5.1 AIR QUALITY

This section of the Draft Supplemental Environmental Impact Report (DSEIR) evaluates the potential air quality impacts of the City of Anaheim Housing Opportunity Sites Rezoning Project ("Proposed Project") as compared to the air quality impacts of the 2004 Anaheim General Plan and Zoning Code Update ("2004 Approved Project"). The analysis in this section is based on buildout of the Proposed Project; vehicle miles traveled (VMT), provided by the traffic consultant, Iteris, as modeled using the Anaheim Transportation Analysis Model (ATAM) for trips (origin-destination method) (see Appendix F to this DSEIR); electricity use provided by the Anaheim Public Utilities Department, natural gas use provided by the Southern California Gas Company (SoCalGas), waste generation identified for the City of Anaheim ("City") by the California Department of Resources Recycling and Recovery (CalRecycle), and water use for the City based on the Anaheim Public Utilities Department 2010 Urban Water Management Plan (UWMP). The air quality model output sheets are included in Appendix C of this DSEIR.

5.1.1 Environmental Setting

5.1.1.1 Regulatory Setting

Ambient air quality standards (AAQS) have been adopted at State and Federal levels for criteria air pollutants. In addition, both the State and Federal government regulate the release of toxic air contaminants (TACs). The City is in the South Coast Air Basin (SCAB) and is subject to the rules and regulations imposed by the South Coast Air Quality Management District (SCAQMD) as well as the California AAQS adopted by the California Air Resources Board (CARB) and National AAQS adopted by the United States Environmental Protection Agency (EPA). Federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized below.

Federal and State Laws

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the United States Congress and has been amended several times. The 1970 CAA amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS based on even greater health and welfare concerns.

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the Federal government have established health-based AAQS for seven air pollutants, which are shown in Table 5.1-1, *Ambient Air Quality Standards for Criteria Pollutants*. These pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM10), fine inhalable particulate matter (PM2.5), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 5.1-1

Ambient Air Quality Standards for Criteria Pollutants

Pollutant	*Averaging Time*	*California Standard*	*Federal Primary Standard*	*Major Pollutant Sources*
Ozone (O_3)	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Average	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm[2]	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm[1]	
	24 hours	0.04 ppm	0.014 ppm[2]	
Respirable Coarse Particulate Matter (PM10)	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	
Respirable Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 µg/m^3	15 µg/m^3[3, 3]	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	Monthly	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	*	1.5 µg/m^3	
	3-Month Average	*	0.15 µg/m^3	
Sulfates (SO_4)	24 hours	25 µg/m^3	*	Industrial processes.

Table 5.1-1
Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles[1]	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide (H2S)	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hour	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: CARB 2012.
ppm: parts per million; µg/m^3: micrograms per cubic meter
[1] When relative humidity is less than 70 percent.
[2] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
[3] On December 14, 2012, EPA lowered the federal primary $PM_{2.5}$ annual standard from 15.0 µg/m^3 to 12.0 µg/m^3. The new annual standard will become effective 60 days after publication in the Federal Register. EPA made no changes to the primary 24-hour $PM_{2.5}$ standard or to the secondary $PM_{2.5}$ standards.
* Standard has not been established for this pollutant/duration by this entity.

Air Pollutants of Concern

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are emitted directly from sources. CO, volatile organic compounds (VOC), NO_2, SO_2, PM10, PM2.5, and Pb are primary air pollutants. Of these, CO, SO_2, NO_2, PM10, and PM2.5 are "criteria air pollutants," which means that AAQS have been established for them. VOC and nitrogen oxides (NO_x) are air pollutant

precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. O_3 and NO_2 are the principal secondary pollutants.

A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

Carbon Monoxide (CO) is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation (SCAQMD 2005; EPA 2012). The SCAB is designated under the California and National AAQS as being in attainment of CO criteria levels (CARB 2013).

Volatile Organic Compounds (VOCs) / Reactive Organic Gases (ROGs) are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of VOCs. Other sources of VOCs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols (SCAQMD 2005). There are no ambient air quality standards established for VOCs. However, because they contribute to the formation of O_3, the SCAQMD has established a significance threshold for this pollutant.

Nitrogen Oxides (NO_x) are a by-product of fuel combustion and contribute to the formation of ground-level O_3, PM10, and PM2.5. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of NO_2 produced by combustion is NO, but NO reacts with oxygen quickly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 acts as an acute irritant and is more injurious than NO in equal concentrations. At atmospheric concentrations, however, NO_2 is only potentially irritating. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 exposure concentrations near roadways are of particular concern for susceptible individuals, including people with asthma asthmatics, children, and the elderly. Current scientific evidence links short-term NO_2 exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Also, studies show a connection between breathing elevated short-term NO_2 concentrations and increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma (SCAQMD 2005, EPA 2012). The SoCAB is designated as an attainment area for NO_2 under the National AAQS and a nonattainment area under the California AAQS (CARB 2013).

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2. When sulfur dioxide forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. Current scientific evidence links short-term exposures to SO_2, ranging from five minutes to 24 hours, with an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. These effects are particularly important for asthmatics at elevated ventilation rates

(e.g., while exercising or playing.) At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics (SCAQMD 2005, EPA 2011). The SCAB is designated as an attainment area for SO_2 under the California and National AAQS (CARB 2013).

Suspended Particulate Matter (PM10 and PM2.5) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM10, include particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or PM2.5, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Both PM10 and PM2.5 may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems. EPA scientific review concluded that PM2.5, which penetrates deeply into the lungs, is more likely than PM10 to contribute to health effects and at concentrations that extend well below those allowed by the current PM10 standards. These health effects include premature death in people with heart of lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Diesel particulate matter (DPM) is classified by the CARB as a carcinogen. Particulate matter can also cause environmental effects such as visibility impairment[1], environmental damage[2], and aesthetic damage[3] (SCAQMD 2005; EPA 2012). The SCAB is a nonattainment area for PM2.5 and PM10 under California and National AAQS (CARB 2013).[4]

Ozone (O_3) is commonly referred to as "smog" and is a gas that is formed when VOCs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O_3 can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level O_3 also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. O_3 also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. In particular, O_3 harms sensitive vegetation, including forest trees and plants during the growing season (SCAQMD 2005; EPA 2011). The SCAB is designated as an extreme nonattainment area under the California AAQS (1-hour and 8-hour) and National AAQS (8-hour) (CARB 2013).

