4.3 AIR QUALITY

This section includes a summary of applicable regulations, a description of existing air quality conditions in the Planning Area and an analysis of potential air quality impacts of the Draft General Plan.

4.3.1 REGULATORY SETTING

Air quality in the planning area is managed by U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and the South Coast Air Quality Management District (SCAQMD). Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent than federal regulations.

CRITERIA AIR POLLUTANTS

Air quality regulations focus on several air pollutants—ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health, and extensive health effects criteria documents are available, these pollutants are commonly referred to as "criteria air pollutants."

Federal Plans, Policies, Regulations, and Laws

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990.

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 4.3-1, EPA has established primary and secondary NAAQS for ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards are designed to protect public health, while the secondary standards are designed to protect public welfare.

The CAA also required each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and to determine whether implementing the SIPs will achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated timeframe, sanctions may be applied to transportation funding and stationary sources of air pollution in the air basin.

State Plans, Policies, Regulations, and Laws

ARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required ARB to establish California ambient air quality standards (CAAQS) (Table 3.2-2). ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally based on interpretation of health-effects studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

Table 4.3-1
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[1]		CAAQS[2]
		Primary[3]	Secondary[4]	Concentration[5]
Ozone (O_3)[6]	1-Hour	-	Same as Primary Standard	**0.09 ppm (180 µg/m^3)**
	8-Hour	**0.075 ppm (147 µg/m^3)**		0.070 ppm (137 µg/m^3)[7]
Carbon Monoxide (CO)	8-Hour	**9 ppm (10 mg/m^3)**	None	9.0 ppm (10 mg/m^3)
	1-Hour	**35 ppm (40 mg/m^3)**		20 ppm (23 mg/m^3)
	8-Hour (Lake Tahoe)	-	-	6 ppm (7 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 µg/m^3)	Same as Primary Standard	0.030 ppm (57 µg/m^3)[8]
	1-Hour	0.100 ppm	0.053 ppm (100 µg/m^3)	0.18 ppm (339 µg/m^3)[8]
Sulfur Dioxide (SO_2)	Annual Average	0.030 ppm (80 µg/m^3)	-	-
	24-Hour	0.14 ppm (365 µg/m^3)	-	0.04 ppm (105 µg/m^3)
	3-Hour	-	0.5 ppm (1,300 µg/m^3)	-
	1-Hour	-	-	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM_{10})[9]	24-Hour	**150 µg/m^3**	Same as Primary Standard	**50 µg/m^3**
	Annual Arithmetic Mean	**Revoked**		**20 µg/m^3 note 9**
Fine Particulate Matter ($PM_{2.5}$)[10]	24-Hour	35 µg/m^3	Same as Primary Standard	-
	Annual Arithmetic Mean	**15 µg/m^3**		**12 µg/m^3**
Lead (Pb)	30-Day Average	-	-	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	Same as Primary Standard	-
	Rolling 3-Month Average[10]	0.15 µg/m^3	Same as Primary Standard	-
Hydrogen Sulfide (H_2S)	1-Hour	No Federal Standards		0.03 ppm (42 µg/m^3)
Sulfates (SO_4)	24-Hour			25 µg/m^3
Visibility Reducing Particles	8-Hour (10 a.m. to 6 p.m., Pacific Standard Time)			Extinction coefficient of 0.23 per km-visibility of 10 miles or more (0.07/30 miles for Lake Tahoe) due to particles when the relative humidity is less than 70%.
Vinyl Chloride[7]	24-Hour			0.01 ppm (26 µg/m^3)

Notes: Standards for which the South Coast Air Basin is in nonattainment status are presented in boldface and shaded.

[1] NAAQS (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact EPA for further clarification and current federal policies.

[2] California Ambient Air Quality Standards for O_3, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM_{10}, $PM_{2.5}$ and visibility reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

[3] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[4] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[5] Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

[6] On June 15, 2005, the 1-hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (those areas do not yet have an effective date for their 8-hour designations). Additional information on federal ozone standards is available at http://www.epa.gov/oar/oaqps/greenbk/index.html.

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

[8] The nitrogen dioxide ambient air quality standard was amended to lower the 1-hr standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes became effective March 20, 2008.

[9] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM_{10} standard on December 17, 2006.

[10] Effective December 17, 2006, EPA lowered the $PM_{2.5}$ 24-hour standard from 65 µg/m^3 to 35 µg/m^3.

ppm = parts per million; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; km = kilometers

Source: ARB 2010a

The CCAA requires all local air districts in the state to endeavor to achieve and maintain the CAAQS by the earliest practical date. The act directs local air districts to focus particular attention on reducing transportation and areawide emissions, and delegates authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing compliance by local air districts with California and federal laws; approving local air quality plans, submitting SIPs to EPA; monitoring air quality; determining and updating area designations and maps; and setting emission standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Regional and Local Plans, Policies, Regulations, and Ordinances

SCAQMD attains and maintains air quality conditions in Riverside County through air quality planning, regulation, enforcement, technical innovation, and promoting understanding of air quality issues. SCAQMD also inspects stationary sources, responds to complaints, monitors ambient air quality and meteorological conditions, and implements other CAA, CAAA, and CCAA programs and regulations. SCAQMD's clean-air strategy involves the preparation of plans and programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources.

Air Quality Management Plan

SCAQMD and the Southern California Association of Governments (SCAG) are responsible for preparing the air quality management plan (AQMP) to address federal and state CAA requirements. The AQMP establishes goals, policies, and programs to improve air quality in the South Coast Air Basin (Basin). Two versions (2003 and 2007) of the AQMP are in different stages of approval.

The 2003 AQMP is an update to the 1997 AQMP. The 2003 AQMP employs up-to-date science and analytical tools and incorporates a comprehensive strategy to control pollution from stationary sources, on-road and off-road mobile sources, and area sources. The 2003 AQMP proposes policies and measures to achieve federal and state standards for healthy air quality in the Basin. The 2003 AQMP updates the federal attainment demonstration for ozone and PM_{10}; replaces the 1997 federal attainment demonstration for CO, and provides a basis for a CO maintenance plan; and updates the maintenance plan for the federal NO_2 standard that the Basin has met since 1992. The 2003 AQMP was adopted by SCAQMD and approved by ARB with modifications (SCAQMD 2005a). ARB submitted the South Coast SIP to the EPA on January 9, 2004; however, this SIP has not been approved, and the 1997 AQMP with 1999 amendments remains the federally approved AQMP.

The purpose of the 2007 AQMP is to set forth a comprehensive program that will lead the region into compliance with federal 8-hour ozone and $PM_{2.5}$ standards. The 2007 AQMP was adopted by SCAQMD (SCAQMD 2007). On November 28, 2007, ARB submitted a SIP revision to EPA for ozone, $PM_{2.5}$, CO, and NO_2 in the Basin; this revision is identified as the 2007 South Coast SIP. The 2007 AQMP/2007 South Coast SIP demonstrates attainment of the federal $PM_{2.5}$ standard in the Basin by 2014, and attainment of the federal 8-hour ozone standard by 2023. The SIP also includes a request of reclassification of the ozone attainment designation from "severe" to "extreme" (ARB 2007).

