# Section 3.7 | Air Quality/Greenhouse Gas Emissions

## 3.7.1 Introduction

This section describes the affected environment for air quality and greenhouse gas (GHG) emissions, the regulatory setting associated with air quality and GHG emissions, the impacts on air quality and GHG emissions that would result from the project, and the mitigation measures that would reduce these impacts.

Additional information on air quality and GHG emissions is available for review at the County of Los Angeles Department of Public Works.[1]

The key sources of data and information used in the preparation of this section are listed and briefly described below.

The following impact determinations were made in the County of Los Angeles Initial Study Checklist for the proposed project.

### Air Quality

- The project would not exceed the state's criteria for regional significance (generally [a] 500 dwelling units for residential users or [b] 40 gross acres, 650,000 square feet of floor area, or 1,000 employees for non-residential uses).
- The proposed use is not considered a sensitive use (schools, hospitals, parks) and is not located near a freeway or heavy industrial use.
- The project would not increase local emissions to a significant extent due to increased traffic congestion or use of a parking structure, and it would not exceed Air Quality Management District (AQMD) thresholds of potential significance.
- The project would not generate, and the project site is not close to, sources that create obnoxious odors, dust, and/or hazardous emissions.
- The project would not result in impacts associated with other air quality factors.

### Greenhouse Gas Emissions

- The project would not result in impacts associated with other GHG emissions factors.
- These issues are not discussed further in this section.

[1] Contact Ms. Reyna Soriano, County of Los Angeles Department of Public Works, Programs Development Division, 900 South Fremont Avenue, 11th Floor, Alhambra, California 91803; by telephone at (626) 458-5192 or by e-mail at rsoriano@dpw.lacounty.gov

# 3.7.2 Regulatory Setting

## 3.7.2.1 Federal

### Air Quality

The EPA is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for certain atmospheric pollutants, known as "criteria pollutants." As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas (i.e., areas that fail to meet one or more NAAQS) to prepare and submit a state implementation plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

### Greenhouse Gas Emissions

The U.S. Supreme Court ruled in *Massachusetts v. Environmental Protection Agency*, 127 S.Ct. 1438 (2007), that carbon dioxide ($CO_2$) and other GHGs are pollutants under the federal Clean Air Act, which the EPA must regulate if it determines they pose an endangerment to public health or welfare. On April 24, 2009, the EPA issued a proposed finding that GHGs contribute to air pollution that may endanger public health or welfare, which was finalized in December 2009, and became effective on January 14, 2010.

The Clean Energy Act of 2007 created new federal requirements for increased fleet-wide fuel economy for passenger vehicles and light trucks. In addition, on May 19, 2009, President Barack Obama announced a new National Fuel Efficiency Policy aimed at increasing fuel economy and reducing GHG pollution. The new National Fuel Efficiency Policy is expected to increase fuel economy by more than 5% by requiring a fleet-wide average of 35.5 miles per gallon by 2016 starting with model years 2012.

## 3.7.2.2 State

### Air Quality

The California Air Resources Board (CARB), a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

Off-road diesel vehicles, which include construction equipment, are also regulated by CARB for both in-use (existing) and new engines. There have been four sets of standards implemented by CARB for new off-road diesel engines, known as tiers. Tier 1 standards began in 1996. Tiers 2 and 3

were adopted in 2000 and were more stringent than the first tier. Tier 2 and 3 standards were completely phased in by 2006 and 2008, respectively. On December 9, 2004, CARB adopted the Tier 4 or fourth phase of emission standards for late model year diesel engines.

Since off-road vehicles that are used in construction and other related industries can last 30 years or longer, most of those that are in service today are still part of an older fleet that do not have emission controls. As such, CARB approved, on July 26, 2007, a regulation to reduce emission from existing (in-use) off-road diesel vehicles that are used in construction and other industries. This regulation includes an anti-idling limit of 5 minutes for all off-road vehicles 25 horsepower and greater. The regulation also establishes emission rate targets for the off-road vehicles that decline over time to accelerate turnover to newer, cleaner engines and require exhaust retrofits to meet these targets.

## Greenhouse Gas Emissions

In June 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, which established GHG emissions targets for the state. In September 2006, Governor Arnold Schwarzenegger signed into law the California Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32. AB 32 commits the state to achieving the following:

- 2000 GHG emission levels by 2010 (which represents an approximately 11% reduction from business as usual).
- 1990 GHG emission levels by 2020 (approximately 30% below business as usual).

To achieve these goals, AB 32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. The following schedule outlines CARB actions mandated by AB 32:

- By January 1, 2008, CARB adopts regulations for mandatory GHG emissions reporting, defines 1990 emissions baseline for California (including emissions from imported power), and adopts it as the 2020 statewide cap.
- By January 1, 2009, CARB adopts plan to effect GHG reductions from significant sources of GHGs via regulations, market mechanisms, and other actions.
- During 2009, CARB drafts rule language to implement its plan and holds a series of public workshops on each measure (including market mechanisms).
- By January 1, 2010, early action measures take effect.
- During 2010, CARB, after workshops and public hearings, conducts series of rulemakings to adopt GHG regulations, including rules governing market mechanisms.
- By January 1, 2011, CARB completes major rulemakings for reducing GHGs, including market mechanisms. CARB may revise and adopt new rules after January 1, 2011 to achieve the 2020 goal.

- By January 1, 2012, GHG rules and market mechanisms adopted by CARB take effect and become legally enforceable.
- December 31, 2020, is the deadline for achieving the 2020 GHG emissions cap.

Executive Order S-01-07 requires a 10% or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the Low Carbon Fuel Standard as an early measure listed above.

AB 1493 (Pavley Standard) requires CARB to adopt regulations to reduce GHG emissions for noncommercial passenger vehicles and light-duty trucks of model year 2009 and thereafter. The bill requires the California Climate Action Registry to develop and adopt protocols for the reporting and certification of GHG emissions reductions from mobile sources for use by CARB in granting emission reduction credits. California petitioned the EPA in December 2005 to allow more stringent standards. On July 1, 2009, the EPA granted California a waiver that will enable the state to enforce stricter tailpipe emissions on new motor vehicles.

In 2006, under Senate Bill 107, California's Renewables Portfolio Standard (RPS) requires retail suppliers of electric services to increase procurement from eligible renewable energy resources to 20% by 2010. Pursuant to Executive Order S-21-09, the CARB also is currently preparing regulations to supplement RPS with a Renewable Energy Standard that will result in a total renewable energy requirement for utilities of 33% by 2020.