[1] $PM_{2.5}$ is the main cause of reduced visibility (haze) in parts of the United States.
[2] Particulate matter can be carried over long distances by wind and then settle on ground or water. The effects of this settling include: making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.
[3] Particulate matter can stain and damage stone and other materials, including culturally important objects such as statues and monuments.
[4] CARB approved the SCAQMD's request to redesignate the SoCAB from serious nonattainment for PM_{10} to attainment for PM_{10} under the National AAQS on March 25, 2010, because the SoCAB has not violated federal 24-hour PM_{10} standards during the period from 2004 to 2007. However, the EPA has not yet approved this request.

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. The major sources of Pb emissions have historically been mobile and industrial sources. As a result of the EPA's regulatory efforts to remove lead from on-road motor vehicle gasoline, emissions of Pb from the transportation sector dramatically declined by 95 percent between 1980 and 1999, and levels of Pb in the air decreased by 94 percent between 1980 and 1999. Today, the highest levels of Pb in air are usually found near lead smelters. The major sources of Pb emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. Once taken into the body, Pb distributes throughout in the blood and is accumulated in the bones. Depending on the level of exposure, l Pb can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Pb exposure also affects the oxygen-carrying capacity of the blood. The Pb effects most commonly encountered in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Infants and young children are especially sensitive to even low levels of Pb, which may contribute to behavioral problems, learning deficits, and lowered IQ (SCAMQD 2005; EPA 2012). However, in 2008, the EPA and CARB adopted stricter lead standards. Based on these stricter standards, very localized violations were recorded at special monitoring sites immediately downwind of Pb sources[5]. As a result of these localized violations, the Los Angeles County portion of the SCAB was designated in 2010 as a nonattainment area for Pb under the California and National AAQS (SCAQMD 2010). Because emissions of Pb are found only in projects that are permitted by SCAQMD, Pb is not an air quality pollutant of concern for the Proposed Project.

Toxic Air Contaminants *(TACs)* are classified as the public's exposure to air pollutants and they are considered to be a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code define a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the CAA (42 United States Code § 7412[b]) is a toxic air contaminant. Under State law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution

[5] Source-oriented monitors record concentrations of lead at lead-related industrial facilities in the SoCAB, which include Exide Technologies in the City of Commerce; Quemetco, Inc., in the City of Industry; Trojan Battery Company in Santa Fe Springs; and Exide Technologies in Vernon. Monitoring conducted between 2004 through 2007 identified that the Trojan Battery Company and Exide Technologies exceed the federal standards (SCAQMD 2010).

control district. High priority facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

In 1998, CARB identified particulate emissions from diesel-fueled engines as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

In 2000, SCAQMD conducted a study on ambient concentrations of TACs and estimated the potential health risks from air toxics. The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,400 in a million. The largest contributor to this risk was diesel exhaust, accounting for 71 percent of the air toxics risk. In 2008, SCAQMD conducted its third update to its study on ambient concentrations of TACs and estimated the potential health risks from air toxics. The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,200 in one million. The largest contributor to this risk was diesel exhaust, accounting for approximately 84 percent of the air toxics risk (SCAQMD 2008). In the vicinity of the City, excess cancer risk ranges from 334 on the eastern City boundary to 1,233 in a million in the eastern portion of the City near the convergence of SR-91 and I-5 Freeways (SCAQMD 2012).

South Coast Air Quality Management District

SCAQMD is the agency responsible for assuring that the National and California AAQS are attained and maintained in the SCAB. SCAQMD is responsible for:

- Adopting and enforcing rules and regulations concerning air pollutant sources;
- Issuing permits for stationary sources of air pollutants;
- Inspecting stationary sources of air pollutants;
- Responding to citizen complaints;
- Monitoring ambient air quality and meteorological conditions;
- Awarding grants to reduce motor vehicle emissions;
- Conducting public education campaigns; and
- Air Quality Management Planning

SCAQMD, with assistance from the Southern California Association of Governments (SCAG), is the agencies responsible for preparing the air quality management plan (AQMP) for the SCAB. Since 1979, a number of AQMPs have been prepared.

2012 AQMP

On December 7, 2012, SCAQMD adopted the 2012 AQMP, which 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. It also

addresses several state and federal planning requirements, incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models. The 2012 AQMP builds upon the approach identified in the 2007 AQMP for attainment of Federal PM and O_3 standards and highlights the significant amount of reductions needed and the urgent need to engage in interagency coordinated planning to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria air pollutant standards within the timeframes allowed under the CAA. The 2012 AQMP demonstrates attainment of Federal 24-hour PM2.5 standard by 2014 and the Federal 8-hour ozone standard by 2023. It includes an update to the revised EPA 8-hour ozone control plan with new commitments for short-term NO_x and VOC reductions. The plan also identifies emerging issues of ultrafine (PM1.0) particulate matter and near-roadway exposure, and an analysis of energy supply and demand.

Nonattainment Areas

The AQMP provides the framework for air quality basins to achieve attainment of the State and Federal AAQS through the SIP. Areas are classified attainment or nonattainment for particular pollutants, depending on whether they meet AAQS. Severity classifications for O_3 nonattainment range from marginal, moderate, and serious to severe and extreme.

Transportation conformity for nonattainment and maintenance areas is required under the federal CAA to ensure federally supported highway and transit projects conform to the SIP. In March 2012, the EPA approved California's SIP revisions for attainment of the 1997 8-hour O_3 National AAQS for the SCAB. Findings for the new 8-hour O_3 emissions budgets for the SCAB and consistency with the recently adopted 2012 RTP/SCS were submitted to the EPA for approval.