$PM_{2.5}$ in the Basin originates primarily through secondary formation. As a result, the draft $PM_{2.5}$ control strategy seeks to reduce precursor emissions of sulfur oxides (SOX), directly emitted $PM_{2.5}$, NO_X, and VOC instead of fugitive dust (SCAQMD 2007). Based on SCAQMD's modeling sensitivity analysis, SOX reductions provide the greatest benefits to reducing ambient $PM_{2.5}$ concentrations.

The Basin has not exceeded the federal CO standard since 2002. In 2005, SCAQMD adopted a CO Redesignation Request and Maintenance Plan that provides for maintenance of the federal CO air quality standard until at least 2015 and commits SCAQMD to revising the Redesignation Request and Maintenance Plan in 2013 to ensure maintenance through 2025 (SCAQMD 2005b). SCAQMD also adopted a CO emissions budget for 2005-2015. In 2006, ARB transmitted the Redesignation Request and Maintenance Plan (including the CO budgets) to EPA for

approval. In 2007, EPA redesignated the Basin as attainment for the federal CO standard and approved the maintenance plan amendment to the SIP (Federal Register 2007).

SCAQMD Rules and Regulations

All projects are subject to SCAQMD rules and regulations in effect at the time of construction. Specific rules applicable to future land uses consistent with the Draft General Plan may include, but are not limited to the following:

Rule 401 – Visible Emissions. A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

Rule 402 – Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions. Rule 403 applies to any activity or man-made condition capable of generating fugitive dust.

Rule 1113 – Architectural Coatings. No person shall apply or solicit the application of any architectural coating within the SCAQMD, with VOC content in excess of the values specified in a table incorporated in the Rule.

TOXIC AIR CONTAMINANTS

Air quality regulations also focus on toxic air contaminants (TACs), referred to as hazardous air pollutants (HAPs) by federal agencies. In general, for those TACs that may cause cancer, there is no safe level of exposure. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and ambient standards established (Table 4.3-1). ARB regulates TACs through statutes, regulations, and guidance that generally require the use of the maximum or best available control technology for toxics (MACT and BACT) to limit emissions, and buffer areas to prevent siting sensitive receptors near sources of TACs.

Federal Programs for Hazardous Air Pollutants

Title III of the CAAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring MACT. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), EPA is required to promulgate health risk–based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to

limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

State and Local Programs for Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807 [Chapter 1047, Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act (AB 2588 [Chapter 1252, Statutes of 1987]).

AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. To date, ARB has identified more than 21 TACs and adopted EPA's list of HAPs as TACs. Most recently, diesel PM was added to the ARB list of TACs. Once a TAC is identified, ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit a particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Air Toxics Hot Spots Information and Assessment Act requires existing facilities emitting toxic substances above a specified level to prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

According to the *2009 California Almanac of Emissions and Air Quality* (ARB 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being diesel PM. Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal-combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, ARB has made preliminary concentration estimates based on a PM exposure method. This method uses the ARB emissions inventory PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies on chemical speciation to estimate concentrations of diesel PM. Of the TACs for which data are available in California, diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risks.

ARB published the *Air Quality and Land Use Handbook: A Community Health Perspective*, which provides guidance concerning land use compatibility with TAC sources (ARB 2005). Although it is not a law or adopted policy, the handbook offers advisory recommendations for the siting of sensitive receptors near that generate TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities, to help keep children and other sensitive populations out of harm's way.

At the local level, SCAQMD may adopt and enforce ARB control measures. Under SCAQMD Regulation XIV (Toxics and Other Non-Criteria Pollutants), and in particular Rule 1401 (New Source Review), all sources that possess the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. SCAQMD limits emissions and public exposure to TACs through a number of programs. SCAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors

ODORS

SCAQMD has identified some common types of facilities that have been known to produce odors: agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting operations, refineries, landfills, rendering plants, dairies, rail yards, and fiberglass molding operations. This list is meant to act as general guidance. Offensive odors rarely cause physical harm and no odor control requirements are provided in federal or state air quality regulations. SCAQMD implements Rule 402 (Nuisance) and Rule 410 (Odors from Transfer Stations and Material Recovery Facilities). Enforcement actions related to odors are based on citizen complaints to local governments and SCAQMD.

Two situations increase the potential for odor problems. The first occurs when a new odor source is located near existing sensitive receptors. The second occurs when new sensitive receptors are developed near existing odor sources. For new odor sources, SCAQMD recommends operational changes, add-on controls, process changes, equipment relocation, or changes in stack heights where feasible to address odor complaints. For projects locating near an existing odor source, and for odor sources locating near existing sensitive receptors, SCAQMD recommends that the determination of potential conflict be based on variables such as wind speed, wind direction, and the distance and frequency of odor complaints from the public that have occurred near the facility (SCAQMD 1993).

4.3.2 ENVIRONMENTAL SETTING

Ambient concentrations of air pollutant emissions are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Existing air quality conditions in the planning area are determined by such natural factors as climate, topography, and meteorology, in addition to emissions released by existing sources, as discussed below.

CLIMATE, TOPOGRAPHY, AND METEOROLOGY

The planning area is located in the Basin, which includes the western portion of Riverside County, southwestern portion of San Bernardino County, the majority of Los Angeles County, and all of Orange County. The climate of the area is characterized by warm summers, mild winters, infrequent rainfall, moderate afternoon breezes, and generally fair weather. The clouds and the fog that form along the coastlines of Los Angeles County and Orange County rarely extend as far inland as the San Jacinto Valley, and if they do, they usually burn off quickly after sunrise. The most important weather pattern is associated with the warm season airflow across populated areas of the Los Angeles Basin that brings polluted air into western Riverside County late in the afternoon. This transport pattern creates unhealthful air quality when the fringes of this "urban smog cloud" extend to the planning area during the summer months. Temperatures in Hemet average 65ºF year-round, with warm summer afternoons (95+ degrees) and often cool winter mornings (35 degrees). Rainfall in the planning area varies considerably in both time and space. Almost all of the annual rainfall comes from the fringes of mid-latitude storms between late November and early April, with summers often completely dry. Rainfall averages 12.5 inches per year, but varies markedly from one year to the next.

Winds are an important factor in characterizing the local air quality environment because they both determine the regional pattern of air pollution transport and control the local rate of pollution dispersion. Daytime winds are from the NW at 6-8 mph as air moves regionally onshore from the cool Pacific Ocean to the warm Mojave Desert. These winds allow for good local mixing, but they may bring air pollutants from urbanized coastal areas into interior valleys. Strong thermal convection in the summer ultimately dilutes the effects from urbanized development, but the planning area is too close to Los Angeles emissions sources to completely escape the regional air quality degradation.

Light nocturnal winds result mainly from drainage of cool air off mountains east and south of the San Jacinto Valley toward the valley floor. Such winds are characterized by stagnation and poor local mixing. However, the

origin of these winds in unpopulated mountain areas does not generally impair air quality. In addition to winds that control the rate and direction of pollution dispersal, Southern California has strong temperature inversions that limit the vertical depth through which pollution can be mixed. In summer, coastal areas are characterized by a sharp discontinuity between the cool marine air at the surface and the warm, sinking air aloft within the high pressure cell over the ocean to the west. This marine/subsidence inversion allows for good local mixing, but acts like a giant lid over the basin.