A companion bill to AB 32, Senate Bill 1368, requires the California Public Utilities Commission and California Energy Commission to establish GHG emission performance standards for the generation of electricity. These standards will also generally apply to power that is generated outside of California and imported into the state. Senate Bill 1368 provides a mechanism for reducing the emissions of electricity providers, thereby assisting CARB to meet its mandate under AB 32. On January 25, 2007, the California Public Utilities Commission adopted an interim GHG Emissions Performance Standard, which is a facility-based emissions standard requiring that all new long-term commitments for baseload generation to serve California consumers be with power plants that have GHG emissions no greater than a combined cycle gas turbine plant. That level is established at 1,100 pounds of $CO_2$ per megawatt-hour (MW/hr). Further, on May 23, 2007, the California Energy Commission adopted regulations that establish and implement an identical Emission Performance Standard of 1,100 pounds of $CO_2$ per MW/hr.

California Senate Bill 97, passed in August 2007, is designed to work in conjunction with CEQA and AB 32. Senate Bill 97 required the Office of Planning and Research to prepare and develop guidelines for the mitigation of GHG emissions or the effects thereof including, but not limited to, effects associated with transportation and energy consumption. On December 30, 2009, the Natural Resources Agency adopted the GHG CEQA Guidelines amendments. The Natural Resources Agency transmitted the amendments to the Office of Administrative Law on December 31, 2009.

Senate Bill 375 links regional planning for housing and transportation with the GHG reduction goals outlined in AB 32. Reductions in GHG emissions would be achieved by, for example, locating housing closer to jobs, retail, and transit. Under the bill, each Metropolitan Planning Organization

would be required to adopt a sustainable community strategy to encourage compact development so that the region will meet a target, created by CARB, for reducing GHG emissions.

The California Climate Action Team (CAT), comprised of representatives from various resource agencies in California, is responsible for implementing global warming emissions reduction programs. The 2006 CAT Report identified key measures that will help ensure that California will meet the GHG reduction goals established under the Governor's Executive Order S-3-05 (1990 levels by 2020 and 80% below 1990 levels by 2050).

# 3.7.2.3 Local

## Air Quality

### Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a council of governments for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. It is a regional planning agency and serves as a forum for regional issues relating to transportation, the economy and community development, and the environment.

Although SCAG is not an air quality management agency, it is responsible for developing transportation, land use, and energy conservation measures that affect air quality. SCAG's Regional Comprehensive Plan (RCP) provides growth forecasts that are used in the development of air quality-related land use and transportation control strategies by the South Coast Air Quality Management District (SCAQMD). SCAG's RCP is a framework for decisionmaking for local governments, assisting them in meeting federal and state mandates for growth management, mobility, and environmental standards, while maintaining consistency with regional goals regarding growth and changes through the year 2015, and beyond. Policies within SCAG's RCP include consideration of air quality, land use, transportation, and economic relationships by all levels of government.

### South Coast Air Quality Management District

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin (SCAB), which includes the non-desert portion of Los Angeles County. SCAQMD develops rules and regulations, establishes permitting requirements, inspects emissions sources, and provides regulatory enforcement through such measures as educational programs or fines, when necessary.

SCAQMD is directly responsible for reducing emissions to meet federal and state ambient air quality standards, including preparation of Air Quality Management Plans (AQMPs). The 2007 AQMP was prepared to comply with the federal and California clean air acts, to accommodate growth, to reduce the high levels of pollutants in the SCAB, to meet federal and state air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy. The 2007 AQMP identifies the control measures that will be implemented over a 20-year horizon to reduce major sources of pollutants. Implementation of control measures established in the previous

AQMPs has substantially decreased the population's exposure to unhealthful levels of pollutants, even while substantial population growth has occurred within the SCAB.

Although SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate the air quality issues associated with new development projects within the SCAB. Instead, SCAQMD published the *California Environmental Quality Act (CEQA) Air Quality Handbook* in November 1993 to assist lead agencies in evaluating potential air quality impacts of projects proposed in the SCAB. SCAQMD's *CEQA Air Quality Handbook* provides standards, methodologies, and procedures for conducting air quality analyses in EIRs and was used extensively in the preparation of this analysis.

SCAQMD adopts rules and regulations to implement portions of the AQMP. Several of these rules may apply to project construction and/or operation. For example, SCAQMD Rule 403 requires the implementation of best available fugitive dust control measures during active construction periods capable of generating fugitive dust emissions from onsite earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads.

SCAQMD has developed the mass emission Localized Significance Thresholds (LSTs) to assist with the analysis of local ambient air quality impacts. The mass emission LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of SCAQMD CEQA significance thresholds for carbon monoxide (CO), nitrogen dioxide ($NO_2$), particulate matter less than 10 microns in diameter (PM10) and particulate matter less than 2.5 microns in diameter (PM2.5) based on ambient concentrations of those pollutants at the nearest sensitive receptors.

### Antelope Valley Air Quality Management District

Initially, the desert portion of Los Angeles County, which is located within the Mojave Desert Air Basin (MDAB), was under the jurisdiction of the SCAQMD. However, on July 1, 1997, this area was established as the Antelope Valley Air Pollution Control District (later known as the Antelope Valley Air Quality Management District [AVAQMD]). On January 1, 2002, the AVAQMD became a successor district to the SCAQMD.

The AVAQMD was previously included by the SCAQMD in the *SCAQMD 1994 AQMP*, as well as the 1997 AQMP revision. The AQMP set forth a comprehensive program that would lead the area into compliance with all federal and state air quality standards. The AVAQMD adopted its own *2004 Ozone Attainment Plan* (April 20, 2004); as well as its *Federal 8-Hour Ozone Attainment Plan* on May 20, 2008. In addition, the AVAQMD published the *AVAQMD CEQA and Federal Conformity Guidelines* in December 2008 to assist persons preparing environmental analysis or reviewing documents for any project within the AVAQMD jurisdiction by providing background information and guidance on the preferred analysis approach.