In 2008, the EPA designated the Los Angeles County portion of the SCAB as a nonattainment are under the Federal Pb classification due to the addition of source-specific monitoring under the new Federal regulation. This designation was based on two source-specific monitors in Vernon and the City of Industry, which exceeded the new standard. The remainder of the SCAB, outside the Los Angeles County nonattainment area, remains in attainment of the new standard. On May 24, 2012, CARB approved the State Implementation Plan (SIP) revision for the Federal Pb standard, which the EPA revised in 2008. Pb concentrations in this nonattainment area have been below the level of the Federal standard since December 2011. The SIP revision was submitted to EPA for approval in June 2012.

The attainment status for the SCAB is shown in Table 5.1-2. The SCAB is designated in attainment of the California AAQS for sulfates. The SCAB will have to meet the new Federal 8-hour O_3 standard by 2023, and the Federal 24-hour PM2.5 standard by 2014 (with the possibility of up to a five-year extension to 2019, if needed). SCAQMD has recently designated the SCAB in nonattainment for NO_2 (entire basin) and Pb (Los Angeles County only) under the California AAQS.

Table 5.1-2
Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 – 1-hour	Extreme Nonattainment	No Federal Standard
O_3 – 8-hour	Extreme Nonattainment	Severe-17 Nonattainment[1]
PM10	Serious Nonattainment	Nonattainment[2]
PM2.5	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Nonattainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Pb	Nonattainment (Los Angeles County only)[3]	Nonattainment (Los Angeles County only)[3]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: CARB 2013.
Notes:
[1] SCAQMD may petition for Extreme Nonattainment designation.
[2] Annual standard revoked September 2006. CARB approved the SCAQMD's request to redesignate the SCAB from serious nonattainment for PM10 to attainment for PM10 under the National AAQS on March 25, 2010, because the SCAB has not violated Federal 24-hour PM10 standards from 2004 to 2007. However, the EPA has not yet approved this request.
[3] The Los Angeles portion of the SCAB was designated nonattainment for Pb under the new Federal and existing State AAQS as a result of large industrial emitters. Remaining areas within the SCAB are in attainment.

5.1.1.2 Existing Setting

South Coast Air Basin

The project site lies within the SCAB, which includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties. The SCAB is in a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semipermanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds (SCAQMD 2005).

Temperature and Precipitation

The annual average temperature varies little throughout the SCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. Based on climatological data recorded at the Anaheim Monitoring Station (ID 040192),the average low temperature is reported at 46.9°F in December while the average high temperature is 87.1°F in August (WRCC 2012).

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast, with slightly heavier shower activity in the east and over the mountains. Rainfall averages 14.09 inches per year in the City (WRCC 2012).

Humidity

Although the SCAB has a semiarid climate, the air near the earth's surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought

into the SCAB by offshore winds, the "ocean effect" is dominant. Periods of heavy fog, especially along the coast, are frequent. Low clouds, often referred to as high fog, are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the eastern portions of the SCAB (SCAQMD 2005).

Wind

Wind patterns across the south coastal region of the SCAB are characterized by westerly or southwesterly onshore winds during the day and by easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season.

Between periods of wind, periods of air stagnation may occur, both in the morning and evening hours. Air stagnation is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high-pressure systems over the SCAB, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally continue a few days before predominant meteorological conditions are reestablished.

The mountain ranges to the east affect the transport and diffusion of pollutants by inhibiting their eastward transport. Air quality in the SCAB generally ranges from fair to poor and is similar to air quality in most of coastal southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions (SCAQMD 2005).

Inversions

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. These inversions are the marine/subsidence inversion and the radiation inversion. The height of the base of the inversion at any given time is known as the "mixing height." The combination of winds and inversions are critical determinants in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the City (SCAQMD 2005).

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the City are best documented by measurements made by SCAQMD. The City lies primarily within Source Receptor Area (SRA) 17, Inland Orange County (Central Orange County).[6] The Anaheim Monitoring Station lies within the City. However, this station does not monitor SO_2. Consequently, data was obtained from the Riverside Monitoring Station for this criteria pollutant. Data from these stations are summarized in Table 5.1-3. The data show that the area regularly exceeds the State and Federal 1-hour and 8-hour O_3 standards and regularly exceeds the state PM10 and federal PM2.5 standards. The CO, SO_2, and NO_2 standards have not been exceeded in the last five years in the project vicinity.

[6] A small portion of the City is within SRA 16, Metropolitan (North Orange County)

Table 5.1-3
Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2008	2009	2010	2011	2012
Ozone (O_3)[1]					
State 1-Hour ≥ 0.09 ppm	2	0	1	0	0
State 8-hour ≥ 0.07 ppm	10	2	1	1	0
Federal 8-Hour > 0.075 ppm	5	1	1	0	0
Max. 1-Hour Conc. (ppm)	0.105	0.093	0.104	0.088	0.079
Max. 8-Hour Conc. (ppm)	0.086	0.077	0.088	0.073	0.068
Carbon Monoxide (CO)[1]					
State 8-Hour > 9.0 ppm	0	0	0	0	0
Federal 8-Hour ≥ 9.0 ppm	0	0	0	0	0
Max. 8-Hour Conc. (ppm)	3.44	2.73	1.98	2.08	2.34
Nitrogen Dioxide (NO_2)[1]					
State 1-Hour ≥ 0.18 ppm	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.093	0.068	0.073	0.074	0.059
Sulfur Dioxide (SO_2)[2]					
State 1-Hour ≥ 0.04 ppm	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.003	0.003	0.005	0.001	0.001
Coarse Particulates (PM10)[1]					
State 24-Hour > 50 µg/m^3	3	1	0	2	0
Federal 24-Hour > 150 µg/m^3	0	0	0	0	0
Max. 24-Hour Conc. (µg/m^3)	111.5	97.4	43.0	53.0	48.0
Fine Particulates (PM2.5)[1]					
Federal 24-Hour > 35 µg/m^3	5	5	0	2	4
Max. 24-Hour Conc. (µg/m^3)	67.8	64.5	31.7	39.2	50.1

Source: CARB 2012.
ppm: parts per million; µg/m^3: or micrograms per cubic meter.
[1] Data obtained from the Anaheim Monitoring Station.
[2] Data obtained from the Riverside Monitoring Station.