A second inversion type forms on clear winter nights when cold air off the mountains sinks to the valley floor while the air aloft over the valley remains warm. This forms radiation inversions. These inversions, in conjunction with calm winds, trap pollutants such as automobile exhaust near their source. While these inversions may lead to air pollution "hot spots" in heavily developed coastal areas of the basin, the lower traffic volumes in inland valleys do not typically result in these pollution hot spots. Thus, while summers are periods of hazy visibility and occasionally unhealthful air, winter is often a period of greater visibility and better air quality in the planning area.

EXISTING AIR QUALITY—CRITERIA AIR POLLUTANTS

Concentrations of criteria air pollutant emissions are used as indicators of ambient air quality conditions. A brief description of each criteria air pollutant (source types, health effects, and future trends) is provided below, along with the most current attainment area designations and monitoring data for the planning area.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not emitted directly into the air, but is formed through complex chemical reactions between precursor emissions of ROG and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from fuel combustion.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 parts per million (ppm) for 1 or 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes, and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia; such increased permeability leads to an increase in the respiratory system’s responsiveness to challenges and the interference or inhibition of the immune system’s ability to defend against infection (Godish 2004).

Emissions of ozone precursors ROG and NO_X have decreased over the past several years as a result of more stringent motor vehicle standards and cleaner burning fuels. Preliminary 2008 air quality data indicate that the

Basin experienced 140, 120, and 99 days above the state 8-hour standard, the national 8-hour standard, and the state 1-hour standard, respectively. This may be attributable to changes in the mix and reactivity of precursor emissions in the Basin. Continuing implementation of aggressive emission control measures in the AQMP will ensure continued progress throughout the Basin (ARB 2009).

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 microns or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and natural windblown dust; and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2009a). $PM_{2.5}$ includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 microns or less.

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with adsorption of metals, polycyclic aromatic hydrocarbons, and other toxic substances onto fine particulate matter (which is referred to as the "piggybacking effect"), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2009a).

$PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health. Based on reviews of the latest scientific literature, ARB has concluded that $PM_{2.5}$ is more dangerous than previously estimated. New research suggests that even small increases in exposure increase the potential for earlier deaths. Every increase of 10 micrograms per cubic meter ($\mu g/m^3$) of $PM_{2.5}$ creates a 10% increase in risk of premature death to a person exposed. State ambient air quality standards are periodically reviewed to assess their adequacy in protecting public health, and this new information will be considered when the PM standards are next reviewed. Nonetheless, the new information indicates the need to continue to reduce exposure to $PM_{2.5}$ (ARB 2009).

Direct emissions of PM_{10} have been increasing in the Basin since 1975. A decrease in emissions would have been observed, if not for growth in emissions from areawide sources, primarily fugitive dust from roads, dust from construction and demolition operations, and other sources. The increase in activity of these areawide sources reflects the increased growth and vehicle miles traveled (VMT) in the Basin.

Although PM_{10} concentrations in the Basin have somewhat stabilized in the last decade, ambient concentrations still exceed the state annual and 24-hour PM_{10} standards (209 days above the 24-hour state standard, and 13 days above the 24-hour national standard in 2007). While emission controls implemented for ozone are also expected to reduce PM_{10} concentrations, additional controls will be needed to reach attainment (ARB 2009).

Concentrations of $PM_{2.5}$ have decreased in the Basin in the past decade. The Basin is currently designated as nonattainment for the state and national $PM_{2.5}$ standards. Measures adopted as part of the upcoming $PM_{2.5}$ State Implementation Plan (SIP), as well as programs to reduce ozone and diesel particulate matter (diesel PM), will help in reducing public exposure to $PM_{2.5}$ (ARB 2009).

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete combustion of carbon in fuels, primarily from mobile (transportation) sources, which composed 80% of the statewide CO emissions in 2008. The remaining 20% of CO is emitted primarily from wood-burning stoves, managed burning, and incineration (ARB 2009).

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2009).

The highest CO concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to ozone, which tends to be a regional pollutant, CO tends to cause localized problems.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile, and stationary reciprocating internal-combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2009). The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation, during or shortly after exposure. After a period of approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment, with such symptoms as chronic bronchitis and decreased lung functions. (OEHHA 2008)

Sulfur Dioxide

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis. (OEHHA 2008)

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. Metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Lead emissions and ambient lead concentrations have decreased dramatically in California over the past 25 years. The rapid decrease in lead concentrations can be attributed primarily to phasing out the lead in gasoline. This phase-out began during the 1970s, and subsequent ARB regulations have eliminated virtually all lead from gasoline now sold in California. All areas of the state are currently designated as attainment areas for the state lead standard (EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose “hot spot” problems in some areas. As a result, ARB has identified lead as a TAC.

Monitoring-Station Data and Attainment-Area Designations

Concentrations of criteria air pollutants are measured at several monitoring stations in the Basin. The nearest monitoring stations to Hemet are the Perris monitoring station and the Lake Elsinore monitoring station. Recent ozone, CO, PM_{10}, and $PM_{2.5}$ data for these stations are presented in Table 4.3-2.

Both ARB and EPA use this type of monitoring data to designate attainment status for criteria air pollutants. The purpose of these designations is to identify areas with air quality problems and initiate planning efforts to improve air quality. The three basic designation categories are "nonattainment," "attainment," and "unclassified." The unclassified designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called "nonattainment-transitional." The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment. State and federal attainment designations for Riverside County are shown in Table 4.3-1 for each criteria air pollutant.

Emission Sources

Sources of criteria air pollutant emissions in Riverside County include stationary, area, and mobile sources.

Stationary Sources

Major stationary sources of air pollutant emissions within the county include industrial processes, fuel combustion from electric utilities and other processes, waste disposal, surface coating and cleaning, petroleum production, and other sources. Local air districts issue permits to various types of stationary sources, which must demonstrate implementation of BACT.

Areawide Sources

Areawide emission sources include consumer products, application of architectural coatings, residential fuel combustion, farming operations, construction and demolition, road dust, fugitive dust, landscaping, fires, and other miscellaneous sources. Unpaved road dust is the largest contributor to particulate matter emissions within the county.

Mobile Sources

On-road and other mobile sources are the largest contributors of ozone precursor emissions within the county. On-road sources consist of passenger vehicles, trucks, buses, and motorcycles, while off-road vehicles and other mobile sources comprise heavy-duty equipment, boats, aircraft, trains, recreational vehicles, and farm equipment.

EXISTING AIR QUALITY—TOXIC AIR CONTAMINANTS

Sources of TACs located throughout the Planning Area could include, but are not limited to, large volume roadways, gasoline dispensing stations, dry cleaners, auto body painting establishments, and crematoriums.

Sensitive Land Uses

Sensitive land uses or sensitive receptors are people or facilities that generally house people (e.g., schools, hospitals, residences) that may experience adverse effects from unhealthful concentrations of air pollutants. There are numerous types of these receptors throughout the planning area.