## Greenhouse Gas Emissions

To provide guidance to local lead agencies on determining significance for GHG emissions in CEQA documents, SCAQMD staff is convening an ongoing GHG CEQA Significance Threshold Working Group. Members of the working group include government agencies implementing CEQA

and representatives from various stakeholder groups that provide input to the SCAQMD staff on developing the significance thresholds. On October 8, 2008, SCAQMD released the *Draft AQMD Staff CEQA GHG Significance Threshold*. These thresholds have not been finalized and continue to be developed through the working group.

The AVAQMD has provided no specific guidance for assessing GHG emissions within its jurisdiction.

# 3.7.3 Environmental Setting

This section discusses the existing conditions related to air quality and GHG emissions in the study area.

## Air Quality Pollutants and Standards

As discussed above under regulatory setting, the federal and state governments have established ambient air quality standards for certain pollutants referred to as criteria pollutants. A summary of federal and state ambient air quality standards is provided in Table 3.7-1.

**Table 3.7-1. State and Federal Ambient Air Quality Standards for Criteria Pollutants**

| Pollutant | Averaging Time | California Standards[a] | | Federal Standards[b] | | |
|---|---|---|---|---|---|---|
| | | Concentration[c] | Method[d] | Primary[c,e] | Secondary[c,f] | Method[g] |
| Ozone ($O_3$) | 1 Hour | 0.09 ppm (180 µg/m$^3$) | Ultraviolet Photometry | -- | Same as Primary Standard | Ultraviolet Photometry |
| | 8 Hours | 0.07 ppm (137 µg/m$^3$) | | 0.075 ppm (147 µg/m$^3$) | | |
| Respirable Particulate Matter (PM10) | 24 Hours | 50 µg/m$^3$ | Gravimetric or Beta Attenuation | 150 µg/m$^3$ | Same as Primary Standard | Inertial Separation and Gravimetric Analysis |
| | Annual Arithmetic Mean | 20 µg/m$^3$ | | -- | | |
| Fine Particulate Matter (PM2.5) | 24 Hours | No Separate State Standard | | 35 µg/m$^3$ | Same as Primary Standard | Inertial Separation and Gravimetric Analysis |
| | Annual Arithmetic Mean | 12 µg/m$^3$ | Gravimetric or Beta Attenuation | 15 µg/m$^3$ | | |
| Carbon Monoxide (CO) | 8 Hours | 9 ppm (10 mg/m$^3$) | Nondispersive Infrared Photometry (NDIR) | 9 ppm (10 mg/m$^3$) | None | Nondispersive Infrared Photometry (NDIR) |
| | 1 Hour | 20 ppm (23 mg/m$^3$) | | 35 ppm (40 mg/m$^3$) | | |
| | 8 Hours (Lake Tahoe) | 6 ppm (7 mg/m$^3$) | | -- | -- | -- |

| Pollutant | Averaging Time | California Standards[a] | | Federal Standards[b] | | |
|---|---|---|---|---|---|---|
| | | Concentration[c] | Method[d] | Primary[c,e] | Secondary[c,f] | Method[g] |
| Nitrogen Dioxide ($NO_2$) | Annual Arithmetic Mean | 0.030 ppm (57 µg/$m^3$) | Gas Phase Chemilumin-escence | 53 ppb (100 µg/$m^3$) | Same as Primary Standard | Gas Phase Chemilumin-escence |
| | 1 Hour | 0.18 ppm (339 µg/$m^3$) | | 100 ppb (188 µg/$m^3$) | None | |
| Sulfur Dioxide ($SO_2$) | 24 Hours | 0.04 ppm (105 µg/$m^3$) | Ultraviolet Fluorescence | -- | -- | Spectro-photometry (Pararo-saniline Method) |
| | 3 Hours | -- | | -- | 0.5 ppm (1300 µg/$m^3$) | |
| | 1 Hour | 0.25 ppm (655 µg/$m^3$) | | 75 ppb (196 µg/$m^3$) | -- | |
| Lead[h] | 30-day Average | 1.5 µg/$m^3$ | Atomic Absorption | -- | -- | -- |
| | Calendar Quarter | -- | | 1.5 µg/$m^3$ | Same as Primary Standard | High-volume Sampler and Atomic Absorption |
| | Rolling 3-month Average[i] | -- | | 0.15 µg/$m^3$ | | |
| Visibility-Reducing Particles | 8 Hours | Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70%. Method: Beta attenuation and transmittance through filter tape. | | No Federal Standards | | |
| Sulfates | 24 Hours | 25 µg/$m^3$ | Ion Chromato-graphy | | | |
| Hydrogen Sulfide | 1 Hour | 0.03 ppm (42 µg/$m^3$) | Ultraviolet Fluorescence | | | |
| Vinyl Chloride[h] | 24 Hours | 0.01 ppm (26 µg/$m^3$) | Gas Chromato-graphy | | | |

Source: California Air Resources Board 2011b.

[a] California standards for ozone, CO (except Lake Tahoe), $SO_2$ (1 hour and 24 hours), $N_2O$, suspended particulate matter (PM10), PM2.5, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in 17 CCR 70200.

[b] National standards (other than ozone, particulate matter, and those based on annual averages or an annual arithmetic mean) are not be exceeded more than once a year. The ozone 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 PM10, the 24-hour standard is attained when the expected number of days per calendar with a 24-hour average concentration above 150 µg/$m^3$ is equal to or less than one. For PM2.5, 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.

| Pollutant | Averaging Time | California Standards[a] | | Federal Standards[b] | | |
|---|---|---|---|---|---|---|
| | | Concentration[c] | Method[d] | Primary[c,e] | Secondary[c,f] | Method[g] |

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Centigrade (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

[d] Any equivalent procedure that can be shown to the satisfaction of CARB to give equivalent results at or near the level of the air quality standard may be used.

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

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

[g] Reference method as described by EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by EPA.

[h] CARB 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.

[i] National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Ozone and $NO_2$ are regional pollutants because these pollutants and their precursors affect air quality on a regional scale. $NO_2$ reacts photochemically with reactive organic gases (ROG) to form ozone, and this reaction occurs downwind of the source of pollutants. Pollutants such as CO and particulates (PM10 and PM2.5) are considered local pollutants because they tend to disperse rapidly with distance from the source. The health effects of the pollutants of concern are discussed below.

**Ozone** is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is a severe eye, nose, and throat irritant. Ozone also attacks synthetic rubber, textiles, plants, and other materials. Ozone causes extensive damage to plants, including agricultural crops, by leaf discoloration and cell damage.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include ROG and $NO_X$, react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors, ROG and $NO_X$, are emitted by mobile sources and by stationary combustion equipment.