Existing Criteria Air Pollutant Emissions Inventory

An existing emissions inventory of the City was conducted based on the existing land uses and is shown in Table 5.1-4. The existing criteria air pollutant emissions were calculated using OFFROAD2007, EMFAC2011, and emission factors identified in CalEEMod.

Table 5.1-4
Existing City of Anaheim Criteria Air Pollutant Emissions Inventory

Sector	Existing, 2012, Criteria Air Pollutants (lbs/day)					
	VOC	NO_X	CO	SO_2	PM10	PM2.5
Transportation[1]	5,363	10,535	50,572	82	1,031	508
Residential Natural Gas[2]	111	950	404	6	77	77
Non-Residential Natural Gas[2]	154	1,398	1,174	8	106	106
Area – Landscaping[3]	1,775	1,297	28,075	3	149	147
Area – Construction[3]	283	1,947	1,698	2	121	119
Existing Land Uses Total	7,686	16,126	81,923	102	1,484	957

Notes:
[1] EMFAC2011 based on daily VMT provided by Iteris using 2012 emission rates. Transportation sector includes the full trip length for external-internal trips. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).
[2] Based on a two-year average (2010–2011) provided by SoCal Gas. Nonresidential includes direct access customers, county facilities, and other district facilities within the City boundaries.
[3] OFFROAD2007. Estimated based on population (Landscaping) and employment (Light Commercial Equipment) for the City as a percentage of Orange County. Estimated based on housing permit data for Orange and the City from the United States Census. Daily offroad construction emissions multiplied by 347 days/year to account for reduced/limited construction activity on weekends and holidays. Excludes fugitive emissions from construction sites and wood-burning fireplaces. Various industrial and commercial processes (e.g., manufacturing, dry cleaning) allowed under the Proposed Project would require permitting and would be subject to further study pursuant to SCAQMD Regulation XIII, New Source Review. Because the nature of those emissions cannot be determined at this time and they are subject to further regulation and permitting, they will not be included in the table because they would be speculative.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups, referred to as sensitive receptors, include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are also considered sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, since the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

5.1.2 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City has determined that a project would normally have a significant effect on the environment if the project would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality 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 non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

AQ-4 Expose sensitive receptors to substantial pollutant concentrations.

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

The Initial Study, included as Appendix A (also included in Chapter 7, *Impacts Found Not to Be Significant)*, substantiates that impacts associated with the following thresholds would be less than significant: AQ-1 and AQ-5. These impacts will not be addressed in the following analysis.

South Coast Air Quality Management District Thresholds

The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in SCAQMD's CEQA Air Quality Handbook and the significance thresholds on SCAQMD's website. CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. SCAQMD has established thresholds of significance for regional air quality emissions for construction activities and project operation. In addition to the daily thresholds listed above, projects are also subject to the AAQS. These are addressed through an analysis of localized CO impacts and localized significance thresholds (LSTs).

Regional Significance Thresholds

SCAQMD has adopted regional construction and operational emissions thresholds to determine a project's cumulative impact on air quality in the SCAB. Table 5.1-5 lists SCAQMD's regional significance thresholds.

Table 5.1-5
SCAQMD Regional Significance Thresholds

Air Pollutant	*Construction Phase*	*Operational Phase*
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Particulates (PM10)	150 lbs/day	150 lbs/day
Fine particulates (PM2.5)	55 lbs/day	55 lbs/day
Lead (Pb)[1]	3 lbs/day	3 lbs/day

Source: SCAQMD 2011
[1] Lead is typically generated by industrial project and is not a pollutant of concern for the 2004 Approved Project or the Proposed Project.

Localized Significance Thresholds

SCAQMD developed LSTs to determine if emissions of NO_2, CO, PM10, and PM2.5 generated at a project site (offsite mobile-source emissions are not included the LST analysis) would expose sensitive receptors to substantial concentrations of criteria air pollutants. LSTs represent the maximum emissions at

a project site that are not expected to cause or contribute to an exceedance of the most stringent Federal or State AAQS and are shown in Table 5.1-6.

Table 5.1-6
SCAQMD Localized Significance Thresholds

Air Pollutant Standard (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
24-Hour PM10 Standard – Construction (SCAQMD)[1]	10.4 $\mu g/m^3$
24-Hour PM2.5 Standard – Construction (SCAQMD)[1]	10.4 $\mu g/m^3$
24-Hour PM10 Standard – Operation (SCAQMD)[1]	2.5 $\mu g/m^3$
24-Hour PM2.5 Standard – Operation (SCAQMD)[1]	2.5 $\mu g/m^3$

ppm – parts per million
$\mu g/m^3$ – micrograms per cubic meter
[1] Threshold is based on SCAQMD Rule 403. Since the SCAB is in nonattainment for PM10 and PM2.5, the threshold is established as an "allowable change" in concentration. Therefore, background concentration is irrelevant.

To assist lead agencies, SCAQMD developed screening-level LSTs to back-calculate the mass amount (pounds per day) of emissions generated onsite that would trigger the levels shown in Table 5.1-6. LSTs are based on the ambient concentrations of NO_X, CO, PM_{10}, and $PM_{2.5}$ for each SRA and the distance to the nearest sensitive receptor. Screening-level LST analyses are the localized significance thresholds for all projects of five acres and less; however, they can be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required to compare concentrations of air pollutants generated by the project to the localized concentrations in Table 5.1-6.

CO Hot Spot Thresholds

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. Typically, for an intersection to exhibit a significant CO concentration, it would operate at level of service (LOS) E or worse without improvements (Caltrans 1997).

