standard) > 35 $\mu g/m^3$	7	5	1	3	2
NAAQS (annual) > 15 $\mu g/m^3$ exceeded?	**Yes**	**Yes**	No	No	No
CAAQS (annual) > 12 $\mu g/m^3$ exceeded?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Abbreviations:
ppm = parts per million; NAAQS = National Ambient Air Quality Standards; CAAQS = California Ambient Air Quality Standards; $\mu g/m^3$ = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; > = greater than.
Source: CARB 2010a, EPA 2010.

Health Risks in the Vicinity

According to the most current SCAQMD inhalation cancer risk data (MATES III), the Project area is located within a cancer risk zone of approximately 280–508 cases per million (SCAQMD 2010). This cancer risk is largely due to the Project area's proximity to I-210, which transverses the entire city, and SR 2, which extends from I-5 in the City of Glendale to I-210 in the city. The highest cancer risks are located in areas near the SR 2 and I-210 freeways, and lower cancer risks are located at the northern portions of the city, away from the busy freeways. For comparison, the average cancer risk in the SCAB is 1,194 per million.

Sensitive Receptors

Some people are particularly sensitive to air pollution, including persons with respiratory illnesses or impaired lung function because of other illnesses, the elderly, and children. Facilities and structures where these people live or spend

considerable amounts of time are known as sensitive receptors. Chapter 4 of the SCAQMD's *Air Quality Analysis Guidance Handbook* defines land uses considered to be sensitive receptors as long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities.

4.2.3 Regulatory Setting

Federal, state, and local agencies have adopted rules and regulations requiring evaluation of the impact on ambient air quality of a planned project and appropriate mitigation for air pollutant emissions. Most federal programs to monitor and regulate stationary source emissions are delegated to the regional air quality management districts. State programs administered through the California Air Resources Board (CARB) provide regulatory control over air pollution emissions from mobile sources.

Federal and state laws and regulations also define a group of pollutants called hazardous air pollutants (HAPs), toxic air contaminants (TACs), or air toxics. Exposure to these pollutants can cause or contribute to cancer, birth defects, genetic damage, and other adverse health effects. The source and effects of TACs and HAPs are generally local, rather than regional. Evaluation is based on case studies, not standards for ambient concentration. Examples of air toxics include DPM, benzene, asbestos, carbon tetrachloride, ammonia, hydrogen sulfide, hydrogen cyanide, and methane.

Federal

Clean Air Act

The Clean Air Act (CAA) was first enacted in 1963 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (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 not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met. The city is within the SCAB and, as such, is in an area designated a nonattainment area for certain pollutants that are regulated under 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 meet interim milestones. The sections of the CAA

that would most substantially affect the 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 4.2-2 shows the NAAQS 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 NAAQS for $PM_{2.5}$. The SCAB fails to meet national standards for O_3, inhalable PM_{10}, and $PM_{2.5}$ and therefore is considered a federal nonattainment area for those pollutants. Table 4.2-3 lists each criteria pollutant and their related federal attainment status.

State

California Clean Air Act

In California, CARB, which became part of the California Environmental Protection Agency (Cal/EPA) in 1991, is responsible for meeting the state requirements of the federal CAA, administering the CCAA, and establishing the CAAQS. The CCAA, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. The CARB established passenger vehicle fuel specifications, which became effective in March 1996. The CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county levels.

The CCAA was signed into law on September 30, 1988, and became effective on January 1, 1989. The Act requires that local air districts implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures. The CCAA required the SDAB to achieve a 5% annual reduction in ozone precursor emissions from 1987 until the standards are attained. If this reduction cannot be achieved, all feasible control measures must be implemented. Furthermore, the CCAA required local air districts to implement a Best Available Control Technology rule and to require emission offsets for nonattainment pollutants.

The CCAA of 1988, as amended in 1992, outlines a program to attain the CAAQS by the earliest practical date. Because the CAAQS are more stringent than the NAAQS, attainment of the CAAQS will require more emissions reductions than what would be required to show attainment of the NAAQS. Consequently, the main focus of attainment planning in California has shifted from the federal to state requirements. Similar to the federal system, the state requirements and compliance dates are based on the severity of the ambient air quality standard violation within a region. Table 4.2-2 shows the CAAQS currently in effect for each criteria pollutant. Table 4.2-3 lists each criteria pollutant and their related state attainment status.

California's Toxic Air Contaminants Regulations

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807—Tanner Act) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588—Hot Spots Act).

The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB designates a substance as a TAC. To date, CARB has identified 21 TACs, and has also adopted the U.S. Environmental Protection Agency's (EPA's) list of Hazardous Air Pollutants (HAPs) as TACs. Since August 1998, DPM was added to the CARB list of TACs (CARB 1998).

The Hot Spots Act requires that existing facilities that emit toxic substances above specified levels: (1) prepare a toxic emission inventory, (2) prepare a risk assessment if emissions are significant (i.e., 10 tons per year or on the Air District's Hot Spots Risk Assessment list), (3) notify the public of significant risk levels, and (4) prepare and implement risk reduction measures.

In Se**p**tember 2000, CARB approved the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Diesel Risk Reduction Plan) (CARB 2000). The Diesel Risk Reduction Plan outlines a comprehensive and ambitious program that includes the development of numerous new control measures over the next several years aimed at substantially reducing emissions from new and existing on-road vehicles (e.g., heavy-duty trucks and buses), off-road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps), and stationary engines (e.g., stand-by power generators).

CARB has adopted several regulations that will reduce diesel emissions from in-use vehicles and engines throughout California (CARB 2009a). In some cases, the particulate matter reduction strategies also reduce smog-forming emissions such as NO_X.

Table 4.2-2. Federal and State Ambient Air Quality Standards

Pollutant	Average Time	Standard (ppm)		Standard (µg/m^3)		Violation Criteria	
		CA	U.S.	CA	U.S.	CA	U.S.
Ozone (O_3)	1 hour	0.09	NA	180	NA	If exceeded	If exceeded on more than 3 days in 3 years
	8 hours	0.070	0.075	137	147	NA	If exceeds 4th highest 8-hour concentration in a year, averaged over 3 years
Respirable Particulate Matter (PM_{10})	Annual mean	NA	NA	20	NA	If exceeded	If exceeded
	24 hours	NA	NA	50	150	If exceeded	If average 1% over 3 years is exceeded
Fine Particulate Matter ($PM_{2.5}$)	Annual mean	NA	NA	12	15	If exceeded	If exceeded
	24 hours	NA	NA	NA	35	NA	If average 2% over 3 years is exceeded
Carbon Monoxide (CO)	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day/year
	1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day/year
Nitrogen Dioxide (NO_2) [1]	Annual average	0.030	0.053	57	100	NA	If exceeded
	1 hour	0.18	0.100	339	NA	If exceeded	If exceeded
Sulfur Dioxide (SO_2)	Annual average	NA	0.030	NA	80	NA	If exceeded
	24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day/ year
	3 hour	NA	0.5	NA	1300	NA	If exceeded no more than 1 day/year
	1 hour	0.25	NA	655	NA	NA	NA
Lead (Pb)	30 days	NA	NA	1.5	NA	If equaled or exceeded	NA
	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day/year
	Rolling 3-month average	NA	NA	NA	0.15	NA	If exceeded
Visibility Reducing Particles	8 hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70%.				If exceeded	NA
Sulfate particles (SO_4)	24 hours	NA	NA	25	NA	If equaled or exceeded	NA
Hydrogen sulfide (H_2S)	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA
Vinyl chloride (C_2H_3Cl)	24 hours	0.01	NA	26	NA	If equaled or exceeded	NA

Notes:
[1] The NAAQS 1-hour NO_2 standard was lowered to 0.100 ppm on January 22, 2010. The EPA will make d attainment status designations by January 2012.
All standards are based on measurements at 25ºC and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
NA = not applicable.
Source: CARB 2010b.

Table 4.2-3. Federal and State Attainment Status for the South Coast Air Basin

Pollutants	Federal Classification	State Classification
O_3 (1-hour standard)	--	Nonattainment
O_3 (8-hour standard)	Nonattainment, Severe-17	--
PM_{10}	Serious Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Serious Maintenance	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Attainment	Attainment

Source: CARB 2010c, EPA 2010.

As an ongoing process, CARB reviews air contaminants and identifies those that are classified as TACs. CARB also continues to establish new programs and regulations for the control of TACs, including DPM, as appropriate.