**Nitrogen Oxides** ($NO_X$) are a family of highly reactive gases that are primary precursors to the formation of ground-level ozone, and react in the atmosphere to form acid rain. $NO_X$ is emitted from the use of solvents and combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. $NO_2$ is a strong oxidizing agent that reacts in the air to form corrosive nitric acid as well as toxic organic nitrates.

$NO_X$ can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. The effects of short-term exposure are still unclear, but continued or frequent exposure to concentrations that are typically much higher than those normally found in the ambient air may cause increased incidence of acute respiratory illness, especially in children. Health effects associated with $NO_X$ include an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to $NO_X$ may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. $NO_X$ can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne $NO_X$ can also impair visibility. $NO_X$ may affect both terrestrial and aquatic ecosystems and is a potentially significant contributor to a number of environmental effects such as acid rain.

**Carbon Monoxide** is essentially inert to plants and materials but can have significant effects on human health. CO combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Effects on humans range from slight headaches and nausea to death. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals also may be affected, but only at higher levels of exposure. Exposure to elevated CO levels can lead to visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

**Inhalable Particulate Matter** pollution consists of very small liquid or solid particles in the air and may consist of smoke, soot, dust, salt, acids, or metals. Particulate matter also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. PM10 refers to particles less than or equal to 10 microns in aerodynamic diameter and PM2.5, a subset of PM10, refers to particles less than or equal to 2.5 microns in aerodynamic diameter.

Particulate matter is emitted from stationary and mobile sources including diesel trucks and other motor vehicles, power plants, industrial processes, wood burning stoves and fireplaces, wildfires, road dust, construction, landfills, agriculture, and fugitive windblown dust. Because particles originate from a variety of sources, their chemical and physical compositions vary widely.

Human health concerns related to particulate matter pollution focus on PM10 and PM2.5 particles, which are small enough—about 1/7th the thickness of a human hair—to be inhaled and lodged in the deepest parts of the lung. Acute and chronic health effects associated with high particulate levels include aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, respiratory illnesses, and cancer. Studies have also shown particulate matter can lead to increased numbers and severity of asthma attacks, reduce the body's ability to fight infections, and even contribute to premature death, particularly for individuals with heart or lung disease. Populations more sensitive to the effects of particulate matter include children, the elderly, and individuals suffering from chronic lung disease (i.e., asthma, bronchitis). In addition, even healthy adults may be more susceptible to health-related effects of these pollutants while exercising.

Other non–health-related effects of particulate matter include reduced visibility, corrosion of human-made and natural materials, and deposition on building exteriors. Particulate matter can also damage plants and affect plant growth.

**Sulfur Oxides** ($SO_X$), including sulfur dioxide ($SO_2$), are colorless, pungent gases formed primarily by combustion of sulfur-containing fossil fuels (mainly coal and oil) and during metal smelting and other industrial processes. $SO_X$ can react to form sulfates, which significantly reduce visibility. In addition, $SO_X$ is a precursor to particulate matter formation.

The major human health concerns associated with exposure to high concentrations of $SO_X$ include effects on breathing, respiratory illness, alterations in pulmonary defenses, and aggravation of existing cardiovascular disease. Emissions of $SO_X$ also can damage foliage of trees and agricultural crops. Together, $SO_X$ and $NO_X$ are the major precursors to acid rain, which is associated with the acidification of lakes, streams, and accelerated corrosion of buildings and monuments.

**Vinyl Chloride** is a sweet-smelling, colorless gas at ambient temperature. Landfills, sewage treatment plants, and polyvinyl chloride (PVC) production (such as pipes, pipe fittings, and plastics) are the major sources of vinyl chloride emissions in California.

Epidemiological studies of workers exposed to vinyl chloride suggest occupational exposure may be linked to development of a rare cancer, liver angiosarcoma, and these studies also have suggested a relationship between occupational exposure and development of lung and brain cancers.

**Lead**, is a metal present naturally in air, water, and the biosphere; it is not created or destroyed in the environment, so essentially it persists forever. Lead was used several decades ago to increase the octane rating in automobile fuel. Because gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels, the use of leaded fuel has been mostly phased out, and the ambient concentrations of lead have dropped dramatically.

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

**Hydrogen Sulfide (**$H_2S$) gas is colorless, with a characteristic odor of rotten eggs. Atmospheric $H_2S$ primarily oxidizes to $SO_2$, which eventually converts into sulfate, then sulfuric acid. When sulfuric acid is transported back to the earth as acid rain, it can damage plant tissue and aquatic ecosystems.

At low levels, $H_2S$ can cause dizziness; irritation to eyes, mucous membranes, and the respiratory tract; nausea; and headaches. Exposure to higher concentrations (above 100 parts per million [ppm]) can cause olfactory fatigue, respiratory paralysis, and death. $H_2S$ can be smelled at concentrations as low as 1/400th the threshold for harmful human health effects.

## Climate and Air Quality

### Non-Desert Area

The non-desert portion of Los Angeles County is located within the SCAB, which is a coastal plain with connecting broad valleys and low hills. The SCAB lies in the presence of the semi-permanent

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

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

The Los Angeles County portion of the SCAB fails to meet national or state standards for ozone, PM10, PM2.5, and lead and, therefore, is considered a nonattainment area for these pollutants. Table 3.7-2 lists each criteria pollutant and its related federal and state attainment status.

**Table 3.7-2. Los Angeles County Portion of SCAB Attainment Status**

| Pollutants | Federal Classification | State Classification |
|---|---|---|
| Ozone (1-hour standard) | -- | Nonattainment, Extreme |
| Ozone (8-hour standard) | Nonattainment, Extreme | Nonattainment |
| Suspended Particulate Matter ($PM_{10}$) | Nonattainment, Serious | Nonattainment |
| Fine Particulate Matter ($PM_{2.5}$) | Nonattainment | Nonattainment |
| Carbon Monoxide (CO) | Attainment/Maintenance | Attainment |
| $NO_2$ | Attainment/Maintenance | Nonattainment |
| $SO_2$ | Attainment | Attainment |
| Lead | Nonattainment | Nonattainment |

Source: EPA 2011 and CARB 2011a.

