5.3 AIR QUALITY

This section examines the air quality in the area of the Project area and region, includes a summary of applicable air quality regulations, and analyzes potential air quality impacts associated with the Project.

5.3.1 EXISTING SETTING

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, together with the current regulatory structure that applies to the Sacramento Valley Air Basin, which encompasses the City of Elk Grove, pursuant to the regulatory authority of the Sacramento Metropolitan Air Quality Management District (SMAQMD).

Ambient air quality is commonly characterized by climate conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the Project area.

AIR BASIN CHARACTERISTICS

Sacramento Valley Air Basin

The proposed Project is located in the Sacramento Valley Air Basin (SVAB), which is under the jurisdiction of the SMAQMD. The SVAB is relatively flat, bordered by mountains to the east, west, and north and by the San Joaquin Valley to the south. Air flows into the SVAB through the Carquinez Strait, moving across the Sacramento Delta, and bringing with it pollutants from the heavily populated San Francisco Bay Area. The climate is characterized by hot, dry summers and cool, rainy winters. Characteristic of SVAB winter weather are periods of dense and persistent low-level fog, which are most prevalent between storm systems. From May to October, the region's intense heat and sunlight lead to high ozone pollutant concentrations. Summer inversions are strong and frequent, but are less troublesome than those that occur in the fall. Autumn inversions, formed by warm air subsiding in a region of high pressure, have accompanying light winds that do not provide adequate dispersion of air pollutants.

Most precipitation in the SVAB results from air masses moving in from the Pacific Ocean during the winter months. These storms usually move through the area from the west or northwest. Over half the total annual precipitation falls during the winter rainy season (November through February); the average winter temperature is a moderate 49 degrees Fahrenheit (°F). During the summer, daytime temperatures can exceed 100°F. Dense fog occurs mostly in mid-winter and never in the summer. Daytime temperatures from April through October average between 70 and 90°F with extremely low humidity. The inland location and surrounding mountains shelter the valley from much of the ocean breezes that keep the coastal regions moderate in temperature. The only breach in the mountain barrier is the Carquinez Strait, which exposes the midsection of the valley to the coastal air mass.

Winds across Elk Grove, which encompasses the Project area, are an important meteorological parameter because they control the dilution of locally generated air pollutant emissions and their regional trajectory. Based on data obtained from the Sacramento Executive Airport, the closest station to the City that measures wind speed and direction, southwest winds are the most predominant (CARB 1992).

Meteorological Influences on Air Quality

Regional flow patterns affect air quality patterns by directing pollutants downwind of sources. Localized meteorological conditions, such as moderate winds, disperse pollutants and reduce pollutant concentrations. However, the mountains surrounding the Sacramento Valley can create a barrier to airflow, which can trap air pollutants in the valley when meteorological conditions are right and a temperature inversion exists. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air, fog, and pollutants near the ground (SMAQMD 2011).

The ozone season (May through October) in the valley is characterized by stagnant morning air or light winds, with the delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the valley. During about half of the days from July to September, however, a phenomenon called the Schultz Eddy prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north and carry the pollutants out of the valley, the Schultz Eddy causes the wind pattern to circle back south. Essentially, this phenomenon causes the air pollutants to be blown south toward the Sacramento area, which exacerbates the pollution levels in the area and increases the likelihood of violating federal or state standards (SMAQMD 2011).

REGIONAL AMBIENT AIR QUALITY

Motor vehicle transportation, including automobiles, trucks, transit buses, and other modes of transportation, is the major contributor to regional air pollution. Stationary sources were once important contributors to both regional and local pollution, and remain significant contributors in other parts of the State and country. However, their role has been substantially reduced in recent years by pollution control programs, discussed below. Any further progress in air quality improvement now focuses heavily on transportation sources.

Criteria Air Pollutants

Criteria air pollutants are defined as those pollutants for which the federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health. The national and California ambient air quality standards have been set at levels to protect human health with a determined margin of safety. For some pollutants, there are also secondary standards to protect the environment. Ozone and particulate matter (PM) are generally considered to be regional pollutants because they or their precursors affect air quality on a regional scale. Pollutants such as carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead are considered to be local pollutants because they tend to accumulate in the air locally. In addition to being considered a regional pollutant, PM is considered a local pollutant. In the Elk Grove region, ozone and PM are of particular concern. Health effects commonly associated with criteria pollutants are summarized in **Table 5.3-1.**