Relevant Air Pollutants

Ozone

O_3, a colorless toxic gas, is the chief component of urban 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 their growth. Although O_3 is not directly emitted, it forms in the atmosphere through a photochemical reaction between reactive organic gases (ROGs) and NO_X in the presence of sunlight. O_3 is present in relatively high concentrations within the SCAB, and the damaging effects of photochemical smog generally are 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. The greatest source of smog-producing gases is the automobile.

Reactive Organic Gases and Volatile Organic Compounds—Ozone Precursors

There are several subsets of organic gases, including ROGs and VOCs. Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. ROGs include all hydrocarbons except those exempted by the 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.

The primary health effects of hydrocarbons result from the formation of ozone 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 NAAQS or CAAQS for ROGs. Carcinogenic forms of ROGs are considered to be TACs, which are described below. An example is benzene, which is a carcinogen.

Carbon Monoxide

CO is a colorless and odorless gas, which can interfere with the transfer of oxygen to the brain. It can cause dizziness and fatigue, and can 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, so 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.

Nitrogen Dioxide

NO_2 is a brownish gas that irritates the lungs. It can cause breathing difficulties at high concentrations. Like O_3, NO_2 is not directly emitted, but is formed through a reaction between 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 PM_{10} (see discussion of PM_{10} below). At atmospheric concentration, 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 (two and three years old) has also been observed at concentrations below 0.3 ppm.

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter. PM_{10} refers to particulate matter less than 10 microns in diameter, about 1/7th the thickness of a human hair. $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair. Major sources of PM_{10} 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. $PM_{2.5}$ results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM_{10} and $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOCs.

PM_{10} and $PM_{2.5}$ 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. PM_{10} and $PM_{2.5}$ 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 blood stream 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 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 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 $PM_{2.5}$ Formation

Within the SCAB, $PM_{2.5}$ particles are both directly emitted into the atmosphere (i.e., primary particles) and formed through atmospheric chemical reactions from precursor gases (i.e., secondary particles). Primary $PM_{2.5}$includes diesel soot, combustion products, road dust, and other fine particles. Secondary $PM_{2.5}$, which includes products such as sulfates, nitrates, and complex carbon compounds, are formed from reactions with directly emitted NO_X, SO_X, VOCs, and ammonia. Emissions of NO_X, SO_X, and VOCs generated due to the General Plan Update would contribute toward secondary $PM_{2.5}$ formation some distance downwind of the emission sources. However, the air quality analysis in this PEIR focuses on the effects of direct $PM_{2.5}$ emissions. This approach is consistent with the recommendations of the SCAQMD (2006).

Sulfur Dioxide

SO_2 is a product of high-sulfur fuel combustion. Main sources of SO_2 are coal and oil used in power stations, in industries, and for 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 can 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 in emissions are needed to attain compliance with standards for sulfates and PM_{10}, of which SO_2 is a contributor.

Lead

Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used several decades ago to increase the octane rating in automotive fuel. Because gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels and because the use of leaded fuel has been mostly phased out, the ambient concentrations of lead have dropped dramatically.

Short-term exposure to high levels of lead can cause vomiting, diarrhea, convulsions, coma, or even death. However, even small amounts of lead can be harmful, especially to infants, young children, and pregnant women. Symptoms of long-term exposure to lower lead 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.

Lead exposure is most serious for young children because they absorb lead more easily than adults and are more susceptible to its harmful effects. Even low-level exposure may harm the intellectual development, behavior, size, and hearing of infants. During pregnancy, especially in the last trimester, lead can cross the placenta and affect the fetus. Female workers exposed to high levels of lead have more miscarriages and stillbirths.

Toxic Air Contaminants

Although ambient air quality standards exist for criteria pollutants, no ambient standards exist for TACs. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of 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 each presents. 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. To date, CARB has identified 21 TACs, and has also adopted the EPA's list of hazardous air pollutants as TACs. In August 1998, diesel particulate matter (DPM) was added to the CARB list of TACs (CARB 1998).

Local

South Coast Air Quality Management District

The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, including all of Orange County, all of Los Angeles County except for the Antelope Valley, the nondesert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The SCAB is a subregion of the SCAQMD jurisdiction. While air quality in this area has improved, the SCAB requires continued diligence to meet air quality standards (SCAQMD 2007).

SCAQMD has adopted a series of air quality management plans (AQMPs) to meet the CAAQS and NAAQS. To ensure continued progress toward clean air and to comply with state and federal requirements, SCAQMD, in conjunction with the CARB, Southern California Association of Governments (SCAG, described below), and the EPA, updates its AQMP every 3 years. These plans require, among other emissions-reducing activities, control technology for existing sources, control programs for area sources and indirect sources, a SCAQMD permitting system designed to allow no net increase in emissions from any new or modified (i.e., previously permitted) emission sources, and transportation control measures.

The most recent AQMP is the 2007 update, which was finalized on June 1, 2007 (SCAQMD 2007). The Final 2007 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP builds upon the approaches taken in the 2003 AQMP for the SCAB for the attainment of NAAQS. Additionally, the AQMP highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet federal criteria pollutant standards within the timeframes allowed under federal CAA.

The 2007 AQMP employs the most up-to-date science and analytical tools and incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources. The 2007 AQMP also addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. Additionally, the 2007 AQMP builds on the approaches taken in the 2003 AQMP for the SCAB for the attainment of the NAAQS. However, the 2007 AQMP highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all NAAQS within the timeframes allowed under the federal CAA. Specifically the 2007 AQMP was prepared because the federal CAA required an 8-hour ozone nonattainment area to prepare a SIP revision by June 2007 and a $PM_{2.5}$ nonattainment area by April 2008.

The 2007 AQMP proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of SO_X, directly emitted $PM_{2.5}$, and NO_X supplemented with VOCs by 2015. The 8-hour ozone control strategy builds on the $PM_{2.5}$ strategy, augmented with additional NO_X and VOC reductions to meet the standard by 2024, assuming a bump-up is obtained. A bump-up means that SCAQMD is considering requesting a voluntary reclassification. The SCAB is currently classified as a Severe-17 nonattainment area for the federal 8-hour O_3 standard with an attainment date of 2021. "Bumping up" to extreme nonattainment classification for the SCAB would extend the attainment date to 2024 and allow for the attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improving of existing control technologies (CAA Section 182(e)(5) measures).

The 2007 AQMP concluded that substantial emission reductions from all sources are necessary. Without aggressive measures to reduce emissions, particularly of NO_X, SO_X, VOCs, and particulate matter, attaining the 8-hour O_3 NAAQS by 2023 and the $PM_{2.5}$ standard by 2014 will be very difficult.

SCAQMD adopts rules and regulations to implement portions of the AQMP. Several of these may apply to construction or operation of future development projects consistent with the Project. For example, SCAQMD Rule 403 requires implementing the best available fugitive dust control measures during active operations capable of generating fugitive dust emissions from onsite earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. SCAQMD has published the *CEQA Air Quality Handbook (*November 1993) to help local governments analyze and mitigate project-specific air quality impacts. This handbook provides standards, methodologies, and procedures for conducting air quality analyses in environmental impact reports and was used extensively in the preparation of this report. In addition, SCAQMD has published two additional guidance documents

(*Localized Significance Threshold Methodology for CEQA Evaluations*, June 2003, and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology*, October 2006) that provide guidance in evaluating localized effects from mass emissions during construction. Both were used in the preparation of this analysis.

Southern California Association of Governments

The SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. It addresses regional issues relating 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 is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide (RCPG) for the SCAG region, which includes Growth Management and Regional Mobility chapters. These chapters form the basis for the land use and transportation components of the AQMP, and are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the AQMP.

The SCAG also addresses regional issues relating to transportation, economy, community development, and the environment. With respect to air quality planning, SCAG prepares the Regional Transportation Plan for the SCAG region every three years, which, along with the RCPG, forms the basis for the land use and transportation components of the AQMP, and is used to prepare the air quality forecasts and the consistency analysis that are included in the AQMP.

4.2.4 Impact Analysis

This section describes the impact analysis relating to air quality. It describes the methods used to determine the impacts of the Project, describes the changes to the existing conditions, and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodology

The impact analysis is a program-level analysis that evaluates development that is reasonably foreseeable if the General Plan Update is adopted and implemented. Although the General Plan Update would not directly cause development, the land use policy contained within the General Plan Update would prescribe the acceptable land uses throughout the city. Implementation of

the proposed land use designations could, therefore, indirectly lead to types of development considered acceptable under the General Plan Update. Based on the existing conditions described above, the impact analysis programmatically and qualitatively assesses the indirect and cumulative air quality impacts from the potential construction of approximately 814 residential units and 1,355, 783 square feet of commercial space within the Project area as well as the implementation of the proposed goals and policies of the General Plan Update.