## Desert Area

The Los Angeles County portion of the MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds are out of the west and southwest. These prevailing winds are due to the proximity to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north. Air masses pushed onshore in Southern California by differential heating are channeled through the area. The MDAB is separated from the southern California coastal and central California Valley regions by mountains (highest

elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevada Mountains in the north by the Tehachapi Pass (3,800-foot elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 feet).

During the summer, the MDAB is generally influenced by a Pacific subtropical high cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving southward from Canada and Alaska, as these frontal systems diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. The MDAB averages between 3 and 7 inches of precipitation per year. The area is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least 3 months have maximum average temperatures over 100.4 degrees Fahrenheit.

Area emissions sources include mobile sources and stationary sources. Mobile sources include motor vehicles, trains, and aircraft. Stationary sources include utilities, natural gas consumption, electricity generation, heating/cooling equipment, dry cleaning equipment, gasoline pumps, and restaurant equipment. Emissions are also generated from construction activities, including the transport of workers and equipment to construction sites, the operation of heavy equipment on the site, fugitive dust, and reactive organic compounds.

The Los Angeles County portion of the MDAB fails to meet both national and state standards for ozone, as well as the state standard for PM10 and, therefore, is considered a nonattainment area for these pollutants. Table 3.7-3 lists each criteria pollutant and its related federal and state attainment status.

**Table 3.7-3. Los Angeles County Portion of MDAB Attainment Status**

| Pollutants | Federal Classification | State Classification |
|---|---|---|
| Ozone (1-hour standard) | -- | Nonattainment, Extreme |
| Ozone (8-hour standard) | Nonattainment, Moderate | Nonattainment |
| Suspended Particulate Matter ($PM_{10}$) | Attainment | Nonattainment |
| Fine Particulate Matter ($PM_{2.5}$) | Attainment | Unclassified |
| Carbon Monoxide (CO) | Attainment | Attainment |
| Nitrogen Dioxide ($NO_2$) | Attainment | Attainment |
| Sulfur Dioxide ($SO_2$) | Attainment | Attainment |
| Lead | Attainment | Attainment |
| Source: CARB 2011a. | | |

## Sensitive Receptors

Some populations are more susceptible to the effects of air pollution than the general population. These population groups are commonly referred to as sensitive receptors. In general, land uses considered to be sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Sensitive receptor sites are located throughout the project vicinity, and are too numerous to cite specifically. For this reason, it is assumed that all land uses adjacent to proposed bikeways are sensitive receptor locations for purposes of impact analysis.

## Greenhouse Gas Emissions

Worldwide, California is the 12$^{th}$ to 16$^{th}$ largest emitter of $CO_2$ and is responsible for approximately 2% of the world's $CO_2$ emissions (CEC 2005).

The transportation sector is responsible for 41% of the state's GHG emissions, followed by the industrial sector (23%), electricity generation (20%), agriculture and forestry (8%), and other sources (8%) (CEC 2005). Emissions of $CO_2$ and nitrous oxide ($N_2O$) are byproducts of fossil fuel combustion, among other sources. Methane ($CH_4$), a highly potent GHG, results from off-gassing associated with agricultural practices and landfills, among other sources. Sinks of $CO_2$ include uptake by vegetation and dissolution into the ocean. California GHG emissions in 2006 totaled approximately 479.8 million metric tons (MMT) in carbon dioxide equivalents ($CO_2e$). Greenhouse gas emissions other than $CO_2$ are commonly converted into $CO_2e$, which takes into account the differing global warming potential (GWP) of different gases. For example, the Intergovernmental Panel on Climate Change (IPCC) finds that $N_2O$ has a GWP of 310 and $CH_4$ has a GWP of 21. Thus, emissions of 1 ton of $N_2O$ and 1 ton of $CH_4$ are represented as the emissions of 310 tons and 21 tons of $CO_2e$, respectively. This method allows for the summation of different GHG emissions into a single total.

Climate change could impact the natural environment in California in the following ways (among others):

- Rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta due to ocean expansion.
- Extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent.
- An increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality.
- Reduced snow pack and stream flow in the Sierra Nevada Mountains, affecting winter recreation and water supplies.
- Potential increase in the severity of winter storms, affecting peak stream flows and flooding.
- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield.

- Changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (CEC 2005). As such, the number of people potentially affected by climate change as well as the amount of anthropogenic GHG emissions expected under a business as usual (BAU) scenario are expected to increase. Similar changes as those noted above for California would also occur in other parts of the world with regional variations in resources affected and vulnerability to adverse effects. GHG emissions in California are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (CEC 2005) as well as natural processes.

### Description of Relevant GHG Pollutants

GHG include $CO_2$, $CH_4$, $N_2O$, and fluorinated gases. Presented below is a description of each GHG and their known sources.

**Carbon Dioxide** ($CO_2$) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products; respiration; and also as a result of other chemical reactions (e.g., manufacture of cement). $CO_2$ is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

**Methane** ($CH_4$) is emitted during the production and transport of coal, natural gas, and oil. $CH_4$ emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

**Nitrous Oxide** ($N_2O$) is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

**Fluorinated Gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global warming potential gases.

- Chlorofluorocarbons (CFCs*)* are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds that are GHGs covered under the Kyoto Protocol.
- Perfluorocarbons (PFCs*)* are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [$CF_4$] and perfluoroethane [$C_2F_6$]) were introduced as alternatives, along with hydrofluorocarbons (HFCs), to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they are strong GHGs.

- Sulfur Hexafluoride *(*$SF_6$*)* is a colorless gas soluble in alcohol and ether, slightly soluble in water. $SF_6$ is a strong GHG used primarily in electrical transmission and distribution systems as a dielectric.[2]
- Hydrochlorofluorocarbons (HCFCs*)* contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.
- Hydrofluorocarbons (HFCs) contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs.

The different GHGs have varying GWP. The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. By convention, $CO_2$ is assigned a GWP of 1. By comparison, $CH_4$ has a GWP of 21, which means that it has a global warming effect 21 times greater than $CO_2$ on an equal-mass basis. $N_2O$ has a GWP of 310, which means that it has a global warming effect 310 times greater than $CO_2$ on an equal-mass basis. To account for their GWPs, GHG emissions are often reported as a $CO_2e$. The $CO_2e$ is calculated by multiplying the emission of each GHG by its respective GWP and summing the values.