TABLE 5.3-1
CRITERIA AIR POLLUTANTS SUMMARY OF COMMON SOURCES AND EFFECTS

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming, and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O_3)	Formed by a chemical reaction between volatile organic compounds (VOC) and nitrous oxides (NOx) in the presence of sunlight. VOCs are also commonly referred to as reactive organic gases (ROGs). Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles and dyes.
Particulate Matter (PM_{10} & $PM_{2.5}$)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO_2)	A colorless, nonflammable gas formed when fuel containing sulfur is burned; when gasoline is extracted from oil; or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel; damage crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CAPCOA 2011

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be

a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

To date, the California Air Resources Board (CARB) has designated nearly 200 compounds as TACs and 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 a relatively few compounds, one of the most important in California being particulate matter from diesel-fueled engines. In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered as TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter and, because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

Diesel Particulate Matter

According to the California Almanac of Emissions and Air Quality (CARB 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines. Diesel PM differs from other TACs in that it is not a single substance. Rather the exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic. Many of these compounds adhere to the particles, and because diesel particles are so small, they penetrate deep into the lungs. Diesel engine particulate has been identified as a human carcinogen. Mobile sources, such as trucks, buses, automobiles, trains, ships, and farm equipment, are by far the largest source of diesel emissions. Studies show that diesel PM concentrations are much higher near heavily traveled highways and intersections.

Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. No ambient monitoring data is available for diesel PM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a PM exposure method. This method uses CARB's emissions inventory PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest existing ambient risk, for which data is available, in the State. However, diesel PM poses the greatest health risk among the ten TACs mentioned. Based on receptor modeling techniques, CARB estimated its health risk to be 360 excess cancer cases per million people in the SVAB. Since 1990, the health risk from diesel PM has been reduced by 52 percent. Overall, levels of most TACs have decreased since 1990, except for para-dichlorobenzene and formaldehyde (CARB 2009).

Unlike criteria pollutants like nitrogen oxide, TACs do not have ambient air quality standards. Since no safe levels of TACs can be determined, there are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given

exposure. Two types of risk are usually assessed: chronic non-cancer risk and acute non-cancer risk. Diesel PM has been identified as a carcinogenic material but is not considered to have acute non-cancer risks. The State has begun a program of identifying and reducing risks associated with particulate matter emissions from diesel-fueled vehicles. The plan consists of new regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles, new retrofit requirements for existing on-road, off-road, and stationary diesel-fueled engines and vehicles, and new diesel fuel regulations to reduce the sulfur content of diesel fuel as required by advanced diesel emission control systems. Areas where individuals could be exposed to high levels of diesel exhaust in the City include:

- Railroad operations
- Warehouses
- Schools with a high volume of bus traffic
- High-volume highways
- High-volume arterials and local roadways with a high level of diesel traffic

Trucks are considered major sources of diesel-related emissions, and a portion of the Project area is adjacent to State Route 99, a high-volume highway facility.

Elk Grove Ambient Air Quality

Ambient air quality in the City, and thus at the Project area, can be deduced from ambient air quality measurements conducted at air quality monitoring stations. There is one air quality monitoring station in the City located at Elk Grove-Bruceville Road, which monitors ambient concentrations of ozone. Concentrations of ozone and airborne particulate matter were obtained from a nearby monitoring station located in the City of Sacramento (Sacramento-T Street air monitoring station) (see **Table 5.3-2**). Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered representative of ambient concentrations affecting the Project area.

Table 5.3-2 summarizes the last three years of published data from the Elk Grove-Bruceville Road monitoring station and the Sacramento-T Street air monitoring station. As depicted in **Table 5.3-2**, state and federal ozone standards have been exceeded on several occasions during the last three years of available data.

TABLE 5.3-2
AMBIENT AIR QUALITY MONITORING DATA FOR THE CITY OF ELK GROVE

Pollutant Standards	2010	2011	2012
Elk Grove-Bruceville Road Air Quality Monitoring Station			
Ozone			
Max 1-hour concentration (ppm)	0.106	0.097	0.093
Max 8-hour concentration (ppm) (state/federal)	0.089/0.089	0.081/0.080	0.087/0.086
Number of days above state 1-hr standard	1	1	0
Number of days above state/federal 8-hour standard	6/2	6/1	11/5
Sacramento-T Street Air Quality Monitoring Station			
Ozone			
Max 1-hour concentration (ppm)	0.092	0.100	0.104
Max 8-hour concentration (ppm) (state/federal)	1/0	5/1	0.093/0.092
Number of days above state 1-hr standard	0	1	1
Number of days above state/federal 8-hour standard	1/0	5/1	9/4
Respirable Particulate Matter (PM_{10})			
Max 24-hour concentration (μg/m3) (state/federal)	53.9/53.5	42.2/38.8	36.7/36.2
Number of days above state/federal standard	6.1/0	0/0	0/0
Fine Particulate Matter ($PM_{2.5}$)			
Max 24-hour concentration (μg/m3) (state/federal)	37/30.6	50.5/50.5	40.8/27.1
Number of days above federal standard	0	18.4	0