Table 4.3-2
Perris and Lake Elsinore Monitoring Stations – Ambient Air Quality

Pollutant	Averaging Time	Federal Primary Standards	California Air Quality Standards	Maximum Concentrations1					Number of Days Exceeding Federal Standard2					Number of Days Exceeding State Standard2				
				2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
Parris Monitoring Station																		
Ozone	1 hour	0.12 ppm[3]	0.09 ppm	0.088	0.169	0.138	0.142	.125	Revoked					0	77	66	65	53
	8 hour	0.075 ppm	0.07 ppm	0.079	0.123	0.117	0.115	0.109	1	83	73	77	67	1	98	88	94	88
PM_{10}	24 hours	150 µg/m^3	50 µg/m^3	75	119	1155	87	76	0	0	*	*	0	110	*	*	*	38.5
	Annual	Revoked	20 µg/m^3	37.1	*	*	*	33.7	1	Revoked				1	*	*	*	1
Lake Elsinore Monitoring Station																		
Ozone	1 hour	0.12 ppm[3]	0.09 ppm	0.149	0.142	0.129	0.139	0.128	Revoked					32	42	26	49	24
	8 hour	0.075 ppm	0.07 ppm	0.119	0.109	0.109	0.119	0.106	41	54	35	69	35	71	71	56	91	65
PM_{10}	24 hours	150 µg/m^3	50 µg/m^3	-	-	-	*	*	-	-	-	0	0	-	-	-	*	*
	Annual	Revoked	20 µg/m^3	-	-	-	-	-	-	Revoked				-	-	-	-	-
$PM_{2.5}$	24 hours	35 µg/m^3	none	-	-	-	41.1	34.2	-	-	-	*	*	-	-	-	1	0
	Annual	15 µg/m^3	12 µg/m^3	-	-	-	*	12.5	-	-	-	*	*	-	-	-	*	1

Notes:

"-" = data not available or applicable.

"*" = insufficient data to determine the value.

[1] Concentration units for ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide are in parts per million (ppm). Concentration units for PM_{10} and $PM_{2.5}$ are in micrograms per cubic meter (µg/m^3). State max values reported.

[2] A value of 1 indicates that the standard has been exceeded.

[3] The federal 1-hour ozone standard was revoked in June 2005.

Source: ARB 2011a

EXISTING AIR QUALITY—ODORS

The planning area does not currently have any individual operations or locations that are sources of odors affecting a substantial number of people. Agricultural activities are the only major potential source of odors in the planning area.

4.3.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by the State CEQA Guidelines (Appendix G) and SCAQMD have been used to determine whether implementation of the Draft General Plan would result in significant air quality impacts.

Based on Appendix G of the State CEQA Guidelines, an air quality impact is considered significant if the proposed project would:

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

As stated in Appendix G, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. SCAQMD has established air quality significance thresholds, as shown in Table 4.3-3.

METHODOLOGY

The analysis of impacts is based on the likely consequences of adoption and implementation of the Draft General Plan, including future land uses consistent with the Land Use Plan, and supporting roadways, infrastructure, and public services; along with implementation of Draft General Plan policies and programs. Regional and local emissions of criteria air pollutants and precursors, TACs, and odors likely to result from implementation of the Draft General Plan were assessed in accordance with the methods described below.

Air quality impacts from future land uses consistent with the Draft General Plan can be divided into two types, short-term impacts and long-term impacts. Short-term impacts are associated with construction activities, and long-term impacts are associated with the continued operation of developed land uses and the associated increase in vehicular trips.

Short-term emissions of criteria air pollutants (e.g., PM_{10}) and ozone precursors (ROG and NO_X) were assessed using methods recommended by ARB and SCAQMD. Where quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod) Version 2011.1.1 computer model. Model default parameters were assumed, as project-specific data (e.g., construction equipment types and number requirements, and maximum daily acreage disturbed) are not available at the General Plan level.

Table 4.3-3 SCAQMD Air Quality Significance Thresholds		
Mass Daily Thresholds [a]		
Pollutant	Construction [b]	Operation
NO_X	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and noncarcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [b]		
NO_2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state)	
PM_{10} 24-hour average annual average	 10.4 μg/m^3 (construction)[c] & 2.5 μg/m^3 (operation) 1.0 μg/m^3	
$PM_{2.5}$ 24-hour average	 10.4 μg/m^3 (construction)[c] & 2.5 μg/m^3 (operation)	
SO_2 1-hour average 24-hour average	 0.25 ppm (state) 0.04 ppm (state)	
Sulfate 24-hour average	 25 μg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

Table 4.3-3 SCAQMD Air Quality Significance Thresholds	
Lead 30-day average Rolling 3-month average Quarterly average	 1.5 $\mu g/m^3$ (state) 0.15 $\mu g/m^3$ (federal) 1.5$\mu g/m^3$ (federal)

Notes:

[a] Source: SCAQMD 2011

[b] Ambient air quality thresholds for criteria pollutants are based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

[c] Ambient air quality threshold is [based] on SCAQMD Rule 403.

KEY: lbs/day = pounds per day
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
$\geq$ greater than or equal to

Long-term emissions of criteria air pollutants and precursors (e.g., mobile and area sources) were also quantified using the CalEEMod Version 2011.1.1 computer model. Modeling was based on land use capacity assumptions for the Draft General Plan (see Table 3-3 in Section 3.0, "Project Description") and information about vehicle trip generation from the traffic analysis prepared to support the General Plan (see Section 4.13, "Traffic and Transportation"). Other air quality impacts (i.e., local emissions of CO, odors, and operation-related TACs) were assessed in accordance using methods recommended by ARB and SCAQMD.

For air quality impacts, compliance with existing regulations presented in Section 4.3.1, "Regulatory Framework," and/or implementation of Draft General Plan policies and programs listed below reduce impacts, but not always to a less-than-significant level. Policies and programs that reduce air quality impacts include:

Policies

- **C-4.6 Vehicle Mile Reduction.** Encourage and promote the reduction of vehicle miles traveled for all vehicles and for carbon-based fueled vehicles, and reduce the use of gasoline and diesel fuel for on-road vehicles in accordance with Senate Bill 375 regional and/or subregional targets established by the California Air **Resources** Board. Create and implement programs that will aid in improving air quality by reducing motor vehicle trips, such as those programs recommended by the Regional Transportation Plan, Riverside County Integrated Project, and the Southern California Air Quality Management Board.

- **OS-3.3 Land Use Compatibility.** Recognize and protect areas of agricultural production from the encroachment of incompatible land uses and establish appropriate buffers, disclosures, easements, and mitigation measures, as warranted.

- **OS-7.1**: **Development Design and Practices.** Reduce the amount of air pollution emissions from mobile and stationary sources, and enhance the South Coast Air Basin by using best management practices in development proposals and project implementation.

- **OS-7.9 Stationary Source Pollution.** Continue to minimize stationary source pollution through the following:

    - Ensure that industrial and commercial land uses are meeting existing South Coast Air Quality Management air thresholds by adhering to established rules and regulations.

    - Encourage the use of new technology to neutralize harmful criteria pollutants from stationary sources.

- Reduce exposure of the City's sensitive receptor s to poor air quality nodes through smart land use decisions.

- **OS-7.10 Sensitive Receptors.** Locate sensitive receptors (i.e., residences, playgrounds, childcare centers, athletic facilities, churches, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes) away from significant pollution sources to the maximum extent feasible.

- **OS-7.11 Fugitive Dust** Reduce the amount of fugitive dust released into the atmosphere by construction and demolition, materials handling, paved roads, unpaved roads, and stock piles through development standards and compliance with CEQA regulations.