The consistency of the General Plan Update with the AQMP and SIP was determined by comparing the growth projected with implementation of the General Plan Update to growth projected for the city by SCAG. Note that because the AQMP uses the population and growth projections formed by SCAG the projections themselves are considered the baseline conditions by which the General Plan Update is compared. Emissions generated as a result of construction activities were analyzed qualitatively because an exact construction schedule and the intensity of future development projects associated with implementation of the General Plan Update cannot be determined at this time and would be speculative.

The primary operational emissions associated with buildout of the General Plan Update are ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ emitted as vehicle exhaust as well as PM_{10}, and $PM_{2.5}$ from entrained road dust. The effects of criteria pollutants from vehicle exhaust were quantified with Caltrans' CT-EMFAC emission modeling program and traffic data provided by the Project traffic engineers (Iteris 2010). Entrained road dust emissions resulting from on-road motor vehicle travel were calculated based on the methodology presented by CARB (CARB 1997). Area source emissions associated with natural gas energy used for space and water heating, landscaping equipment, and consumer products were quantified using the URBEMIS 2007 (version 9.2.4) model. The effects of localized CO hot spot emissions were evaluated through CO dispersion modeling using the Transportation Project-Level Carbon Monoxide Protocol developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997).

Mobile source emissions were modeled using the CT-EMFAC model, which uses the latest version of CARB California Mobile Source Emission Inventory and Emission Factors model, EMFAC2007, to quantify running exhaust and running loss emissions using user-input traffic data, including peak-hour and off-peak-hour vehicle miles traveled (VMT) data allocated into 5-mph speed bins. Running exhaust emissions are emitted from the vehicle tailpipe while the vehicle is traveling, while running loss emissions are evaporative total organic gases (TOG) emissions that occur when hot fuel vapors escape from the fuel system or overwhelm the carbon canister while the vehicle is operating. CT-EMFAC was used to estimate emissions from motor vehicle travel within the Project area for Existing (2008), Future Year No Project (2030), and Future Year with Project (2030) traffic conditions. For purposes of analysis, it was assumed that all proposed land uses would be built out by 2030. Mobile source emissions were estimated using

traffic data obtained from the traffic engineers (Iteris 2010). Emissions from entrained road dust were calculated using the methodology presented by CARB and traffic data obtained from the traffic engineers (Iteris 2010).

Area source emissions associated with natural gas energy used for space and water heating, landscaping equipment, and the use of consumer products from the proposed land uses were quantified using the URBEMIS 2007 (version 9.2.4) model. The analysis assumed buildout of all of the proposed land uses in 2030. Area sources were estimated based on default URBEMIS2007 assumptions.

Estimates of CO concentrations near roadways for existing and future Project conditions were modeled using the EMFAC2007 and CALINE4 models. Only the PM peak hour traffic was modeled, as traffic volumes and congestion would be worse in the PM peak hour than in the AM peak hour. Vehicle emission rates were determined using the EMFAC2007 emission rate program. Traffic speeds were adjusted based on level-of-service (LOS) and volume-to-capacity (V/C) ratio. EMFAC2007 modeling procedures followed the guidelines recommended by Caltrans (2003). The program assumed Los Angeles County regional traffic data, averaged for each subarea, operating during the winter months. A mean January temperature of 44° F and humidity of 40% were assumed. Receptor height was set at 5.9 feet and receptor locations were placed at 3, 25, 50, 100, 250, and 500 feet from the edge of each roadway segment.

Meteorological inputs to the CALINE4 model were determined using methodology recommended in Appendix B of the CO Protocol (Garza et al. 1997). The meteorological conditions used in the modeling represent a calm winter period. Worst-case wind angles were modeled to determine a worst-case concentration for each receptor. The meteorological inputs include: 0.5 meters per second wind speed, ground-level temperature inversion (atmospheric stability class G), wind direction standard deviation equal to 5 degrees, ambient temperature of 49° F, and a mixing height of 1,000 meters. To account for sources of CO not included in the modeling, a background concentration of 5.2 ppm was added to the modeled cumulative 1-hour values, while a background concentration of 3.46 ppm was added to the modeled cumulative 8-hour values. Background concentration data were taken from the highest of the five recent years of monitoring data (CARB 2010a, EPA 2010).

Thresholds of Significance

For this analysis, an impact pertaining to air quality was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (14 CCR 15000 et seq.). An impact related to air quality is considered significant if it would:

AQ-1: conflict with or obstruct implementation of the applicable air quality management plan;

AQ-2: violate any air quality standard or contribute substantially to an existing or projected air quality violation;

AQ-3: result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment status under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors);

AQ-4: expose sensitive receptors to substantial pollutant concentrations; or

AQ-5: create objectionable odors affecting a substantial number of people.

In addition, the CEQA Guidelines state that the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make significance determinations. Based on the SCAQMD's regulatory role in the SCAB, the significance thresholds and analysis methodologies outlined in the SCAQMD 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.

Construction Emissions

According to criteria set forth in the SCAQMD CEQA Air Quality Handbook, Localized Significance Threshold Methodology for CEQA Evaluations, and Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology guidance documents, the Project would have a significant impact on construction emissions if any of the following were to occur:

- Regional emissions from both direct and indirect sources exceed any of the following SCAQMD prescribed threshold levels: (1) 75 pounds a day for ROC, (2) 100 pounds per day for NO_X, (3) 550 pounds per day for CO, (4) 150 pounds per day for PM_{10} or SO_X, and (5) 55 pounds per day for $PM_{2.5}$.
- Localized emissions from onsite construction equipment and site disturbance activity exceed any of the following SCAQMD prescribed threshold levels for the Project area: (1) 148 pounds per day for NO_X, (2) 1,540 pounds per day for CO, (3) 12 pounds per day for PM_{10}, and (4) 3 pounds per day for $PM_{2.5}$ (localized emissions are for SRA 8, the West San Gabriel Valley, construction on a 5-acre site with a 25-meter receptor distance).

Operational Emissions

According to criteria set forth in the SCAQMD *CEQA Air Quality Handbook*, the Project would have a significant impact with regard to operational emissions if any of the following were to occur:

- Regional emissions from both direct and indirect sources would exceed any of the following SCAQMD prescribed threshold levels: (1) 55 pounds a day for ROC, (2) 55 pounds per day for NO_X, (3) 550 pounds per day for CO, (4) 150 pounds per day for PM_{10} or SO_X, and (5) 55 pounds per day for $PM_{2.5}$.
- Localized emissions from onsite sources exceed any of the following SCAQMD prescribed threshold levels: (1) 148 pounds per day for NO_X, (2) 1,540 pounds per day for CO, (3) 3 pounds per day for PM_{10}, and (4) 2 pounds per day for $PM_{2.5}$ (localized emissions are SRA 8, the West San Gabriel Valley, operation on a 5-acre site with a 25-meter receptor distance).
- The Project would cause an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 ppm or the federal 1-hour or 8-hour CO standards of 35 or 9 ppm, respectively, at an intersection or roadway within 0.25 mile of a sensitive receptor location.

Toxic Air Contaminants

According to guidelines provided in the SCAQMD *CEQA Air Quality Handbook*, the Project would have a significant impact from toxic air contaminants if any of the following were to occur:

- Onsite stationary sources emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of ten in one million (1.0×10^{-5}) or an acute or chronic hazard index of 1.0.
- Hazardous materials associated with onsite stationary sources result in an accidental release of air toxic emissions or acutely hazardous materials, posing a threat to public health and safety.
- The project would be occupied primarily by sensitive individuals within 0.25 mile of any existing facility that emits air toxic contaminants, which could result in a health risk from pollutants identified in District Rule 1401.

An increase above SCAQMD's thresholds for construction and operations would be expected to have a significant impact on air quality because any emission increase would contribute to the air quality problems in the SCAB. In addition, if a project would potentially exceed the thresholds for TAC's, then the project would be expected to have a significant impact on air quality by exposing sensitive receptors to substantial pollutant concentrations.

Impacts and Mitigation Measures

Threshold AQ-1: Would the proposed Project conflict with or obstruct implementation of the applicable air quality management plan?