Health Risk Analysis

Whenever a project would require use of chemical compounds that have been identified in SCAQMD Rule 1401, placed on CARB's air toxics list pursuant to AB 1807, Air Contaminant Identification and Control Act (1983), or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment (HRA) is required by the SCAQMD. Table 5.1-7 lists the SCAQMD's TAC incremental risk thresholds for operation of a project. Residential, commercial, and office uses do not use substantial quantities of TACs, and these thresholds are typically applied for new industrial projects. It

should be noted that these thresholds do not gauge the compatibility of a project with adjacent sources of air pollutants.

Table 5.1-7
SCAQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Individual Cancer Risk	≥ 10 in 1 million
Cancer Burden	≥ 0.5 excess cancer cases (in areas ≥ 1 in 1 million)
Hazard Index (project increment)	≥ 1.0

Source: SCAQMD 2011

5.1.3 The 2004 Approved Project

Air quality related impacts of the 2004 Approved Project were analyzed in the 2004 Certified EIR using SCAQMD's CEQA Handbook methodologies and thresholds. Modeling of operational phase emissions were conducted using the URBEMIS2002 computer model. The 2004 Certified EIR identified the following conclusions regarding the air quality emissions:

- **Construction-Related Regional Air Quality Impact: Significant and unavoidable.**
  The 2004 Certified EIR concluded that, even after mitigation, construction air emissions could exceed SCAQMD's significance thresholds as a result of the amount of development activity that is anticipated in the City.

- **Operational Phase Regional Air Quality Impact: Significant and unavoidable.**
  The 2004 Certified EIR concluded that the operational emissions would exceed SCAQMD's significance thresholds and would be significant after mitigation.

- **AQMP Consistency: Less than significant impact.**
  The 2004 Certified EIR concluded that the project would not conflict with SCAQMD's AQMP.

- **Localized Air Quality Impact: Less than significant impact.**
  The 2004 Certified EIR demonstrated that there would be no CO exceedances caused by vehicular emissions when idling at intersections, therefore localized CO hot spot impacts of the 2004 Approved Project would be less than significant.

- **Air Quality Compatibility: Less than significant impact.**
  The 2004 Certified EIR identified that while no CO exceedance would be caused by the project, the City could place sensitive land uses proximate to areas with elevated CO concentrations However, implementation of General Plan goals and policies would ensure that mitigation would reduce impacts to less than significant levels.

- **Odors: Less than significant impact.**
  The 2004 Certified EIR identified that odors generated within the City would not affect a substantial number of people and impacts would be less than significant.

5.1.4 Environmental Impacts of the Proposed Project

Modeling Methodology

This air quality evaluation was prepared in accordance with the requirements of CEQA to determine if significant air quality impacts are likely to occur in conjunction with future development that would be accommodated by the existing current General Plan. SCAQMD has published the CEQA Handbook that is intended to provide local governments with guidance for analyzing and mitigating air quality impacts, which were used in this analysis. Because substantial revisions in modeling methodology, modeling tools, and emissions factors for sectors analyzed have been updated by CARB since the 2004 Certified EIR, criteria air pollutant emissions modeling has been updated for the 2004 Approved Project in order to compare emissions of the 2004 Approved Project to the emissions generated by the Proposed Project. The City's criteria air pollutant emissions inventory includes the following sectors:

Transportation: Transportation emissions forecasts were modeled using CARB's EMFAC2011. Model runs were based on daily per capita VMT data provided by ITERIS using the ATAM regional transportation demand model and year 2035 emission rates. The VMT provided in the model includes the full trip length for land uses in the City (origin-destination approach) and does not include a 50 percent reduction in VMT for external-internal/internal-external trips.

Natural Gas: Natural gas use for residential and non-residential land uses in the City were modeled using data provided by SoCalGas. Natural gas use is based on a two-year average (2011 and 2010) to account for fluctuation in annual use as a result of natural variations in climate. Forecasts are adjusted for increases in population and employment in the City.

Area Sources: OFFROAD2007 was used to estimate GHG emissions from landscaping equipment, light commercial equipment, and construction equipment in the City. OFFROAD2007 is a database of equipment use and associated emissions for each county compiled by CARB. Annual emissions were compiled using OFFROAD2007 for Orange County for the year 2012. In order to determine the percentage of emissions attributable to the City, landscaping and light commercial equipment is estimated based on population (Landscaping) and employment (Light Commercial Equipment) for the City as a percentage of Orange County, while construction equipment use is estimated based on building permit data for the City and Orange County from data compiled by the United States Census. Daily off-road construction emissions are multiplied by 347 days per year to account for reduced/limited construction activity on weekends and holidays. Forecasts are adjusted for increases in population and employment in the City. Area sources exclude emissions from fireplaces (fugitive particulate matter) and consumer products (VOCs) in the City.

Impact Threshold Analysis

The following impact analysis addresses impacts that the Initial Study for the Proposed Project disclosed as potentially significant impacts of the Proposed Project, as compared to the 2004 Approved Project. The applicable potential impacts are identified in brackets after the impact statement.

IMPACT 5.1-1: CONSTRUCTION EMISSIONS ASSOCIATED WITH BUILDOUT OF THE PROPOSED PROJECT WOULD, LIKE THE 2004 APPROVED PROJECT, RESULT IN A SUBSTANTIAL INCREASE IN CRITERIA AIR POLLUTANTS THAT COULD EXCEED SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT'S EMISSIONS THRESHOLDS AND CONTRIBUTE TO THE OZONE (O_3), NITROGEN DIXOXIDE (NO_2), AND PARTICULATE MATTER (PM_{10} AND $PM_{2.5}$) NONATTAINMENT DESIGNATIONS OF THE SOUTH COAST AIR BASIN. [THRESHOLD AQ-2, AQ-3, AND AQ-4]

Impact Analysis: Construction activities associated with development of the Proposed Project would cause short-term emissions of criteria air pollutants. The primary source of NOx, CO, and SO_x emissions is the operation of construction equipment. The primary sources of particulate matter (PM10 and PM2.5) emissions are activities that disturb the soil, such as grading and excavation road construction, and building demolition and construction. The primary source of VOC emissions is the application of architectural coating and off-gas emissions associated with asphalt paving. A discussion of health impacts associated with air pollutant emissions generated by construction activities is included under "Air Pollutants of Concern" in Section 5.1-1, *Environmental Setting*.