- **OS-7.12 Best Management Practices.** Ensure all applicable best management practices are used in accordance with South Coast Air Quality Management District (SCAQMD) to reduce emitting criteria pollutants during construction..

Programs

- **OS-P-31 Fugitive Dust Control** Cooperate with federal, state, regional and local jurisdictions to control fugitive dust from stationary, mobile, and area sources.

- **OS-P-32: Aggregate Transport.** Enforce regulations that do not allow vehicles to transport aggregate or similar material on a roadway unless the material is stabilized or covered, in accordance with state law and South Coast Air Quality Management District regulations.

- **OS-P-34: Climate Action Plan.** Develop and adopt a climate action plan (CAP) for the City of Hemet. The CAP will have two primary objectives, which are to reduce total greenhouse gas (GHG) emissions in the City by 2020 and create adaptation strategies to address the impacts of climate change on the City, such as increased risk of flooding and wildfires, diminished water supplies, and public health.

- **OS-P-35 Baseline GHG Emissions Inventory and Forecast** The City will calculate GHG emissions for base year 2010, forecast emissions in 2020 under a business-as-usual scenario, and describe the GHG reductions necessary to achieve the City's adopted target. Sectors to be described in the inventory will include municipal operations; residential, commercial, industrial buildings; motor vehicles; agriculture; and waste. This inventory and forecast provide a benchmark for planning and monitoring progress in government operations and the community. The GHG inventory will be conducted using a methodology consistent with that used by other local governments and according to the most recently established methodologies of the South Coast AQMD.

- **OS-P-36 GHG Emissions Reduction Strategies and Measures** The CAP will describe the strategies and measures necessary to reduce GHG emissions in the Planning Area and achieve the reduction target. Policies and measures will be created with public input from all stakeholders. Each measure will include a timeline, describe financing mechanisms, and assign responsibility to relevant agencies and departments. In addition to direct GHG reduction measures, the chapter will incorporate public education efforts to raise awareness on the importance of minimizing GHG emissions and methods for reducing emissions from individual's lifestyles. Policies and programs relevant to climate change contained in the General Plan will be included within the CAP. Policies, benchmarks, and measures will be reevaluated according to current state law and guidance each time the General Plan is updated.

- **OS-P-37 Protection and Adaptation Strategies** The CAP will describe strategies, policies, and measures that will be used to protect the City from and facilitate adaptation to the potential effects of climate change. Potential effects to be evaluated include, but are not limited to, increased frequency and magnitude of flooding, diminished water supply, habitat loss, and possible impacts on public health and the local economy,

including agriculture. Each measure will include a timeline, describe financing mechanisms, and assign responsibility to relevant agencies and departments.

- **OS-P-38 Benchmarks and Next Steps** In conclusion, the CAP will identify benchmarks, monitoring procedures, and other steps needed to ensure the City achieves its GHG reduction, protection, and adaptation goals. Monitoring and verifying progress on the GHG emissions reduction measures will be conducted on an ongoing basis. Monitoring will provide important feedback that can be used to demonstrate overall progress toward emissions reduction targets and improve measures over time. Benchmarks will be established to serve as intermediate goals and motivate compliance with City and sector-level reduction targets.

  Benchmarks for strategic responses to climate change impacts should be based on the expected timescale of the specific impact and will be established during the development of individual strategic plans. As the CAP is to be implemented over a period of several years, knowledge surrounding climate change and implementation measures are likely to evolve. The CAP will contain provisions to evaluate measures to ensure successful GHG emissions reduction and protection of the City.

IMPACT ANALYSIS

IMPACT 4.3-1 Compliance with SCAQMD Air Quality Management Plan. *Implementation of the Draft General Plan would include the construction and operation of new commercial, industrial, and residential uses, resulting in new criteria air pollutant emissions in excess of established SCAQMD thresholds, impeding implementation of the AQMP. As a result, this impact is considered significant.*

The AQMP relies on demographic growth forecasts developed by SCAG for the Regional Transportation Plan. If the Draft General Plan would accommodate population growth substantially greater than that anticipated in the AQMP, then the Draft General Plan would conflict with the AQMP. The available SCAG projections at the time of the AQMP preparation were from 2006. According to those projections, the population in Hemet is forecast to increase to 169,636 in 2030 (SCAG 2006). Under the Draft General Plan, population for the planning area (which is larger than incorporated Hemet) is projected to increase to 163,748 post-2030, (see Chapter 3, "Project Description," and Section 4.10, "Land Use, Population and Housing"). Thus, the Draft General Plan would increase population (and thus VMT) at a rate less than that anticipated by SCAG in 2006.

The Draft General Plan includes policies and programs which would reduce air emissions generated by new uses envisioned by the plan. Policy C-4.6 requires creation and implementation of VMT reduction programs, including transportation management actions for large employers; these efforts would reduce air emissions. Policy OS-7.1 requires a reduction in air emissions for new projects, including implementation of best management practices (BMPs). Policy OS-7.11, Program OS-P-31, and OS-P-32 require control of fugitive dust, including covering aggregate shipments, thus reducing particulate emissions. Programs OS-P-34, OS-P-35, OS-P-36, OS-P-37, and OS-P-38 require preparation of a Climate Action Plan and implementation of greenhouse gas (GHG) reduction measures that would also reduce criteria air pollutant emissions.

However, SCAQMD's thresholds for criteria air pollutants and precursors for which the region is in nonattainment are designed to be applied to projects, rather than program activities, and, implementation of the Draft General Plan would result in emissions in excess of these SCAQMD thresholds, as described in Impacts 4.3-2 and 4.3-3. This would conflict with SCAQMD air quality planning efforts. This impact would be **significant,** and mitigation is required.

Mitigation Measures

Mitigation Measure 4.3-1a: Fugitive Dust Emissions.

The City shall implement the following measures to reduce the amount of fugitive dust that is re-entrained into the atmosphere from parking lots and construction sites.

- Require the following measures to be taken during the construction of all projects to reduce the amount of dust and other sources of PM10, in accordance with SCAQMD Rule 403:
  - D**u**st suppression at construction sites using vegetation, surfactants, and other chemical stabilizers
  - Wheel washers for construction equipment
  - Watering down of all construction areas
  - Limit speeds at construction sites to 15 miles per hour
  - Cover aggregate or similar material during transportation of material
  - Adopt incentives, regulations, and/or procedures to reduce paved road dust emissions through targeted street sweeping of roads subject to high traffic levels and silt loadings.

Mitigation Measure 4.3-1b: Reduce ~~Exhaust~~ Emissions from Construction ~~Equipment~~.

The City shall require each project applicant, as a condition of project approval, to implement the following measures to reduce ~~exhaust emissions from~~ construction ~~equipment~~ emissions:

- Commercial electric power shall be provided to the project site in adequate capacity to avoid or minimize the use of portable gas-powered electric generators and equipment.
- Where feasible, equipment requiring the use of fossil fuels (e.g., diesel) shall be replaced or substituted with electrically driven equivalents (provided that they are not run via a portable generator set).
- To the extent feasible, alternative fuels and emission controls shall be used to further reduce exhaust emissions.
- On-site equipment shall not be left idling when not ~~is~~ in use.
- The hours of operation of heavy-duty equipment and/or the amount of equipment in use at any one time shall be limited.
- Staging areas for heavy-duty construction equipment shall be located as far as possible from sensitive receptors.
- Before construction contracts are issued, the project applicants shall perform a review of new technology, in consultation with SCAQMD, as it relates to heavy-duty equipment, to determine what (if any) advances in emissions reductions are available for use and are economically feasible. Construction contract and bid specifications shall require contractors to utilize the available and economically feasible technology on an established percentage of the equipment fleet. It is anticipated that in the near future, both NO_X and PM_{10} control equipment will be available.