# 3.7.4 Project Impacts and Mitigation Measures

This section describes the impact analysis relating to criteria air pollutant and GHG emissions for the Bicycle Master Plan at the program level. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion, if necessary. Detailed analysis at the project level will determine the significance of impacts for individual Bicycle Master Plan projects and, if necessary, the applicability of mitigation measures.

## 3.7.4.1 Methods

### Air Quality

Construction-period emissions were estimated for each type of bikeway using the CalEEMod software model. For this programmatic assessment, conservative estimates of daily emissions were calculated based on the assumption that a 100-foot bikeway segment would be constructed per day for each type of bikeway. Total construction emissions for the entire Plan were then estimated by (1) calculating the number of 100-foot segments for each of the bikeway types, and (2) summing the emissions total. The assumptions for calculating the unit construction emissions for three types of bikeways are described below:

2 An electrical insulator that is highly resistant to the flow of an electric current.

- Class I Bike Path – Construct a 100-foot-long and 8-foot-wide bike path in 1 day. The construction would be expected to involve site preparation and grading, using the default CalEEMod construction equipment for these phases. It was conservatively assumed that both construction phases would occur simultaneously within the same segment. The disturbed area was assumed to be twice as wide (16 feet) as the bike path, which would be 0.04 acre of the construction area. It was assumed that 44 cubic yards of materials would be either excavated or filled to construct a bike path segment.
- Class II Bike Lane – Widen existing road to provide a 100-foot-long and 5-foot-wide bike lane in 1 day. The construction would be expected to involve two phases, demolition of existing pavement/structure and paving a new bike lane, using the default CalEEMod construction equipment for these phases. It was conservatively assumed that both construction phases would occur simultaneously within the same segment. It was assumed that an area 100 feet long and 8 feet wide would be demolished to construct a bike lane segment.
- Class III Bike Route[3]– Add pavement marking for a 100-foot-long bike route in 1 day. It was assumed that few pieces of construction equipment would be used to add pavement markings on the existing pavement for a shared bike route segment. The CalEEMod was used to calculate construction emissions using the paving phase.

The project would not result in any criteria pollutant emissions following completion of construction.

### Greenhouse Gas Emissions

Construction-period GHG emissions were estimated for each type of bikeway using the CalEEMod software following the same assumptions described above under air quality. Following the methodology prescribed by the SCAQMD CEQA Significance Threshold Working Group, construction emissions were amortized over the life of the project, defined as 30 years, to obtain total annual GHG emissions.

## 3.7.4.2 Thresholds of Significance

### Air Quality

For this analysis, an impact pertaining to air quality was considered significant if it would result in a "yes" answer to any of the following questions from the Los Angeles County Initial Study Checklist.

- Would the project conflict with or obstruct implementation of the applicable air quality plan?
- Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation? The SCAQMD and AVAQMD regional construction emissions thresholds identified in Table 3.7-4 are used for this assessment to evaluate regional impacts.

[3] Bicycle boulevards represent a very small proportion of the Bicycle Master Plan projects and would have variable, but limited, construction impacts. Emissions would be negligible.

- With respect to localized impacts, construction would occur throughout Los Angeles County. The County's most conservative localized significance thresholds (LST) values, identified in Table 3.7-5, are used in this assessment to evaluate localized impacts.
- Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standards (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

**Table 3.7-4. Regional Construction Emissions Thresholds (lbs/day)**

| Pollutant | SCAQMD | AVAQMD |
|---|---|---|
| Nitrogen Oxides ($NO_X$) | 100 | 137 |
| Reactive Organic Compounds (ROC) | 75 | 137 |
| Suspended Particulate Matter ($PM_{10}$) | 150 | 82 |
| Fine Particulate Matter ($PM_{2.5}$) | 55 | 82 |
| Sulfur Oxides ($SO_X$) | 150 | 150 |
| Carbon Monoxide (CO) | 550 | 548 |
| Lead [1] | 3 | 3 |
| Hydrogen Sulfide ($H_2S$)[1] | -- | 54 |

[1] The proposed project would have no lead or hydrogen sulfide emissions sources during project construction. As such, these emissions are not evaluated in this report.

Source: SCAQMD 2011a and AVAQMD 2008.

**Table 3.7-5. Localized Construction Emissions Thresholds (lbs/day)**

| Pollutant | Lowest Countywide LST Value |
|---|---|
| Nitrogen Oxides ($NO_X$) | 46 |
| Suspended Particulate Matter ($PM_{10}$) | 4 |
| Fine Particulate Matter ($PM_{2.5}$) | 4 |
| Carbon Monoxide (CO) | 231 |

Notes: Localized thresholds are derived from SCAQMD LST tables and are based on the lowest value Los Angeles County source receptor area (SRA) values for a 1-acre project site at a 25-meter receptor distance.

Source: SCAQMD 2008.

## Greenhouse Gas Emissions

For this analysis, an impact pertaining to GHG emissions was considered significant if it would result in a "yes" answer to any of the following questions from the Los Angeles County Initial Study Checklist.

- Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment (i.e., on global climate change)?
- Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs including regulations implementing AB 32 of 2006, general plan policies and implementing actions for GHG emission reduction, and the Los Angeles Regional Climate Action Plan?

Assessing the significance of a project's contribution to cumulative global climate change involves: 1) determining an inventory of project GHG emissions and 2) considering project consistency with applicable emission reduction strategies and goals, such as those set forth by AB 32. Based on the foregoing, a project would have a significant impact if the project:

- Would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. More specifically, a significant impact would occur if project-wide emissions reductions do not constitute an equivalent or larger reduction from business-as-usual than has been determined by the CARB to be necessary to meet the state AB 32 goals (approximately 28.4%).
- Would conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

# 3.7.4.3 Impacts and Mitigation Measures

## Impact 3.7-1: Conflict with or obstruct implementation of the applicable air quality plan.

The SCAQMD and AVAQMD are required, pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which the air basins are in nonattainment (i.e., ozone, $PM_{10}$, $PM_{2.5}$, and lead). The project would be subject to both jurisdictions' AQMPs, which contain comprehensive lists of pollution-control strategies directed at reducing emissions and achieving ambient air quality standards. These strategies are developed, in part, based on regional population, housing, and employment projections prepared by SCAG.