In accordance with the CCAA, areas designated as nonattainment or maintenance areas with regards to the NAAQS or CAAQS are required to prepare an air quality attainment plan. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date. Typically, a general plan is deemed inconsistent with air quality plans if it would result in population, VMT, or emissions that exceed the estimates included in the applicable air quality plan such that exceedances would hinder achievement of NAAQS and CAAQS.

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, economy, community development, and environment. With regard to air quality planning, SCAG has prepared the RCPG, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the AQMP. These documents are utilized in the preparation of the air quality forecasts and consistency analysis included in the AQMP. Both the RCPG and AQMP are based, in part, on projections originating with county and city general plans. Implementation of the General Plan Update would allow for an increase in population, housing units, and VMT within the city. The Project could add up to an additional 438 units to the city (beyond the existing General Plan projections), which would increase the number of housing units to 7,883 and result in a population of approximately 23,799 by 2030. SCAG projections indicate that there would be 7,209 housing units and a population of 21,862 for the city by 2030. As shown in Table 4.2-4, while population and housing would each increase by approximately 8.9 and 9.3% over SCAG projections, respectively, daily VMT would show only a slight increase of 1.1% over SCAG projections.

Table 4.2-4. 2030 General Plan Update and SCAG Comparisons

	SCAG Projections for 2030 (No Project)	General Plan Update 2030	Percent Difference with General Plan Update
VMT [1]	1,170,299	1,182,950	+1.1%
Population	21,862 [2]	23,799	+8.9%
Housing Units	7,209 [2]	7,883	+9.3%

Notes:
[1] VMT data provided by Iteris, Inc.
[2] SCAG population and housing data obtained from the RTP 2030.
Sources: SCAG 2008, Iteris 2010.

An additional measurement tool in determining consistency with the AQMP is to identify how a project accommodates the expected increase in population or employment. Generally, if a project is planned in a way that results in a reduction in motor vehicle trips and VMT, then the project is consistent with the AQMP. Although the General Plan Update would result in growth that exceeds SCAG projections for the city, the development associated with the Project would be consistent with SCAG's Compass Blueprint Growth Visioning and 2% Strategy, which forms the basis of the Land Use and Housing chapter of the RCPG (see Section 4.11, "Population and Housing," for a full discussion). Specifically, the General Plan Update would encourage development within the downtown area, would promote mixed-use and walkable communities, and would provide a variety of housing types for all income levels. The Project would also promote sustainability by preserving open space, expanding the trail system, and providing a circulation system that reduces dependency on automobiles.

In addition, goals, objectives, and policies in the Air Quality Element of the General Plan Update are aimed at improving local and regional air quality. Objectives and policies supporting AQ-Goal 1 would help to improve air quality through sustainable, compact, and multi-modal oriented development. Objectives and policies supporting AQ-Goal 2 would help to improve air quality locally and within the SCAB by reducing use of passenger vehicles. Objectives and policies supporting AQ-Goal 3 would help to improve air quality through conservation activities, policies and programs, and regulations, and through the use of technology. Objectives and policies and supporting AQ-Goal 6 would help to improve air quality and reduce health risks through regional coordination, cooperation, advocacy, education, and monitoring of air quality conditions, legislation, and policies.

In addition, the following goals, objectives, and policies from other resource elements will help to reduce VMT from within the city (SCAG 2008a, ULI 2007).

> **LUE Policy 2.1.4:** Support the mixed-use village character of the Downtown District (from La Cañada Boulevard to the I-210 freeway overpass at Crown Avenue) through continued implementation of the DVSP.
>
> **LUE Policy 2.2.1:** Encourage the integration of mixed-use retail/office and multi-family residential/retail projects through implementation of the new Mixed Use land use designation and the Mixed Use Overlay on Foothill Boulevard.
>
> **LUE Policy 2.2.2:** Encourage high quality multi-family residential and mixed-use development on Foothill Boulevard as a means of promoting pedestrian activity and reducing dependence on automobiles, addressing the housing needs of seniors and families, and improving the physical appearance of the Boulevard.

LUE Objective 3.1: Promote sustainable development practices to protect the City's valuable resources and guide their utilization in a responsible manner; reduce vehicle miles travelled; and reduce GHG emissions.

CE Policy 1.1.3: Promote the concept of "Complete Streets" in the City, which are designed and operated to enable safe access for all users of all ages and abilities, including pedestrians, bicyclists, motorists, transit riders, and equestrians.

CE Goal 2: Facilitate alternatives to automobile travel, including public transportation, bicycling, ridesharing, walking, and equestrians, that support land use plans, meet transportation needs, and reduce vehicle-related and GHG emissions.

CE Objective 2.2: Continue to improve transit service in the City to achieve trip reductions, improve air quality and reduce GHG emissions, and facilitate pedestrian and non-motorized travel.

CE Goal 6: Promote non-motorized transportation.

Impact Determination

The General Plan Update proactively addresses regional air quality in a manner consistent with policies and measures outlined in the 2007 AQMP. Although the General Plan Update would result in increased population, housing, and VMT over that projected by SCAG, the mixed-use development associated with the General Plan Update would be consistent with the land use and housing portion of SCAG's RCPG, which promotes mixed-use and walkable downtown communities. In addition, the General Plan Update includes numerous goals, objectives, and policies that would help to support mixed-use development and alternative forms of transportation within the city. Therefore, the General Plan Update is considered consistent with the 2007 AQMP. Impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts related to Threshold AQ-1 would be less than significant.

Threshold AQ-2: Would the proposed Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Criteria Pollutant Emissions from Construction Activities

Construction emissions would temporarily generate CO, ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions, which could result in adverse affects on short-term ambient air quality. Primary emission sources include mobile and stationary construction equipment exhaust, employee vehicle exhaust, dust from clearing land, exposed soil eroded by wind, and ROG from architectural coatings and asphalt paving. Construction-related emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

Projected 2030 buildout of General Plan Update would add some single-family homes and various Mixed Used Overlay zones on presently underutilized parcels within the city. As indicated in Chapter 3, "Project Description," the projected 2030 buildout would allow for an estimated 814 new housing units and 18.48 acres of commercial/retail land use designations over existing conditions, primarily in the Mixed Use Overlay zones. The addition of new development and redevelopment would result in construction emissions. However, because specific construction activities and their timing are not yet known, it is uncertain whether or not construction of mixed-use areas would result in emissions that exceed SCAQMD regional and/or localized thresholds.

The General Plan Update includes numerous policies that will act to reduce emissions from construction activities.

> **AQ Policy 3.1.2**: Require stabilization of land disturbed as a result of construction projects, including short-term methods during construction (e.g., watering active construction areas, covering open stockpiles, applying non-toxic soil stabilizers on unpaved access roads and temporary parking areas) and permanent methods post-construction (e.g., vegetation or revegetation, installation of hardscape, etc.).
>
> **AQ Policy 3.5.7**: Continue to implement the City's Recycling and Diversion of Construction and Demolition Debris Ordinance (Chapter 9.14 of the LCFMC) to reduce the amount of GHG emissions associated with the disposal of solid waste into landfills.
>
> **AQ Policy 3.5.9:** Consider adopting a program to increase asphalt recycling and the use of recycled asphalt and cement, including:

a. requiring recycled asphalt pavement (RAP) for streets and roads;

b. requiring RAP for community and commercial parking lots, where feasible;

c. encouraging schools and public agencies to use RAP for parking lots;

d. for City-sponsored projects, requiring 100 percent in-place recycling of recovered asphalt concrete and Portland cement, where feasible; and

e. considering modification of the City's Construction and Demolition Debris Ordinance to increase the minimum diversion rate for asphalt and concrete.

Because the timing and duration of construction activities associated with the buildout projections over the 20-year life of the General Plan Update cannot be determined, it is not possible to determine the magnitude of construction emissions from each development project or the magnitude of emissions reductions that would be achieved by these policies. Each future development would undergo development review, including in many cases CEQA review, and would evaluate project-specific impacts. In addition to City policies regarding construction activities, construction projects would be subject to regulatory measures, including but not limited to SCAQMD rules pertaining to fugitive dust (Rules 403, 404, and 405), visibility of emissions (Rule 401), nuisance activities (Rule 402), and limiting VOC content in both asphalt and architectural coatings (Rules 1108 and 1113). However, given the lack of specifics regarding construction projects at this time, this impact is considered significant and mitigation is required.