- Provide temporary traffic controls such as a flag person during all phases of construction to maintain smooth traffic flow.
- Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site.
- Reroute construction trucks away from congested streets or sensitive receptor areas.
- Appoint a construction relations officer to act as a community liaison concerning on-site construction activity, including resolution of issues related to PM_{10} generation.
- Improve traffic flow by signal synchronization, and ensure that all vehicles and equipment will be properly tuned and maintained according to manufactures' specifications.
- Use coatings and solvents with a VOC content lower than that required under AQMD Rule 1113.
- Construct or build with materials that do not require painting, or require the use of pre-painted construction materials where feasible.
- Require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export). If the City determines that 2010 model year or newer diesel trucks cannot be obtained, the lead agency shall use trucks that meet EPA 2007 model year NO_x and PM emissions requirements.
- During project construction, all internal combustion engines or construction equipment operating on the project site shall meet EPA-Certified Tier 2 emissions standards or higher. A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization for each applicable unit of equipment.
- Encourage construction contractors to apply for AQMD "SOON" funds.

Mitigation Measure 4.3-1c: Two-Stroke Engines.

The City shall distribute public information regarding the polluting impacts of two-stroke engines and the common types of machinery with two-stroke engines.

Mitigation Measure 4.3-1d: Implement the Air Quality Management Plan.

The City shall work with SCAQMD and SCAG to implement the AQMP and meet all federal and state air quality standards for pollutants. The City shall participate in any future amendments and updates to the AQMP. The City shall also implement, review, and interpret the proposed General Plan and future discretionary projects in a manner consistent with the AQMP to meet standards and reduce overall emissions from mobile and stationary sources.

Mitigation Measure 4.3-1e: Reduce Exposure of Sensitive Receptors.

The City shall implement the following measures to minimize exposure of sensitive receptors and sites to health risks related to air pollution:

- Encourage the applicants for sensitive land uses to incorporate design features (e.g., pollution prevention, pollution reduction, barriers, landscaping, ventilation systems, or other measures) in the planning process to minimize the potential impacts of air pollution on sensitive receptors.
- Activities involving idling trucks shall be oriented as far away from and downwind of existing or proposed sensitive receptors as feasible.

- Strategies shall be incorporated to reduce the idling time of diesel engines through alternative technologies such as IdleAire, electrification of truck parking, and alternative energy sources for TRUs to allow diesel engines to be completely turned off.

Conclusion

Adherence to SCAQMD rules and regulations, Draft General Plan policies, and implementation of Mitigation Measures 4.3-1a through 4.3-1e would reduce this impact, but not to a less-than-significant level. SCAQMD's thresholds are designed to be applied to individual projects, rather than larger programs like General Plans. Despite the City's efforts, implementation of the Draft General Plan, a 20-year program, could result in emissions in excess of project-based thresholds for criteria air pollutants and precursors for which the region is in nonattainment. No additional feasible mitigation is available. The impact would remain **significant and unavoidable**.

IMPACT 4.3-2 Violation of an Air Quality Standard – Short Term. *Implementation of the Draft General Plan would include the construction of new commercial, industrial, and residential uses, resulting in short-term construction air emissions in excess of SCAQMD thresholds. This impact would be significant.*

Construction emissions are short term or temporary in duration and have the potential to represent a significant impact with respect to air quality. Future land uses consistent with the Draft General Plan would result in construction of new commercial, industrial, and residential land uses, and infrastructure improvements necessary to serve the new population.

Construction associated with future land uses consistent with the Draft General Plan would result in emissions of criteria air pollutants and precursors from site preparation (e.g., demolition, excavation, grading, and clearing); exhaust from off-road equipment, material delivery trucks, and worker commute vehicles; vehicle travel on roads; and other miscellaneous activities (e.g., building construction, asphalt paving, application of architectural coatings, and trenching for utility installation).

Because the Draft General Plan identifies future land uses rather than providing for specific development proposals, construction-related emissions that may occur at any one time in the planning area are speculative and cannot be accurately determined. Assuming relatively robust economic conditions over the next 20 to 25 years, construction activity would occur throughout the planning area, but the rate of development cannot be anticipated. Construction-related emissions could lead to violation of an applicable air quality standard or contribute substantially to an existing or projected air quality violation. This is a **significant** impact requiring mitigation.

Mitigation Measures

Implement Mitigation Measures 4.3-1a and 4.3-1b above.

Conclusion

As described in Impact 4.3-1, a variety of Draft General Plan policies are intended to improve air quality and reduce air emissions. Adherence to SCAQMD rules and regulations, Draft General Plan policies, and implementation of Mitigation Measures 4.3-1a and 4.3-1b would reduce this impact, but not to a less-than-significant level; because the Draft General Plan identifies future land uses rather than providing for specific development proposals, construction-related emissions that may occur at any one time in the planning area cannot be accurately determined. Assuming relatively robust economic conditions over the next 20 to 25 years, construction activity would occur throughout the planning area, but the rate of development cannot be anticipated. No additional feasible mitigation is available. The impact would remain **significant and unavoidable**.

IMPACT 4.3-3 Violation of an Air Quality Standard – Long Term. *Implementation of the Draft General Plan would provide for new commercial, industrial, and residential uses and mobile sources, resulting in long-term air emissions in excess of SCAQMD thresholds. This impact would be significant.*

Regional area- and mobile-source emissions of criteria air pollutants and ozone precursors were modeled using CalEEMod. CalEEMod allows land use data entries that include project location specifics and trip generation rates. CalEEMod accounts for area-source emissions from the use of natural gas, fireplaces, and consumer products, as well as mobile-source vehicle trip emissions. Regional area- and mobile-source emissions were modeled based on Draft General Plan land use types and sizes (see Chapter 3.0, "Project Description"), anticipated increases in trip generation (see Section 4.13, "Traffic and Transportation"), and default settings and parameters for the analysis period and planning area location.

Modeled long-term emissions are summarized in Table 4.3-4 for 2030 conditions. This modeling assumes that the new residences, commercial and industrial uses in Table 3.1 in Chapter 3.0, "Project Description" would be constructed by 2030.

The Draft General Plan could accommodate stationary sources of pollutants that would be required to obtain permits to operate in compliance with SCAQMD rules. These sources could include but would not be limited to diesel-engine or gas turbine generators for emergency power generation; central-heating boilers for commercial, industrial, or large residential buildings; process equipment for light-industrial uses; kitchen equipment at restaurants; service-station equipment; and dry-cleaning equipment. The permit process would ensure that these sources would be equipped with the required emission controls and that, individually, these sources would not cause a significant environmental impact. There is no available methodology to reliably estimate these emissions; nonetheless, the emissions from these sources would be additive to the estimated area-source and mobile-source emissions described above.