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development, and the environment. With regard to air quality planning, SCAG has prepared the *Regional Comprehensive Plan and Guide*, which includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the AQMPs. These documents are utilized in the preparation of the air quality forecasts and consistency

analysis included in the AQMPs. Both the RCPG and AQMPs are based, in part, on projections originating with County and City general plans.[4]

Implementation of the Bicycle Master Plan would facilitate the construction of an expanded bikeway network, including the addition of approximately 695 miles of new bikeways, throughout unincorporated Los Angeles County. Bikeways are used in a transitory manner, similar to a transportation corridor. As such, bikeways typically are not given a general plan or zoning designation. The Plan would not conflict with any zoning regulations because any change to the bicycle network would mostly occur within roadways or existing rights-of-way. Additionally, implementation of the Plan would not conflict with the general plan but would supplement, amend, and implement policies from the Mobility Element of the Draft 2035 Los Angeles County General Plan Update to promote alternative transportation. Therefore, no conflicts are anticipated.

### Mitigation Measures

Impacts would be less than significant; therefore, no mitigation is required.

### Level of Significance after Mitigation

Impacts would be less than significant.

## Impact 3.7-2: Violate any air quality standards or contribute substantially to an existing or projected air quality violation.

### Regional Impacts

Project construction has the potential to create air quality impacts through the use of onsite construction equipment emissions, as well as vehicle tailpipe trips generated from construction workers traveling to and from the project site. In addition, fugitive dust emissions would result from site work activities. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources.

The total amount of construction, the duration of construction, and the intensity of construction activity would have a substantial effect upon the amount of construction emissions, concentrations, and resulting impacts occurring at any one time. As such, the emission forecasts provided herein reflect a specific set of conservative assumptions based on the expected construction scenario wherein a relatively large amount of construction is occurring in a relatively intensive manner.

As presented in Tables 3.2-6 and 3.2-7, construction-related daily emissions would not exceed the SCAQMD nor AVAQMD regional significance thresholds. In addition, concurrent emissions from three concurrent 100-foot segment construction activities would also remain below regional significance criteria. Impacts would be less than significant, and no mitigation measures are necessary

[4] SCAG serves as the federally designated MPO for the Southern California region.

**Table 3.7-6. SCAQMD Regional Emissions (lbs/day)**

| | ROG | $NO_X$ | CO | $SO_2$ | PM10 | PM2.5 | $CO_2e$ |
|---|---|---|---|---|---|---|---|
| | lbs/day | | | | | | |
| Class I Bike Path | 4 | 26 | 18 | <1 | 2 | 2 | 2,886 |
| Class II Bike Lane | 5 | 31 | 21 | <1 | 3 | 2 | 3,230 |
| Class III Bike Route | 1 | 8 | 6 | <1 | 1 | 1 | 799 |
| SCAQMD Thresholds | 75 | 100 | 550 | 150 | 150 | 55 | N/A |

Note:
Fugitive PM10 and PM2.5 emissions estimates take into account compliance with SCAQMD fugitive dust control requirements, which require that no visible dust be present beyond the site boundaries.

**Table 3.7-7. AVAQMD Regional Emissions (lbs/day)**

| | ROG | $NO_X$ | CO | $SO_2$ | PM10 | PM2.5 | $CO_2e$ |
|---|---|---|---|---|---|---|---|
| | lbs/day | | | | | | |
| Class I Bike Path | 4 | 29 | 19 | <1 | 2 | 2 | 3,214 |
| Class II Bike Lane | 4 | 31 | 20 | <1 | 3 | 2 | 3,221 |
| Class III Bike Route | 1 | 8 | 6 | <1 | 1 | 1 | 851 |
| AVAQMD Thresholds | 137 | 137 | 547 | 137 | 82 | 82 | N/A |

Note:
Fugitive PM10 and PM2.5 emissions estimates take into account compliance with AVAQMD fugitive dust control requirements, which require that no visible dust be present beyond the site boundaries.

## Localized Impacts

SCAQMD has developed a set of mass emissions rate look-up tables that can be used to evaluate localized impacts that may result from construction-period emissions. If the onsite emissions from proposed construction activities are below the LST emission levels found in the LST mass rate look-up tables for the project site's SRA, then project emissions would not have the potential to cause a significant localized air quality impact.

As discussed previously, mass daily emissions during construction were compiled using the CalEEMod emissions inventory model. However, only onsite construction emissions were considered for purposes of comparison with the LST mass rate look-up tables (i.e., consistent with SCAQMD LST Guidelines, offsite delivery/haul truck activity and employee trips were not considered in the evaluation of localized impacts). The conservative estimates of onsite mass emissions are presented in Tables 3.7-8. As shown therein, the localized emissions are not anticipated to exceed the County's most conservative LST emissions value. Impacts would be less than significant, and no mitigation measures are required.

**Table 3.7-8. SCAQMD Localized Emissions (lbs/day)**

| | $NO_X$ | CO | PM10 | PM2.5 |
|---|---|---|---|---|
| | lbs/day | | | |
| Class I Bike Path | 26 | 18 | 2 | 2 |
| Class II Bike Lane | 28 | 19 | 2 | 2 |
| Class III Bike Route | 8 | 6 | 1 | 1 |
| SCAQMD Thresholds | 46 | 231 | 4 | 3 |

## Mitigation Measures

Impacts would be less than significant; therefore, no mitigation is required.

## Level of Significance after Mitigation

Impacts would be less than significant.

## Impact 3.7-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standards (including releasing emissions which exceed quantitative thresholds for ozone precursors).

For both air districts, the approach for assessing cumulative impacts is based on the respective AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and state clean air acts. As previously discussed, the proposed project would be consistent with both AQMPs, which is intended to bring both air basins into attainment for all criteria pollutants.

In addition, the mass regional emissions calculated for the proposed project and presented earlier in Tables 3.7-6 and 3.7-7 would not exceed daily significance thresholds, which are designed to assist each region in attaining the applicable state and national ambient air quality standards.

The proposed project would comply with the each district's fugitive dust control rule during construction, as well as all other adopted AQMP emissions control measures. Per air district rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., fugitive dust control compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on all projects, which would include all related projects. As such, cumulative impacts with respect to construction criteria pollutant emissions would not be considered cumulatively considerable.

## Mitigation Measures

Impacts would be less than significant; therefore, no mitigation is required.

### Level of Significance after Mitigation

Impacts would be less than significant.