Criteria Pollutant Emissions from Project Operations

Buildout of the General Plan Update would facilitate development and redevelopment within specified infill and mixed-use areas within the city that would allow additional residential units and commercial/office space by the year 2030 over existing conditions. Operation of the proposed land uses would result in emissions as a result of mobile and area sources. Motor vehicles travelling throughout the city would result in emissions of CO, PM_{10}, $PM_{2.5}$, and ozone precursors (ROG and NO_X), emitted primarily as vehicle exhaust. Common area source emission sources are natural gas and wood combustion for energy and heating, criteria pollutants from landscaping equipment, and ROGs from personal household product use and painting. For this analysis, mobile source emissions for existing year (2008) and 2030 Project and no-Project conditions were evaluated using the CT-EMFAC model and traffic data from the General Plan Update Traffic Impact Analysis (Iteris 2010). VMT data includes regional through traffic, so VMT data below includes all traffic going through the city, whether or not the trip has a destination in the city. Area source emissions for existing year (2008) and 2030 Project and no-Project conditions were

evaluated using the URBEMIS 2007 (version 9.2.4) model. This analysis assumes that all of the proposed land uses would be built by 2030 at a reasonably foreseeable density. Note that area source emissions for existing land uses were estimated using URBEMIS defaults for natural gas and hearth fuel. However, additional land uses associated with the no- and with-Project scenarios assume that there would be no wood fireplaces in new development, consistent with SCAQMD Rule 445. Therefore, for purposes of analysis, it was assumed that all new fireplaces would be heated by natural gas. Table 4.2-5 summarizes the results of the modeling.

As indicted in Table 4.2-4, implementation of the General Plan Update would result in increased daily VMT approximately 33% over existing conditions but would result in a net decrease in exhaust emissions of CO, ROG, NO_X, and PM_{10} and $PM_{2.5}$. In general, vehicular emission rates are anticipated to fall in future years due to continuing improvements in engine technology and the phasing out of older, higher-emitting vehicles. These decreases are sufficient to offset the increases in VMT seen between existing and 2030 Project conditions.

However, Table 4.2-5 shows an exceedance of SCAQMD mass emission thresholds for PM_{10} and $PM_{2.5,}$ primarily due to paved road dust. Paved road dust increases linearly with VMT, regardless of the analysis year, as road dust emissions are directly related to VMT. The road dust emissions shown in Table 4.2-5 are uncontrolled and do not take into account the effectiveness of street sweeping activities within the city. The City provides street sweeping to all residential streets once every 2 weeks and to Foothill Boulevard daily during the week (City 2010). Street sweeping reasonably results in emissions of road dust below the emissions shown in Table 4.2-5. For example, according to SCAQMD,

PM_{10}-efficient street sweepers can reduce road dust emissions by 79% on the day of street sweeping (SCAQMD 1997). As such, given the regularity of street sweeping activities, emissions from paved road dust are likely less than the emissions shown above. Given the likely effectiveness of street sweeping, this impact is considered less than significant.

In addition, and for context, the Project would result in an approximately 1% increase in daily VMT when compared to 2030 No Project conditions, but the resulting increase in ROG, NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$ emissions would be less than SCAQMD emission thresholds.

As shown under Threshold AQ-1, the General Plan Update Air Quality, Land Use, and Circulation Elements contain goals, objectives, and policies aimed at reducing VMT by promoting sustainable, mixed-use, and walkable development and alternative modes of transportation. Given the nature of the policies, it is likely that these policies would reduce trips and VMT beyond what is shown in the emissions modeling.

Table 4.2-5. Criteria Pollutant Emissions from the Existing, No General Plan Update, and With General Plan Update Scenarios (pounds per day)

Scenario	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Existing (2008)						
Area Source[1]	1,576	175	3,273	9	501	482
Mobile Sources -Exhaust	478	2,135	7,233	9	71	66
Mobile Sources-Road Dust[2]	-	-	-	-	611	279
Total	**2,054**	**2,310**	**10,506**	**18**	**1,183**	**827**
2030 No Project						
Area Source[1]	1,600	188	3,281	9	501	482
Mobile Sources -Exhaust	167	570	2,297	12	55	51
Mobile Sources-Road Dust[2]	-	-	-	-	801	366
Total	**1,767**	**758**	**5,577**	**21**	**1,357**	**899**
2030 With General Plan Update						
Area Source[1]	1,628	198	3,291	9	501	482
Mobile Sources-Exhaust	168	576	2,318	12	55	51
Mobile Sources-Road Dust[2]	-	-	-	-	810	370
Total	**1,796**	**774**	**5,609**	**21**	**1,366**	**903**
Alternative Difference						
2030 General Plan Update Difference from Existing	-258	-1,537	-4,897	3	183	77
2030 General Plan Update Difference from 2030 No Project	29	16	32	0	9	4
SCAQMD Threshold	**55**	**55**	**550**	**150**	**150**	**55**
Significant?	No	No	No	No	**Yes**	**Yes**

[1] Area source emissions represent the maximum of summer and winter daily emissions.

[2] Road dust emissions assume no reductions from street sweeping activities.

Source: Iteris 2010, CT-EMFAC modeling 2010, URBEMIS 2007 modeling 2010, ICF International.

In addition, the General Plan Update includes numerous objectives that will help to reduce emissions from residential and commercial development:

AQ Objective 3.4: Reduce air pollution and GHG emissions through energy conservation

AQ Objective 5.1: Enhance the energy efficiency of City facilities.

> **CNE Objective 1.3**: Promote efficient and sustainable use of energy resources through conservation and demand-reduction activities.

Policies within the General Plan Update would help to reduce emissions of ROG, NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$ from area sources. Additionally, anticipated reductions in vehicle fleet emissions will help to offset the increases in VMT seen between existing and 2030 Project conditions. In the absence of a quantitative analysis, there is insufficient data to determine the magnitude of reductions associated with the General Plan Update's goals, objectives, and policies. However, future development projects consistent with the updated General Plan will be subject to project-level CEQA analysis and SCAQMD rules, regulations, and standard mitigation measures. This subsequent project-level review, combined with the goals and policies described in this section would result in a less-than-significant impact.

Impact Determination

Impact AQ-1: The timing and duration of construction activities associated with the buildout projections over the 20-year life of the General Plan Update cannot be determined; therefore, it is not possible to determine the magnitude of construction emissions from each development project or the magnitude of emissions reductions that would be achieved by these policies. Each future development would undergo development review, including in many cases CEQA review to evaluate project-specific impacts. Given the lack of specifics regarding construction projects, this impact is considered significant and mitigation would be required.

Operation of the proposed land uses would increase motor vehicle traffic and area source emissions in the future. Although motor vehicles will emit fewer emissions in the future, increased VMT would result in road dust emissions that would exceed SCAQMD significance thresholds, if uncontrolled. However, current street sweeping activities reduce this impact to less than significant.

Mitigation Measures

MM AQ-1. Avoidance and Minimization Measures for Construction Emissions. The following shall be incorporated into the General Plan Policy Implementation Program or adopted by City ordinance: If the development review identifies construction emissions that exceed SCAQMD mass emission thresholds, avoidance or minimization measures shall be developed and implemented to ensure that emissions will be reduced below their respective thresholds. In addition to compliance with regulatory measures (including compliance with SCAQMD Rules and Regulations), the City shall require all new construction projects to incorporate all feasible mitigation where appropriate.

Potential measures to reduce fugitive dust emissions include but are not limited to the following:

- Active grading sites will be watered one additional time per day beyond that required by Rule 403.
- Contractors will apply approved nontoxic chemical soil stabilizers to all inactive construction areas or replace groundcover in disturbed areas (previously graded areas inactive for 10 days or more).
- Construction contractors will provide temporary wind fencing around sites being graded or cleared.
- Trucks hauling dirt, sand, or gravel will be covered or will maintain at least 2 feet of freeboard in accordance with Section 23114 of the California Vehicle Code.
- Construction contractors will install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off tires of vehicles and any equipment leaving the construction site.
- Traffic speeds on all unpaved roads will be reduced to 15 mph or less.
- Temporary traffic controls such as a flag person will be provided during all phases of construction to maintain smooth traffic flow.
- Construction activities that affect traffic flow on the arterial system will be conducted during off-peak hours to the extent practicable.
- The grading contractor will suspend all soil disturbance activities when winds exceed 25 mph or when visible dust plumes emanate from a site; disturbed areas will be stabilized if construction is delayed.