Information regarding specific development projects, soil types, and the locations of receptors would be needed in order to quantify the level of impact associated with construction activity. As with the 2004 Approved Project, due to the scale of development activity associated with the Proposed Project, emissions would likely exceed the SCAQMD's significance thresholds and therefore, in accordance with the SCAQMD methodology, would cumulatively contribute to the nonattainment designations of the SCAB. The SCAB is currently designated nonattainment for O_3 and particulate matter (PM10 and PM2.5). Emissions of VOC and NO_x are precursors to the formation of O_3. In addition, NO_x is a precursor to the formation of particulate matter (PM10 and PM2.5). Therefore, the proposed project would cumulatively contribute to the existing nonattainment designations of the SCAB for O_3, NO_2, and particulate matter (PM10 and PM2.5).

Air quality emissions related to construction activities must be addressed on a project-by-project basis. For this broad-based Project, it is not possible to determine whether the scale and phasing of individual projects would result in the exceedance of SCAQMD's short-term regional or localized construction emissions thresholds. An estimate of construction emissions is included in the operational phase regional criteria air pollutant emissions inventory in Impact 5.1-2 below. In addition to regulatory measures (e.g., SCAQMD Regulation XIII for new source review; Regulation II, which includes Rule 201 for a permit to construct and Rule 203 for a permit to operate; Regulation IV, which includes Rules 403 for fugitive dust control, and CARB's airborne toxic control measures), mitigation may include extension of construction schedules and/or use of special equipment. Nevertheless, because of the likely scale and extent of construction activities pursuant to the future development that would be accommodated by the Proposed Project, similar to the 2004 Approved Project, at least some projects would likely continue to exceed the relevant SCAQMD thresholds. Consequently, construction-related air quality impacts associated with development in accordance with the Proposed Project are deemed significant. With the approval of the Proposed Project, the construction criteria pollutant emissions and resulting impacts would be the similar to the 2004 Approved Project's construction criteria pollutant emissions and resulting impacts reported in the 2004 Certified EIR.

IMPACT 5.1-2: LONG-TERM OPERATION OF THE PROPOSED PROJECT WOULD, LIKE THE 2004 APPROVED PROJECT, EXCEED SCAQMD'S EMISSIONS THRESHOLDS AND CONTRIBUTE TO THE OZONE (O_3), NITROGEN DIOXIDE (NO_2), AND PARTICULATE MATTER (PM_{10} AND $PM_{2.5}$) NONATTAINMENT DESIGNATIONS OF THE SOUTH COAST AIR BASIN. [THRESHOLD AQ-2 AND AQ-3]

Impact Analysis: The General Plan guides growth and development within the City. The Proposed Project would facilitate new development that would increase air pollutant emissions in the City and contribute to the overall emissions inventory in the SCAB. A discussion of health impacts associated with air pollutant emissions generated by operational activities is included in the "Air Pollutants of Concern" discussion in Section 5.1-1, *Environmental Setting*.

The 2004 Approved Project permits the development of land uses throughout the City that would generate various industrial and commercial processes (e.g., manufacturing) that could release toxic air contaminants. Under the Proposed Project, the Mixed Use Overlay Zone could still potentially result in the development of land uses (e.g., dry cleaners, restaurants with charbroilers) that could release toxic air contaminants. These emissions are controlled by SCAQMD through their permit process and would be subject to further study and health risk assessment prior to the issuance of any necessary air quality permits. Because the nature of these emissions cannot be determined at this time, and are subject to further regulation and permitting, they will not be addressed further in this analysis.

Criteria air pollutants associated with the Proposed Project are compared to emissions associated with the 2004 Approved Project and are shown in Table 5.1-8. As shown in the table, similar to the 2004 Approved Project, the anticipated operational phase emissions for the Proposed Project would exceed the SCAQMD's thresholds for all criteria air pollutants. Table 5.1-8 also shows that the Proposed Project would result in a substantial increase in emissions compared to the 2004 Approved Project's emissions for these same criteria air pollutants.

The City has considered whether there are additional feasible mitigation measures that would reduce the Proposed Project's increased emissions as compared to the 2004 Approved Project, but has concluded that all feasible mitigation measures have already been adopted in the mitigation monitoring and reporting program (MMRP) for the 2004 Approved Project. Therefore, like the 2004 Approved Project, the operational phase emissions of the Proposed Project are considered to be significant and unavoidable under the SCAQMD thresholds.

Table 5.1-8
Summary Comparison of the Proposed Project to the 2004 Approved Project

Summary	Maximum Daily Emissions (lbs/day)					
	VOC	NO_x	CO	SO_x	PM10	PM2.5
2004 Approved Project						
Transportation[1]	4,003	6,469	31,185	159	1,782	803
Residential Natural Gas[2]	111	950	404	6	77	77
Non-Residential Natural Gas[2]	154	1,398	1,174	8	106	106
Area – Landscaping[3]	1,775	1,297	28,075	3	149	147
Area – Construction[3]	283	1,947	1,698	2	121	119
2004 Certified EIR (URBEMIS2002)	6,326	12,060	62,536	178	2,234	1,253
Exceeds SCAQMD Threshold?	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
SCAQMD Threshold	55	55	550	150	150	55
Proposed Project						
Transportation[1]	4,978	8,045	38,785	197	2,216	999
Residential Natural Gas[2]	152	1,302	554	8	105	105
Non-Residential Natural Gas[2]	196	1,780	1,495	11	135	135
Area – Landscaping[3]	2,433	1,778	38,491	4	204	202
Area – Construction[3]	377	2,590	2,260	3	161	159
Proposed Project Total	8,137	15,496	81,585	223	2,821	1,600
Exceeds SCAQMD Threshold?	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
SCAQMD Threshold	55	55	550	150	150	55
Comparison of the Proposed Project to the 2004 Approved Project						
Net Change compared to 2004 Approved Project	1,565	2,929	16,032	41	528	302
Substantial Increase from 2004 Approved Project?	**YES**	**YES**	**YES**	NO	**YES**	**YES**
SCAQMD Threshold	55	55	550	150	150	55

Notes: Totals may not add to 100 percent due to rounding.