## Impact 3.7-4: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

Construction of the proposed project would generate GHG emissions through the use of onsite construction equipment and offsite vehicle trips generated from construction workers, as well as haul/delivery trucks that travel to and from the project site. Table 3.7-9 presents an estimate of project-related GHG emissions of $CO_2$, $CH_4$, and $N_2O$, expressed in terms of $CO_2e$.

**Table 3.7-9. Estimate of Project-Related Greenhouse Gas Emissions**

| Project Emissions | Annual $CO_2e$ (metric tons) |
|---|---|
| Class I Bike Path Construction | 121.6 |
| Class II Bike Lane Construction | 395.8 |
| Class III Bike Route Construction | 705.2 |
| Total Project GHG Emissions | 1,223 |
| Note: Includes total construction period emissions amortized over 30 years. | |

The proposed project's annual GHG emissions are estimated to be 1,223 metric tons $CO_2e$. This estimate reflects emissions from all construction activity amortized over 30 years. To put this number into perspective, statewide $CO_2e$ emissions for year 2006 were estimated to be 479.8 million metric tons.

While the estimate of vehicle miles traveled (VMT) diverted due to bicycle path infrastructure enhancements was not evaluated, development of the proposed project could potentially reduce VMT as some commuters may mode-shift from automobile to bicycle.

As discussed previously, historic and current global GHG emissions are known by the state and the global scientific community to be causing global climate change. Increases in GHG emissions associated with the proposed project could contribute to significant adverse environmental effects. Furthermore, increased GHG emissions associated with the proposed project could potentially impede implementation of the state's mandatory requirement under AB 32 to reduce statewide GHG emissions to 1990 levels by 2020.

The County does not have adopted plans or programs explicitly mandating GHG emission reductions. Though no technical data and methodologies currently exist that would allow the County to determine what level of GHG emissions, on a project-level, would result in a significant cumulative contribution, the County has conservatively concluded that the project's potential GHG emissions contribution would be potentially significant.

## Mitigation Measures

Detailed analysis of impacts to GHG emissions will be required prior to implementation of individual Bicycle Master Plan projects that would involve substantial use of onsite construction equipment and generate substantial amounts of construction traffic.

**MM 3.7-1: Meet Tier 2 standards for engine/equipment emissions during construction.**

For individual projects in the Bicycle Master Plan where substantial numbers of construction vehicles would be required, all internal combustion engines/construction equipment operating on the project site will meet EPA-certified Tier 2 emissions standards, or higher.

**MM 3.7-2: Turn off equipment when not in use.**

Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, will be turned off when not in use for more than 5 minutes.

**MM 3.7-3: Use existing electricity infrastructure.**

Construction operations will rely on the electricity infrastructure surrounding the construction site rather than electrical generators powered by internal combustion engines, to the extent feasible.

## Level of Significance after Mitigation

With implementation of MM 3.7-1 through MM 3.7-3, impacts would be less than significant.

## Impact 3.7-5: Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

AB 32 identified a 2020 target level for GHG emissions in California of 427 MMT of $CO_2e$, which is approximately 28.5% less than the year 2020 BAU emissions estimate of 596 MMT $CO_2e$. To achieve these GHG reductions, there will have to be widespread reductions of GHG emissions across California. Some of those reductions will need to come in the form of changes in vehicle emissions and mileage standards, changes in the sources of electricity, and increases in energy efficiency by existing facilities. The remainder will need to come from requiring new facility development to have lower carbon intensity than BAU conditions. Therefore, this analysis uses a threshold of significance that is in conformance with the state's goals.

On December 12, 2008, CARB adopted the AB 32 Scoping Plan, which details specific GHG emission reduction measures that target specific GHG emissions sources. Project-related GHG emissions would be reduced as a result of several AB 32 Scoping Plan measures. The Scoping Plan considers a range of actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market based mechanisms (e.g., cap-and-trade system. Some examples include the following:

- Mobile-source GHG emissions reduction measures
    - Pavley emissions standards (19.8% reduction)

  - Low carbon fuel standard (7.2% reduction)
  - Vehicle efficiency measures (2.8% reduction)
- Energy production related GHG emissions reduction measures
  - Natural gas transmission and distribution efficiency measures (7.4% reduction)
  - Natural gas extraction efficiency measures (1.6% reduction)
  - Renewables (electricity) portfolio standard (33.0% reduction)

These reductions in mobile-source and energy production GHG emissions would occur with or without development of the proposed project. The project-specific mitigation measures prescribed above (MM 3.7-1 through MM 3.7-3) would further reduce GHG emissions.

Overall, the proposed project would be consistent with the AB 32 goal of reducing statewide GHG emissions to 1990 levels by year 2020. Currently, no other GHG reduction plan (i.e., SCAG, SCAQMD, or County) applies to the proposed project. The proposed project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs; therefore, impacts would be less than significant.

### Mitigation Measures

Impacts would be less than significant; therefore, no mitigation is required.

### Level of Significance after Mitigation

Impacts would be less than significant.

## 3.7.5 Cumulative

### Air Quality

For both air districts, the approach for assessing cumulative impacts is based on the respective AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and state clean air acts. As previously discussed, the proposed project would be consistent with both AQMPs, which is intended to bring both air basins into attainment for all criteria pollutants.

In addition, the mass regional emissions calculated for the proposed project and presented earlier in Tables 3.7-6 and 3.7-7 would not exceed daily significance thresholds, which are designed to assist each region in attaining the applicable state and national ambient air quality standards.

The proposed project would comply with the each district's fugitive dust control rule during construction, as well as all other adopted AQMP emissions control measures. Per air district rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., fugitive dust control compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures)

would also be imposed on all projects, which would include all related projects. As such, cumulative impacts with respect to construction criteria pollutant emissions would not be considered cumulatively considerable.

## Greenhouse Gas Emissions

With regard to climate change and GHG emissions, there would be no long-term GHG emissions following completion of construction activities, and the amounts of construction-period emissions that would result from development of the proposed project have been shown to be negligible. The proposed project's emissions, alone or in relation to cumulative global emissions, would be insufficient to cause substantial climate change. To the extent that implementation of the Bicycle Master Plan project would reduce emissions by shifting vehicle trips to bicycle trips, there would be beneficial long-term impacts associated with the Plan. In addition, the proposed project has been shown to conform to AB 32 Scoping Plan reduction measures. The proposed project's contribution to worldwide GHG emissions and climate change would not be cumulatively considerable.