Although the City will apply SCAQMD's significance thresholds to individual projects as they are brought forward, based on the modeling described above, long-term operation of future land uses consistent with the Draft General Plan could result in emissions of ROG, NO_X, CO, PM_{10}, and $PM_{2.5}$ that exceed SCAQMD thresholds. Thus, such emissions could violate or contribute substantially to an existing or projected air quality violation. This is a **significant** impact requiring mitigation.

Mitigation Measures

Implement Mitigation Measures 4.3-1c, 4.3-1d, and 4.3-1e above.

Conclusion

As indicated in Impact 4.3-1, a variety of Draft General Plan policies are intended to improve air quality and reduce air emissions. Adherence to SCAQMD rules and regulations, Draft General Plan policies, and implementation of Mitigation Measures 4.3-1c, 4.3-1d, and 4.3-1e would reduce this impact, but not to a less-than-significant level. The SCAQMD thresholds are developed for individual projects, rather than 20-year programs such as the Draft General Plan. The City will apply the SCAQMD thresholds to individual projects as they are proposed under the Draft General Plan. No additional feasible mitigation is available. The impact would remain **significant and unavoidable**.

IMPACT 4.3-4 Impacts on Sensitive Receptors. *Implementation of the Draft General Plan would potentially expose sensitive receptors to criteria air pollutants, toxic air contaminants, and carbon monoxide. This impact would be significant.*

Table 4.3-4
Summary of Modeled Operational Emissions of Criteria Air Pollutants and Precursors

	Emissions (lbs/day)[1]				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area Sources	11,554	403	28,561	3,678	3,677
Energy	80	683	313	55	55
Mobile Sources	3,312	7,709	26,187	10,958	592
	14,945	8,795	55,061	14,690	4,323
Project-Based SCAQMD Significance Threshold	***55***	***100***	***550***	***150***	***55***
Exceeds Project Threshold?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***

Notes:
SCAQMD = South Coast Air Quality Management District; lbs/day = pounds per day; CO = carbon monoxide; NO_X = oxides of nitrogen; PM_{10} = particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter; ROG = reactive organic gases.

[1] Emissions modeled using the CalEEMod (Version 2011.1.1) computer model, based on trip generation rates obtained from the analysis prepared for this project and proposed land uses identified in Chapter 3, "Project Description," and Section 4.13, "Traffic and Transportation," of this EIR.

Note: The total emissions estimates shown are the highest values that would occur in the summer or winter season. Totals may not add up to individual values since the highest emissions for a pollutant from both area and mobile sources may not occur in the same season.
Refer to Appendix B for detailed assumptions and modeling output files.
SCAQMD's thresholds are established for individual projects, and are not readily applied to a 20-year program such as the Draft General Plan. Although the City will apply SCAQMD's thresholds to individual projects as they are brought forward, the total emissions in the City and the planning area will still exceed these project-based thresholds.
Source: Data modeled by AECOM in 2011

Criteria Air Pollutants

As discussed in Impact 4.3-2 and 4.3-3, implementation of the Draft General Plan would result in short-term and long-term criteria air pollutant or precursor emissions that exceed SCAQMD significance thresholds. To the extent that emissions of these air pollutants and precursors would expose sensitive receptors to substantial pollutant concentrations, such exposure would be considered a **significant** impact requiring mitigation.

Toxic Air Contaminants

With implementation of the Draft General Plan, new or modified sources of TACs could be placed near existing sensitive receptors, and new sensitive receptors could be developed near existing sources of TACs. Emissions of TACs during construction of future land uses consistent with the Draft General Plan and from long-term operation of such uses are discussed and the resulting levels of TAC exposure and sensitive receptors are analyzed separately below.

Construction-related Emissions

Emissions from construction equipment would be reduced over the timeframe of the Draft General Plan. Construction-related activities would result in short-term diesel PM emissions from the exhaust of off-road heavy-duty diesel equipment for site preparation (e.g., excavation, grading, and clearing); paving; application of architectural coatings; and other miscellaneous activities. Because the use of off-road heavy-duty diesel equipment for individual construction projects which would occur during implementation of the Draft General Plan would be temporary and diesel PM is expected to disperse quickly (Zhu et al. 2002), further reductions in

exhaust emissions would occur, and construction-related activities would not be expected to expose sensitive receptors to substantial emissions of TACs. As a result, this impact would be **less than significant.**

Operational Emissions

Stationary Sources

The Draft General Plan anticipates construction of commercial, institutional, and industrial land uses that may potentially include stationary sources of TACs, such as hospitals, dry-cleaning establishments, restaurants operating large grills, gasoline-dispensing facilities, and diesel-fueled backup generators. These types of stationary sources, in addition to other stationary sources that may emit TACs, would be subject to SCAQMD rules and regulations. Thus, as discussed in Impact 4.3-3, SCAQMD would analyze such sources (e.g., health risk assessment, LST, dispersion modeling) based on their potential to emit TACs. If it is determined that the sources would emit TACs in excess of SCAQMD significance thresholds, maximum or best available control technology (MACT or BACT) would be implemented to reduce emissions. If implementation of MACT or BACT would not reduce the risk below the threshold, SCAQMD would deny the required permit. As a result, with compliance with applicable rules and regulations, operation of stationary sources would not result in the exposure of sensitive receptors to TACs at levels exceeding SCAQMD significance thresholds, and this impact would be **less than significant**.

Furthermore, stationary sources of TAC emissions in the planning area would require permits, preventing new land use compatibility conflicts. Therefore, no incompatibility of proposed land uses with existing sources of TAC emissions would result, and this impact would be **less than significant**.

On-Road Mobile Sources

The Draft General Plan provides for a mix of land uses, including retail, office, hotel, public/institutional/civic, human services, and residential uses. The ARB Air Quality and Land Use Handbook recommends avoiding the placement of new sensitive land uses (e.g., residences and schools) within 500 feet of major freeways (those with 100,000 or more vehicles per day). The only roadway forecast to carry 100,000 or more vehicles per day is the SR-79 Expressway, which is planned to traverse the western portion of the planning area from north to south. Sensitive uses could potentially be placed within 500 feet of this roadway, either before or after the roadway is actually constructed. Therefore, risk associated with implementation of the Draft General Plan would potentially exceed ARB's recommendation. This would be a **significant** impact requiring mitigation.

On-Site Mobile Sources

On-site mobile sources of TACs would be associated primarily with the operation of on-road heavy-duty diesel trucks used for proposed on-site commercial activities (e.g., unloading/loading). The ARB Air Quality and Land Use Handbook recommends avoiding the siting of new commercial trucking facilities that accommodate more than 100 trucks per day, or 40 trucks equipped with transportation refrigeration units (TRUs), within 1,000 feet of sensitive receptors (e.g., residences) (ARB 2005). Long-term activities that require the use of diesel-fueled vehicles for extended periods, such as delivery areas or loading docks, may generate diesel PM emissions that could expose sensitive receptors to diesel PM emissions. Although specific future commercial uses that would be developed consistent with the Draft General Plan have not been identified, some tenants would require large delivery and shipping trucks that use diesel fuel. The diesel exhaust PM emissions generated by these uses would be produced primarily at single locations on a regular basis (e.g., loading dock areas). Idling trucks, including TRUs, increase diesel PM levels at these locations, exposing occupants of nearby existing and proposed residences to diesel PM emissions on a recurring basis.