In addition, potential measures to reduce emissions of ozone precursors (ROG and NO_x) and particulates (PM_{10} and $PM_{2.5}$) associated with construction equipment exhaust include but are not limited to the following:

- Use construction equipment rated by the EPA as having Tier 3 or higher exhaust emission limits.
- Use diesel oxidation catalysts and catalyzed diesel particulate traps.
- Maintain equipment according to manufacturers' specifications.
- Restrict idling of construction equipment to a maximum of 5 minutes when not in use.
- Install high-pressure fuel injectors on construction equipment vehicles.
- Re-route construction trucks away from congested streets or sensitive receptor areas

Potential measures to reduce emissions of the ozone precursors (ROG) from architectural coatings include but are not limited to the following:

- Use Super-Compliant VOC paints for coating of architectural surfaces whenever possible.

Residual Impacts

Impacts related to construction emissions (Impact AQ-1) would be reduced to less than significant.

Threshold AQ-3: Would the proposed Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment status under an applicable federal or state ambient air quality standard (including the release of emissions that exceed quantitative thresholds for ozone precursors)?

A significant impact would occur if a project's contribution to federal or state nonattainment pollutant would be cumulatively considerable. The SCAB is currently in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, and related projects could exceed an air quality standard or contribute to an existing or projected air quality exceedance. With regard to determining the significance of the proposed projects' contribution to a cumulative impact, the SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions, nor provides methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. Instead, the SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed utilizing the same significance criteria as those for project-specific impacts.

As discussed under Threshold AQ-1, the proposed Project would be consistent with the AQMP, which is intended to bring the SCAB into attainment for all criteria pollutants. As discussed under Threshold AQ-2, construction of the proposed mixed-use areas would result in a potentially significant impact as emissions could exceed the thresholds of significance recommended by the SCAQMD for ROG, NO_X, CO, and PM_{10}, and $PM_{2.5}$. Because the SCAB is in nonattainment for PM_{10} and $PM_{2.5}$ and because both ROG and NO_X are precursors of ozone, for which the SCAB is also in nonattainment, the General Plan Update could make a cumulatively considerable contribution to these emissions.

At this time, construction emissions generated by future development projects consistent with the General Plan Update are not known. Future projects under the updated General Plan would be required to undergo development review, and in many cases CEQA review to determine whether each project results in a

significant air quality impact. Future construction would comply with SCAQMD rules and regulations regarding fugitive dust, asphalt paving, and architectural coatings, among others. However, given the lack of specifics regarding construction projects at this time, project-related construction impacts are considered potentially significant. Since cumulative impacts should be assessed utilizing the same significance criteria as those for project-specific impacts, the cumulative impact of the project construction emissions are also considered potentially significant and unavoidable.

In addition, operation of the proposed mixed-use areas would generate emissions that do not exceed the thresholds of significance recommended by the SCAQMD for ROG, NO_X, CO, and PM_{10} and $PM_{2.5}$. The proposed developments associated with the General Plan Update are high density mixed-uses which by design promote a reduction in average daily trips and trip length while increasing the availability of alternative forms of transportation. As described under Threshold AQ-2 above, the General Plan Update includes numerous goals, objectives, and policies which aim to improve local and regional air quality by promoting walkable communities, alternative forms of transportation and green building, among others. Development per the General Plan Update would be consistent with the AQMP and SCAG's RCPG and Compass Blueprint Growth Visioning and 2% Strategy, which promote infill, mixed-use and walkable communities. As such, cumulative impacts with respect to criteria pollutant emissions from project operations would be less than significant.

Impact Determination

Impact AQ-2. At this time, the timing and duration of construction activities associated with the buildout projections over the 20-year life of the General Plan Update cannot be determined; therefore, it is not possible to determine the magnitude of construction emissions from each development project or the magnitude of emissions reductions that would be achieved by these policies. Future projects associated with the General Plan Update would be required to undergo development review, including in many cases CEQA review to evaluate project-specific impacts. Future construction would comply with SCAQMD rules and regulations regarding fugitive dust, asphalt paving, and architectural coatings, among others. However, given the lack of specifics regarding construction projects at this time, project-related construction impacts are considered potentially significant and mitigation would be required.

Operation of the proposed land uses would increase motor vehicle traffic and area source emissions in the future within the city. Although motor vehicles will emit fewer emissions in the future, increased VMT would result in road dust emissions that would exceed SCAQMD significance thresholds. However, current street sweeping activities reduce this impact to less than significant.

Mitigation Measures

Mitigation measure MM AQ-1, as described under Threshold AQ-2, would mitigate construction emissions to less than significant. Thus, construction emissions would not result in a cumulative impact.

Residual Impacts

Impacts related to cumulative construction emissions (Impact AQ-2) would be reduced to less than significant. Impacts related to operational emissions would be less than significant.

Threshold AQ-4: Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?

Exposure to CO Emissions Associated with Traffic Congestion

Elevated levels of CO concentrations are typically found in areas with significant traffic congestion. CO emission rates from motor vehicles have been declining and are expected to continue to decline in the future because of CARB's Mobile Source Program, which supports replacement of older, higher emitting vehicles with newer vehicles, and increasingly stringent inspection and maintenance programs, as well as other regulatory requirements, such as AB 1493 (Pavley). For this analysis, the effects of CO hot spots were evaluated through CO dispersion modeling using CARB's EMFAC2007 (version 2.3) model, the CALINE4 model, and traffic data provided by the traffic engineers. CO emissions were modeled for Existing (2008) and Future (2030) conditions at congested roadway segments. Only the p.m. peak hour traffic was modeled, because the traffic data indicated that traffic volumes and congestion would be worse in the afternoon than in the morning (Iteris 2010). Segments were analyzed that displayed the worst congestion (V/C ratio) and highest traffic volumes in the Project area. The traffic report analyzed 31 roadway segments within the city and neighboring jurisdictions. Based on the above criteria, those 31 segments were screened, and the following 5 were analyzed:

- Foothill Boulevard east of Verdugo Boulevard,
- Foothill Boulevard east of Gould Boulevard
- Foothill Boulevard east of Hillard Avenue
- Verdugo Boulevard east of Alta Canyada Road
- Verdugo Boulevard between Park and Lanterman

The selected segments were assumed to be representative of the worst traffic conditions within the Project area. Table 4.2-6 presents the results of the CO "hotspot" modeling, and indicates that implementation of General Plan Update would not result in violations of the state or federal 1-hour or 8-hour CO standards. Consequently, the impact of traffic conditions from General Plan Update on ambient CO levels is considered less than significant.

The General Plan Update includes numerous objectives and policies that will act to reduce traffic congestion and therefore reduce CO emissions at affected roadways.

> **AQ Policy 1.2.3**: Promote efficient use of the street system by making improvements, such as coordination of signal time and other intersection improvements, to improve circulation patterns and flow of traffic in the City.

CE Objective 1.2: Establish a Level of Service (LOS) standard by which to evaluate new developments and substantial redevelopments for their potential impacts on and contribution to the City's congestion management concerns.

CE Objective 1.3: Enhance community character by maintaining aesthetically pleasing streets with low traffic volumes.

CE Objective 5.2: Enhance traffic flow along Foothill Boulevard.

Exposure to the Localized Effects of Air Pollution

SCAQMD has developed a set of mass emissions rate look-up tables that can be used to evaluate localized impacts for NO_X, CO, $PM_{10,}$ and $PM_{2.5}$ resulting from construction and operational onsite emissions. Ozone is a pollutant primarily of regional concern so, therefore, the ozone precursor ROG is not addressed for localized impacts, per SCAQMD localized significance thresholds (LSTs). LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the NAAQS or CAAQS at the nearest receptor or residence, taking into account ambient concentrations in each SRA, project site, and distance to the receptor. If onsite emissions from proposed construction or operational activities are below the LST emission levels found in the LST mass rate look-up tables for the project site's SRA, then project emissions are not expected to cause a significant localized air quality impact. As discussed under Thresholds AQ-2 and AQ-3, Project construction would result in emissions that would potentially exceed SCAQMD regional emissions. In addition, given the lack of specific information regarding project construction activities, it is unknown at this point whether they would potentially exceed LSTs. Each future development would undergo development review, including in many cases CEQA review, for project-specific evaluation to evaluate the potential air quality impacts associated with localized construction and operational emissions. Given the lack of specifics regarding construction projects, this impact is considered significant and mitigation would be required.