[1] EMFAC2011 based on daily VMT provided by Iteris using year 2035 emission rates. Transportation sector includes the full trip length for external-internal trips. VMT per year based on a conversion of VMT multiplied by 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

[2] Based on a two-year average (2010–2011) provided by SoCalGas. Nonresidential includes direct access customers, county facilities, and other district facilities within the City boundaries.

[3] OFFROAD2007. Forecast in emissions is based on population (Landscaping) and employment (Light Commercial Equipment) for the City as a percentage of Orange County using housing permit data for the City from the United States Census. Assumes no included in wood-burning fireplaces. Various industrial and commercial processes (e.g., manufacturing, dry cleaning) allowed under the Proposed Project would require permitting and would be subject to further study pursuant to SCAQMD Regulation XIII, New Source Review. Because the nature of those emissions cannot be determined at this time and they are subject to further regulation and permitting, they will not be included in the table because they would be speculative.

Bold = Exceeds SCAQMD threshold

IMPACT 5.1-3: AS COMPARED TO THE 2004 APPROVED PROJECT, OPERATION OF THE PROPOSED PROJECT WOULD NOT EXPOSE SENSITIVE RECEPTORS TO ELEVATED CONCENTRATIONS OF CO AT INTERSECTIONS. [THRESHOLD AQ-4]

Impact Analysis: Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the State 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. At the time of the 1993 Handbook, the SCAB was designated nonattainment under California and National AAQS for CO. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the SCAB and in the State have steadily declined. In 2007, the SCAQMD was designated in attainment for CO under both the California and National AAQS. As identified within SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide ("1992 CO Plan"), peak CO concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection. A CO hot spot analysis was conducted for four busy intersections in Los Angeles[7] at the peak morning and afternoon time periods and did not predict a violation of CO standards. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (BAAQMD 2011). Even the most congested intersections in the City would not have a volume of 44,000 vehicles per hour and therefore would not produce the volume of traffic required to generate a CO hot spot. Based on the above, the Proposed Project, like the 2004 Approved Project, would not have a significant impact related to exposure of sensitive receptors to elevated concentrations of CO at intersections.

IMPACT 5.1-4: OPERATION OF THE 2004 APPROVED PROJECT AND THE PROPOSED PROJECT MAY RESULT IN PLACEMENT OF SENSITIVE LAND USES PROXIMATE TO MAJOR SOURCES OF AIR POLLUTION. [THRESHOLD AQ-4]

Impact Analysis: The 2004 Certified EIR identified that sensitive land uses could be sited near major freeways and expose receptors to substantial pollutant concentrations of CO but concluded that impacts would be less than significant. Since completion of the 2004 Certified EIR, air pollution studies have shown an association between proximity to major air pollution sources and a variety of health effects. Because sensitive land uses are outside CARB jurisdiction, CARB established the Air Quality and Land Use Handbook: A Community Health Perspective in May 2005 to address the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed as a tool for assessing compatibility and associated health risks when placing sensitive receptors near existing pollution sources. CARB recommendations are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations, as shown in Table 5.1-9. This guidance document and the recommended buffer distances were not available at the time of the 2004 Certified EIR.

[7] The four intersections were Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day and LOS E in the morning peak hour and LOS F in the evening peak hour.

Table 5.1-9
CARB Recommendations for Siting New Sensitive Land Uses

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.
Distribution Centers	• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units [TRUs] per day, or where TRU unit operations exceed 300 hours per week). • Take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points.
Rail Yards	• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. • Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health risks.
Refineries	• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. • Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.

Source: CARB 2005.

CARB's recommendations on the siting of new sensitive land uses were developed from a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources. The key observation in these studies is that close proximity to air pollution sources substantially increases exposure and the potential for adverse health effects relative to the existing background concentrations in the air basin. However, the impact of air pollution from these sources is on a gradient that at some point becomes indistinguishable from the regional air pollution problem.

There are several high-volume roadways that generate 100,000 average vehicle trips or more per day, as identified by Caltrans: Interstate 5 (I-5), State Route (SR) -91, SR-57, and SR-55. In addition, several industrial land uses that may generate stationary or mobile sources of TACs (e.g., truck idling) are within the City. New residential land uses could be exposed to substantial concentrations of TACs from mobile or stationary sources. Consequently, under this new criterion, air quality compatibility impacts for new sensitive land uses are potentially significant for the Proposed Project and for the 2004 Approved Project.

The 2004 Certified EIR did not identify this as a potentially significant impact because criterion to evaluate land use compatibility was not yet established. The City has identified a feasible mitigation measure that would reduce the Proposed Project's impacts. With adherence to the mitigation measure below, air quality land use compatibility impacts would be less than significant.

5.1.5 Applicable Mitigation Measures from the 2004 Certified EIR

The following mitigation measures were adopted for the 2004 Approved Project. These mitigation measures apply to the Proposed Project.

Impact 5.1-1

MM 5.2-1 Prior to the issuance of grading permits, the property owner/developer shall include a note on all grading plans which requires the construction contractor to implement the following measures during grading. These measures shall also be discussed at the pregrade conference.

- Use low emission mobile construction equipment.
- Maintain construction equipment engines by keeping them tuned.
- Use low sulfur fuel for stationary construction equipment.
- Utilize existing power sources (i.e., power poles) when feasible.
- Configure construction parking to minimize traffic interference.
- Minimize obstruction of through-traffic lanes. When feasible, construction should be planned so that lane closures on existing streets are kept to a minimum.
- Schedule construction operations affecting traffic for off-peak hours.
- Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service).

Impact 5.1-2

MM 5.2-2 The City shall reduce vehicle emissions caused by traffic congestion by implementing transportation systems management techniques that include synchronized traffic signals and limiting on-street parking.

MM 5.2-3 The City shall encourage major employers, tenants in business parks and other activity centers, and developers of large new developments to participate in transportation management associations.