ARB has adopted an idling restriction ATCM requiring large commercial diesel-powered vehicles to limit idling to no more than 5 minutes under most circumstances. ARB is currently evaluating additional ATCMs to further

reduce TACs associated with commercial operations, including a similar requirement to limit idling of smaller diesel-powered commercial vehicles.

It is unknown at this time whether the concentration of diesel PM at any sensitive receptor locations might exceed the threshold for acceptable cancer risk for the maximally exposed individual. It is also unclear what effect ARB's new diesel-engine emission standards and diesel PM regulations would have on the level of emissions from any one facility. Therefore, given uncertainty with respect to determination of tenants, frequency of diesel-fueled trucks visiting the proposed land uses, and distances between trucking activities and sensitive receptors throughout implementation of the Draft General Plan and associated mobile emissions of diesel exhaust, this would be a **significant** impact requiring mitigation.

Local CO Impacts

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions (e.g., stable conditions that result in poor dispersion), CO concentrations may reach unhealthy levels at local sensitive land uses such as residential areas, schools, and hospitals. As a result, SCAQMD recommends analyzing CO emissions at a local as well as a regional level.

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. SCAQMD requires a microscale CO hotspot analysis when a project increases the volume-to-capacity ratio by 2% for any intersection with an existing level of service (LOS) D or worse.

The Draft General Plan traffic analysis (see Section 4.13, "Traffic and Transportation") indicates that some signalized intersections would operate at LOS E or LOS F in 2030. Therefore, further investigation of potential CO impacts is warranted.

A detailed CO analysis was conducted during the preparation of SCAQMD's 2003 AQMP. The locations selected for microscale modeling in the 2003 AQMP included high average daily traffic (ADT) intersections in the South Coast Air Basin, those which would be expected to experience the highest CO concentrations. The highest CO concentration observed was at the intersection of Wilshire Boulevard and Veteran Avenue on the west side of Los Angeles near the Interstate 405 Freeway. The concentration of CO at this intersection was 4.6 ppm, which is well below the 35-ppm 1-hr CO Federal standard. The Wilshire Boulevard/Veteran Avenue intersection has an ADT of approximately 100,000 vehicles per day.

Draft General Plan traffic analysis demonstrates that only two of the studied intersections (Sanderson Avenue at Florida Avenue and at Devonshire Avenue) would operate at LOS E or F under General Plan buildout. The highest ADT for any of the segments approaching these intersections would be about 43,000 vehicles, yielding a total intersection ADT of less than 100,000. Furthermore, due to stricter vehicle emissions standards in newer cars, new technology, and increased fuel economy, future CO emission factors under future land use conditions (year 2030) would be substantially lower than those under existing conditions. Thus, even though there would be more vehicle trips under the Draft General Plan at buildout than under existing conditions, project-generated local mobile-source CO emissions would not result in or substantially contribute to concentrations that exceed the 1-hour or 8-hour ambient air quality standards for CO. As a result, this impact would be **less than significant**.

Impact Summary

This impact discussion addresses the effects of various types of air emissions on sensitive receptors. Implementation of the Draft General Plan would have a **less-than-significant** impact on sensitive receptors with respect to TAC emissions from short-term construction, stationary-source emissions, and localized CO emissions.

Implementation of the Draft General Plan would have a **significant** impact on sensitive receptors related to criteria air pollutant emissions and on-road and on-site mobile-source related TAC emissions.

Mitigation Measures

Implement Mitigation Measures 4.3-1-a, 4.3-1b, 4.3-1c, 4.3-1d, and 4.3-1e above.

Mitigation Measure 4.3-4a: Local Significance Thresholds and Dispersion Modeling

For new discretionary projects of 5 acres or less, ~~The~~ the City shall require air quality analysis to use SCAQMD's Local Significance Threshold (LST) methodology to evaluate air quality impacts. For discretionary projects that are larger than 5 acres, the City shall require dispersion modeling to identify localized air quality impacts, potential for impacts on nearby sensitive receptors, and binding mitigation to avoid or reduce potentially significant impacts.

Mitigation Measure 4.3-4b: Avoid siting new sensitive receptors within buffers recommended by ARB ~~500 feet of the SR-79 Expressway~~.

The City shall require disclosure of health risks for all other new sensitive uses proposed within distances recommended within the *Air Quality and Land Use Handbook* (ARB 2005) ~~500 feet of the SR-79 Expressway~~. To the extent feasible, the City shall prohibit the placement of new schools, parks, day care centers, adult day care facilities, community centers, and libraries within buffers recommended within the *Air Quality and Land Use Handbook* (ARB 2005)~~500 feet of the SR-79 Expressway.~~

Conclusion

A variety of Draft General Plan policies are intended to improve air quality and reduce air emissions. Adherence to SCAQMD rules and regulations, Draft General Plan policies, and implementation of Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-4a, and 4.3-4b would reduce this impact, but not to a less-than-significant level. No additional feasible mitigation is available. Impacts to sensitive receptors are largely related to the future location of the SR 79 expressway in West Hemet; although the City would apply all necessary measures to reduce risks to new sensitive receptors near SR 79 as described in Mitigation Measure 4.3-4a and 4.3-4b, existing sensitive receptors along the SR 79 alignment could still be affected. This impact would remain **significant and unavoidable**.

IMPACT 4.3-5~~4~~ Exposure to Odors. *Implementation of the Draft General Plan would potentially expose sensitive receptors to odors. However, because odors would either result from agricultural activities where disclosure of potential odors is required, or would be temporary and disperse rapidly with distance from the source, odors would not result in frequent exposure of sensitive receptors to objectionable odors. Therefore, this impact would be less than significant.*

As discussed previously, the human response to odors is extremely subjective, and sensitivity to odors varies greatly among the public. The screening-level distance identified by SCAQMD under Rule 410 for transfer stations and material recovery facilities is 2,000 feet from sensitive receptors. SCAQMD does not identify a screening-level distance for other major sources of odors near sensitive receptors. Minor sources of odors, such as exhaust from mobile sources and charbroilers associated with commercial uses, are not typically associated with numerous odor complaints but are known to have temporary, less concentrated odors.

Agricultural activities are the only major sources of odor in the planning area, and Policy OS-3.3 directs the City to establish appropriate buffers, disclosures, easements, and mitigation measures to protect areas of agricultural production from encroachment of incompatible uses. The Draft General Plan does not propose development of any new major odor sources. With the exception of agricultural activities where disclosure of potential odors is required, land use conflicts between major odor sources and sensitive receptors are not anticipated. Minor odors from implementation of the Draft General Plan would be diesel exhaust associated with construction of proposed land uses. Exhaust odors from diesel engines, as well as emissions associated with asphalt paving and the application of architectural coatings may be considered offensive to some individuals. Similarly, diesel-fueled

trucks traveling on local roadways would produce associated diesel exhaust fumes. However, because odors associated with diesel fumes, asphalt paving, and architectural coatings would be temporary and would disperse rapidly with distance from the source, construction-generated and mobile-source odors would not result in frequent exposure of on-site receptors to objectionable odor emissions. As a result, impacts related to odors would be **less than significant**.