Table 4.2-6. Carbon Monoxide Modeling Results at Designated Receptor Locations

Segment	Receptor (feet)	Existing (2008) 1-Hour CO[1,2]	Existing (2008) 8-Hour CO[1,3]	Project (2030) 1-Hour CO[1,2]	Project (2030) 8-Hour CO[1,3]
Foothill Boulevard east of Verdugo Boulevard	3	6.3	4.2	5.6	3.7
	25	6.3	4.2	5.6	3.7
	50	6.3	4.2	5.6	3.7
	100	6.3	4.2	5.5	3.7
	250	5.6	3.7	5.3	3.5
	500	5.5	3.7	5.2	3.5
Foothill Boulevard east of Gould Avenue	3	6.3	4.2	5.5	3.7
	25	6.3	4.2	5.5	3.7
	50	6.3	4.2	5.5	3.7
	100	6.2	4.2	5.5	3.7
	250	5.6	3.7	5.3	3.5
Foothill Boulevard east of Hillard Avenue	3	5.4	3.6	5.2	3.5
	25	6.1	4.1	5.5	3.7
	50	6.1	4.1	5.5	3.7
	100	6.1	4.1	5.5	3.7
	250	6.0	4.0	5.4	3.6
	500	5.5	3.7	5.2	3.5
Verdugo Boulevard east of Alta Canyada Road	3	5.4	3.6	5.2	3.5
	25	7.1	4.8	5.6	3.7
	50	7.1	4.8	5.6	3.7
	100	7.1	4.8	5.6	3.7
	250	6.4	4.3	5.5	3.7
	500	5.7	3.8	5.3	3.5
Verdugo Boulevard between Park and Lanterman	3	5.5	3.7	5.2	3.5
	25	5.7	3.8	5.3	3.5
	50	5.7	3.8	5.3	3.5
	100	5.7	3.8	5.3	3.5
	250	5.7	3.8	5.3	3.5
	500	5.4	3.6	5.2	3.5

[1] Background concentrations of 5.2 and 3.46 ppm were added to the modeling 1- and 8-hour results, respectively.

[2] The federal and state 1-hour standards are 35 and 20 ppm, respectively.

[3] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Source: ICF International, EMFAC and CALINE4 modeling, 2010.

Proximity to Freeway Emissions

TACs are a category of air pollutants that have been shown to have an impact on human health but are not classified as criteria pollutants. Air toxics are generated by a number of sources, including: stationary sources, such as dry cleaners, gas stations, auto body shops, and combustion sources; mobile sources, such as diesel trucks, ships, and trains; and area sources, such as farms, landfills, and construction sites. Ten TACs have been identified through ambient air quality data as posing the greatest health risks in California. Adverse health effects of TACs can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

Emissions from mobile sources—including cars and trucks as well as ships, trains, and planes—account for about 90% of the cancer risk in the SCAB. Diesel exhaust alone is responsible for about 70% of the total cancer risk from air pollution (SCAQMD 2005). Therefore, health risk studies associated with freeway proximity are primarily concerned with DPM, as it comprises most of the associated health risk. Cancer health risks associated with exposures to diesel exhaust typically are associated with chronic exposure, in which a 70-year exposure period often is assumed. Although elevated cancer rates can result from exposure periods of less than 70 years, acute exposure (i.e., exposure periods of 2 to 3 years) is not anticipated to result in an increased health risk because typically exposure concentrations are too low.

In addition to the length of the exposure period, the locations of potential emissions sources and exposed sensitive receptors are major factors in determining the health risk of diesel exhaust. In general, diesel exhaust has a greater potential to harm people when the source of emissions is closer to sensitive populations (CARB 2005). However, even though sensitive receptors are at an increased risk to diesel exhaust, exposure can adversely affect all members of the population.

CARB recommends avoiding siting new sensitive land uses within 500 feet of a freeway or urban roads with 100,000 vehicles per day. In general, concentrations of pollutant emissions are typically higher near transportation corridors and decline as distance increases from the source. The distance from the roadway and truck traffic densities are key factors affecting the strength of the association with adverse health effects (CARB 2005). The association of traffic-related emissions with adverse health effects has been noted within 1,000 feet of transportation corridors and is strongest within 300 feet (Zhu 2002). There is growing evidence that proximity to heavily traveled roadways increases the potential for adverse health effects such as child lung function, asthma, and increased medical visits (Brunekreef 1997, Lin 2000, Venn 2001, Kim 2004, and English 1999).

Generally, cancer risk will drop off with distance from a ground level pollution source, such as a freeway. Freeways and busy traffic corridors are defined as having traffic volume of over 100,000 vehicles per day in urban areas and 50,000 vehicles per day in rural areas (Education Code Section 17312). CARB studies show that air pollution levels can be significantly higher within 500 feet (150 meters) of freeways or busy traffic corridors and then diminish rapidly (CARB 2005). As shown in Table 4.2-7, total cancer risk from DPM emissions and total cancer risk in rural and urban areas decreases rapidly within the first 328–492 feet (100–150meters) from the edge of a roadway. Estimated cancer risk from DPM along rural and urban roadways is reduced approximately 68% at a distance of 492 feet (150 meters) from the edge of the roadway.

Table 4.2-7. Cancer Risks from Diesel Particulate Matter (DPM) at the Edge of Roadways in Rural and Urban Areas.

Distance from Edge of Roadway (meters)	DPM Cancer Risk (in 1 million)		Total Cancer Risk (in 1 million)	
	Rural	Urban	Rural	Urban
20	475	890	589	1,104
150	151	277	187	343
500	86	159	107	197

Source: SCAQMD 2005.

Both 1-210 and SR 2 are major thoroughfares for both motor vehicle and heavy duty truck traffic. Traffic on I-210 through the city is an estimated 103,000 to 175,000 vehicles per day, while SR 2 is an estimated 115,000 vehicles per day south of the interchange with I-210 (Caltrans 2008). New development constructed as part of the General Plan Update within proximity of these freeways has the potential to expose sensitive receptors to substantial pollutant concentrations. The proposed mixed-use areas associated with the General Plan Update would be located along Foothill Boulevard. Three of the four proposed mixed-use areas would be approximately 500 meters from the edge of I-210. However, one would be directly adjacent to the SR-2/I-210 Interchange, at the southern part of the city. If sensitive receptors, including residences, are placed at this site or any other site within proximity of the freeways, there could be a potentially significant health risk from exposure to substantial pollutant concentrations. This impact would be potentially significant. Future development within the city consistent with the updated General Plan would undergo development review, including in many cases CEQA review to evaluate project-specific impacts. During this environmental review, a project would be required to perform an analysis of the localized air quality impacts from placement of new sensitive land uses within vicinity of the freeways.

CARB recommends that sensitive receptors not be placed within 500 feet of freeways, and requires mitigation where separation is not feasible. The General Plan Update includes policies to create a buffer between sensitive receptors and existing pollution sources and adopt mitigation when an adequate buffer cannot be guaranteed, as needed.

> **AQ Policy 1.1.7**: Discourage the location of new or expansion of existing sensitive receptor land uses adjacent to I-210.
>
> **AQ Policy 1.1.8**: Encourage site plan designs to provide the appropriate setbacks from I-210 and SR-2.
>
> **AQ Policy 6.1.1**: Continue to oppose the extension of the I-710 freeway due to the increase in automobile and truck traffic on the I-210 freeway that would result from the proposed extension, and the negative health risks it poses for the La Cañada Flintridge and surrounding communities due to higher vehicular pollutant levels.
>
> **AQ Policy 6.1.2:** Continue to monitor air quality impacts on the health of the City from vehicular emissions associated with freeway traffic

In addition, policies to reduce traffic trips and congestion, including AQ Policy 6.1.4, and those described under Thresholds AQ-1 and AQ-2, would reduce traffic congestion and promote alternative forms of transportation and carpooling, thus helping to minimize high levels of pollutants associated with increased vehicle traffic and congestion. Taken together, these policies would help reduce exposure to diesel exhaust and its associated health risk.

The City has taken a proactive approach to addressing the health risks associated with siting sensitive receptors near existing pollution sources. The establishment of buffer zones that decrease the likelihood of exposure and the implementation of air quality mitigation measures that directly reduce pollutant exposure are typically stipulated as sufficient mitigation to reduce health risks from TACs. It is unknown if the General Plan Update policies would be sufficient to reduce the health risk associated with siting residences near the existing freeway. Future development projects consistent with the General Plan Update would be required to undergo development review, and in many cases CEQA review, to determine whether each project results in a significant air quality impact.