MM 5.2-4 The City shall consider the feasibility of diverting commercial truck traffic to off-peak periods to alleviate non-recurrent congestion as a means to improve roadway efficiency.

MM 5.2-5 The City will encourage the incorporation of energy conservation techniques (i.e. installation of energy saving devices, construction of electric vehicle charging stations, use of sunlight filtering window coatings or double-paned windows, utilization of light-colored roofing materials as opposed to dark-colored roofing materials, and placement of shady trees next to habitable structures) in new developments.

MM 5.2-6 The City will encourage the incorporation of bus stands, bicycle racks, bicycle lanes, and other alternative transportation related infrastructure in new developments.

5.1.6 Level of Significance Before Additional Mitigation

Upon implementation of regulatory requirements, policies and actions within the General Plan, and standard conditions of approval, the following impacts would be less than significant for the Proposed Project: Impact 5.1-3.

Upon implementation of regulatory requirements, policies and actions within the General Plan, and standard conditions of approval, and the above-listed mitigation measures adopted in the MMRP for the 2004 Approved Project, the following impact would be a potentially significant: Impact 5.1-4.

Upon implementation of regulatory requirements, policies and actions within the General Plan, and standard conditions of approval, and the above-listed mitigation measures adopted in the MMRP for the 2004 Approved Project, the following impacts would be significant (as they were for the 2004 Approved Project): Impact 5.1-1, 5.1-2.

5.1.7 Additional Mitigation Measures for the Proposed Project

The following additional feasible mitigation measure has been incorporated to reduce the potentially significant impacts of the Proposed Project.

Impact 5.1-4

MM 5.2-7 Prior to the issuance of building permits, the property owner/developer for residential or residential mixed-use projects within: 1) 1,000 feet from the truck bays of an existing distribution centers that accommodate more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units, or where transport refrigeration unit operations exceed 300 hours per week; 2) 1,000 feet of an industrial facility which emits toxic air contaminants; or 3) 500 feet of Interstate 5 (I-5), State Route 91 (SR-91), State Route 57 (SR-57) or State Route 55 (SR-55), shall submit a health risk assessment (HRA) prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment (OEHHA) and the South Coast Air Quality Management District (SCAQMD).

The HRA shall be submitted to the Anaheim Planning Department prior to the issuance of building permits for any future residential or residential mixed-use project. If the HRA shows that the incremental cancer risk exceeds one in one hundred thousand (1.0E-05), or the appropriate noncancer hazard index exceeds 1.0, or if the PM10 or PM2.5 ambient air quality standard exceeds 2.5 $\mu g/m^3$, the HRA shall identify the level of high-efficiency Minimum Efficiency Reporting Value (MERV) filter required to reduce indoor air concentrations of pollutants to achieve the cancer and/or noncancer and/or ambient air quality threshold. Heating, ventilation, and air conditioning systems for units that are installed with MERV filters shall maintain positive pressure within the building's filtered ventilation system to reduce infiltration of unfiltered outdoor air. The property owner/developer shall be required to install high efficiency MERV filters in the intake of residential ventilation systems, consistent with the recommendations of the HRA. Heating, air conditioning and ventilation (HVAC) systems shall be installed with a fan unit power designed to force air through the MERV

filter. To ensure long-term maintenance and replacement of the MERV filters in the individual units, the following shall occur:

a) Developer, sale, and/or rental representative shall provide notification to all affected tenants/residents of the potential health risk for affected units.

b) For rental units, the owner/property manager shall maintain and replace MERV filters in accordance with the manufacture's recommendations. The property owner shall inform renters of increased risk of exposure to diesel particulates when windows are open.

c) For residential owned units, the Homeowner's Association (HOA) shall incorporate requirements for long-term maintenance in the Covenant Conditions and Restrictions and inform homeowners of their responsibility to maintain the MERV filter in accordance with the manufacturer's recommendations. The HOA shall inform homeowners of increased risk of exposure to diesel particulates when windows are open.

e) For projects within 500 feet of the freeway, air intakes on residential buildings shall be placed as far from the freeway as possible.

f) For projects within 500 feet of the freeway, the residential buildings should be designed to limit the use of operable windows and/or balconies on portions of the site adjacent to and facing the freeway.

5.1.8 Level of Significance After Additional Mitigation

Impact 5.1-1

Like the 2004 Approved Project, due to the scale of development activity associated with the Proposed Project, emissions would exceed the SCAQMD's significance thresholds and cumulatively contribute to the nonattainment designations of the SCAB. Mitigation Measure 5.2-1 would reduce construction emissions to the extent feasible. However, like the 2004 Approved Project, Impact 5.1-1 would remain significant and unavoidable even after mitigation.

Impact 5.1-2

Like the 2004 Approved Project, criteria air pollutants generated by the Proposed Project would exceed the SCAQMD's thresholds for all criteria air pollutants, except SO_2. Due to the increase in development intensity associated with the Proposed Project, the magnitude of the increase in criteria air pollutants compared to the 2004 Certified EIR would be significant. Mitigation Measures 5.2-2 through 5.2-6 would reduce operational phase air quality impacts to the extent feasible. However, like the 2004 Approved Project, Impact 5.1-2 would remain significant and unavoidable even after mitigation and would result in greater impacts compared to the 2004 Approved Project.

Impact 5.1-4

The 2004 Certified EIR did not identify air quality land use compatibility from siting new sensitive receptors proximate to major mobile source and stationary sources of emissions as a potentially significant impact because criterion to evaluate land use compatibility was not yet established by CARB.

Under CARB's new siting criterion, air quality compatibility impacts for new sensitive land uses are potentially significant for the Proposed Project and for the 2004 Approved Project. New Mitigation Measure 5.2-7 would ensure that future residential projects are designed to reduce indoor concentrations of air pollutants to meet the SCAQMD's significance thresholds and would reduce the Proposed Project's impacts to less than significant. With adherence to Mitigation Measure 5.2-7, air quality land use compatibility impacts would be less than significant.

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