Impact Determination

As shown above in Table 4.2-6, CO levels would not exceed SCAQMD thresholds under the buildout of the General Plan Update. The General Plan Update would increase VMT and congestion on roadways within the city. Vehicles excessively idling at congestion points or traveling at slow speeds are less efficient and create possible air pollution hotspots. Buildout of the General

Plan Update would increase roadway traffic, but this increase would be partially offset by cleaner burning vehicles. Accordingly, impacts would be less than significant.

Impact AQ-3: Localized emissions of criteria pollutants associated with construction and operation of future development associated with the General Plan Update would potentially exceed LSTs. Future development would undergo development review, including in many cases CEQA review, and would be required to comply with SCAQMD rules and regulations as well as General Plan Update goals, objectives, and policies. This impact would be significant. Mitigation measure MM AQ-1 under Threshold AQ-2 would help to reduce this impact.

Impact AQ-4: New development constructed as part of the General Plan Update within proximity of SR 78 has the potential to expose sensitive receptors to substantial pollutant concentrations. Polices within the General Plan Update would reduce the health risk to a level below significance, but it is unknown if these polices would sufficiently reduce the health risks. Future projects will be subject to development review, including in many cases CEQA review. If future projects are determined to potentially pose a significant health risk to sensitive receptors, then mitigation measure MM AQ-2 would reduce this impact's significance.

Mitigation Measures

Implement mitigation measure MM AQ-1 for Impact AQ-3.

For Impact AQ-4, implement:

MM AQ-2: Building Design Measures. The following shall be incorporated into the General Plan Policy Implementation Program or adopted by City ordinance: If the development review identifies potential health risk associated with siting residences near existing pollutant sources, avoidance or minimization measures shall be developed that ensure that the health risk be reduced to a level below SCAQMD thresholds for health risk. Measures shall be specific to each project and be determined during project design and/or development review. Potential building design measures to reduce the health risk associated with development within proximity (i.e., within 500 feet) of busy roadways (e.g. I-210 and SR-2) include, but are not limited to, the following:

- plant vegetation, preferably tall and finely-needled trees, between receptor and roadway;
- construct wall barriers between receptor and roadway that reduce the line of sight between the potential receptors and pollutant sources ;
- install only fixed windows;

- install a central heating, ventilation, and air conditioning (HVAC) system that includes high efficiency particulate air (HEPA) filters (MERV-13 or higher), and develop a maintenance plan to ensure the filtering system is properly maintained; and
- locate air intake systems for HVAC systems as far away from the existing air pollution sources as possible.

Residual Impacts

Implementation of MM AQ-1 would reduce the localized air quality impacts associated with Impact AQ-3 to less than significant. Therefore, Impact AQ-3 would be less than significant with mitigation.

Implementation of MM AQ-2 would help reduce the potential health risks associated with Impact AQ-4 to less than significant. Therefore, Impact AQ-4 would be less than significant with mitigation.

Threshold AQ-5: Would the proposed Project create objectionable odors affecting a substantial number of people?

According to the CARB and SCAQMD, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993, CARB 2005). None of these land uses exist in the city. Therefore, new development would not be placed near existing land uses that generate odors. In addition, the land uses associated with the proposed General Plan Update do not include any uses identified by the SCAQMD as being associated with odors and therefore would not produce objectionable odors.

Potential odor emitters during construction activities include diesel exhaust, asphalt paving, and the use of architectural coatings and solvents. Construction-related operations near existing receptors would be temporary in nature and construction activities would not be likely to result in nuisance odors that would violate SCAQMD Rule 402. Given mandatory compliance with SCAQMD rules, no construction activities or materials are proposed that would create a significant level of objectionable odors.

Impact Determination

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.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts related to Threshold AQ-5 would be less-than significant.

Cumulative Impacts

The geographic scope for the cumulative air quality analysis comprises the SCAB. SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and state Clean Air Acts. As previously discussed, the proposed General Plan Update would be consistent with the AQMP, which is intended to bring the Basin into attainment for all criteria pollutants.

Pollutant concentrations in the SCAB vary with location, season, and time of day. Ozone 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 SCAB and adjacent desert. Over the past 30 years, substantial progress has been made in reducing air pollution levels in Southern California.

The SCAQMD has divided the SCAB into air monitoring areas and maintains a network of air quality monitoring stations located throughout the SCAB. The Project site is located in West San Gabriel Valley Monitoring Area (i.e., SRA 8). The nearest monitoring station to this area within SRA 8 is the Pasadena Monitoring Station (ARB 70088), which is located within the City of Pasadena. Monitoring data (Table 4.2-1) show the following pollutant trends: state 1-hour O_3 standards were exceeded an average of 19 times per year during the 5-year period. The national and state 8-hour O_3 standards were exceeded an average of 13 and 30 times per year during the 5-year reporting period, respectively. CO and NO_2 concentrations are low, and recorded no exceedances during the 5-year reporting period. Particulate (PM_{10} and $PM_{2.5}$) concentrations are largely affected by meteorology and show some variability during the 5-year reporting period. The state 24-hour PM_{10} standard as recorded at Burbank was exceeded 6 times in 2004, 5 times in 2005, 10 times in 2006, 5 times in 2007, and 5 times in 2008 while the national standard was not exceeded during the 5-year reporting period. The state 24-hour PM_{10} standard as recorded at Azusa was exceeded 7 times in 2004, 10 times in 2005, 7 times in 2006, 11 times in 2007, and 12 times in 2008. The national PM_{10} standard was exceeded once in 2007. The national $PM_{2.5}$ standard was exceeded 7 times in 2004, 5 times in 2005, once in 2006, 3 times in 2007, and twice in 2008. Therefore, past and present projects have and continue to contribute to a cumulatively significant impact.

At present, most of the area is developed, with a limited amount of developable land remaining. Redevelopment could potentially increase construction emissions, area source emissions, and mobile emissions from an increase in traffic volumes on roadways in surrounding areas.

With respect to the proposed Project and associated construction and operational emissions, as well as the cumulative SCAB–wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP pursuant to CAA mandates. As such, development projects consistent with the General Plan Update would comply with SCAQMD rules, including Rule 403 among others, and would implement all feasible mitigation measures identified in this draft PEIR. In addition, the proposed Project would comply with adopted AQMP emissions control measures. Per SCAQMD rules and mandates as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on construction projects SCAB-wide, which would include each of the related projects mentioned above.

As discussed under Threshold 1, the General Plan Update would be consistent with the AQMP, which is designed to bring the SCAB into attainment for the CAAQS and NAAQS. In addition, as discussed under Thresholds AQ-2 and AQ-3, mitigated construction and unmitigated operational emissions would be less than applicable SCAQMD daily significance thresholds, which are designed to assist the region in attaining the applicable CAAQS and NAAQS. As such, when combined with past, present, and foreseeable future development projects, cumulative impacts on air quality during proposed Project construction and operation would be less than considerable (i.e., less than significant).

Impact Determination

Impact C-AQ-1: At this time, the time and duration of construction activities associated with the buildout projections over the 20-year life of the General Plan Update cannot be determined; therefore, it is not possible to determine the magnitude of construction emissions from each development project or the magnitude of emissions reductions that would be achieved by these policies. Future projects associated with the General Plan Update would be required to undergo development review, including in many cases CEQA review to evaluate project-specific impacts. Future construction would comply with SCAQMD rules and regulations regarding fugitive dust, asphalt paving, and architectural coatings, among others. However, given the lack of specifics regarding construction projects at this time, project-related construction impacts are considered potentially significant and mitigation would be required.

Operation of the proposed land uses would increase motor vehicle traffic and area source emissions in the future within the city. While motor vehicles will

emit fewer emissions in the future, increased VMT would result in road dust emissions that would exceed SCAQMD significance thresholds. However, current street sweeping activities reduce this impact to less than significant.

Mitigation Measures

Implementation of mitigation measures MM AQ-1 and MM AQ-2 would reduce the impacts from construction activities as well as from exposure to freeway emissions.

Residual Impacts

Specific development projects associated with the General Plan Update would require development review, including in many cases CEQA review, in analyzing project-specific impacts. However, with implementation of MM AQ-1 and MM AQ-2, the Project's incremental contribution to cumulative impacts on air quality from past, present, and reasonably foreseeable projects would be less than significant.

Significant and Unavoidable Adverse Impacts

Implementation of the proposed Project would not result in any significant and unavoidable adverse impacts related to air quality.