Source: CARB 2013a

µg/m3 = micrograms per cubic meter; ppm = parts per million

– Insufficient or no data currently available to determine the value

5.3.2 REGULATORY FRAMEWORK

The federal Clean Air Act of 1971 and Clean Air Act Amendments (1977) established the national ambient air quality standards (NAAQS), which are promulgated by the US Environmental Protection Agency (EPA). The State of California has also adopted its own California ambient air quality standards (CAAQS), which are promulgated by CARB. The proposed Project would occur in the Sacramento Valley Air Basin, which is under the air quality regulatory jurisdiction of the SMAQMD, and is subject to the rules and regulations adopted by the SMAQMD to achieve attainment with the NAAQS and CAAQS. Federal, state, regional, and local laws, regulations, plans, and guidelines are summarized below.

AMBIENT AIR QUALITY STANDARDS

Both the EPA and CARB have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. The national and California ambient air

quality standards are summarized in **Table 5.3-3**. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas.

Regulations implementing the federal Clean Air Act and its subsequent amendments established national ambient air quality standards for the six criteria pollutants. California has adopted more stringent state ambient air quality standards for most of the criteria air pollutants. In addition, California has established ambient air quality standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Because of the meteorological conditions in the State, there is a considerable difference between State and federal standards in California.

The ambient air quality standards are intended to protect the public health and welfare, and they incorporate an adequate margin of safety. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, elderly, persons weak from other illness or disease, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

TABLE 5.3-3
AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	National Standards
Ozone	8 Hour	0.070 ppm (137$\mu g/m^3$)	0.075 ppm
	1 Hour	0.09 ppm (180 $\mu g/m^3$)	–
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide	1 Hour	0.18 ppm (339 $\mu g/m^3$)	100 ppb
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)	53 ppb (100 $\mu g/m^3$)
Sulfur Dioxide	24 Hour	0.04 ppm (105 $\mu g/m^3$)	N/A
	3 Hour	–	N/A
	1 Hour	0.25 ppm (665 $\mu g/m^3$)	75 ppb
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 $\mu g/m^3$	N/A
	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$
Particulate Matter – Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 $\mu g/m^3$	15 $\mu g/m^3$
	24 Hour	N/A	35 $\mu g/m^3$
Sulfates	24 Hour	25 $\mu g/m^3$	N/A
Lead	Calendar Quarter	N/A	1.5 $\mu g/m^3$
	30 Day Average	1.5 $\mu g/m^3$)	N/A
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	N/A
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 $\mu g/m^3$)	N/A
Visibility-Reducing Particles	8 Hour (10:00 to 18:00 PST)	–	N/A

Source: CARB 2013b

Notes: mg/m3 = milligrams per cubic meter; ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter

AMBIENT AIR QUALITY ATTAINMENT STATUS

Table 5.3-4 shows the national and California attainment status for Sacramento County. The region is nonattainment for both federal and state ozone, PM_{10}, and $PM_{2.5}$ standards (CARB 2011, 2013c).

Areas with air quality that exceed adopted air quality standards are designated as nonattainment areas for the relevant air pollutants. Areas that comply with air quality standards are designated as attainment areas for the relevant air pollutants. Unclassified areas are those with insufficient air quality monitoring data to support a designation of attainment or nonattainment, but are generally presumed to comply with the ambient air quality standard. State Implementation Plans must be prepared by states for areas designated as federal nonattainment areas to demonstrate how the area will come into attainment of the exceeded national ambient air quality standard.

As detailed below, both CARB and the EPA have established air pollution standards in an effort to protect human health and welfare. Geographic areas are designated attainment if these standards are met and nonattainment if they are not met.

TABLE 5.3-4
NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY ATTAINMENT STATUS FOR SACRAMENTO COUNTY

Pollutant	National	California
1-hour Ozone (O_3)	–	Nonattainment
8-hour Ozone (O_3)	Nonattainment	Nonattainment
Coarse Particulate Matter (PM_{10})	Nonattainment	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Unclassifiable/Attainment	Attainment
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO_2)	Unclassified	Attainment
Hydrogen Sulfide (H_2S)	Unclassified	Unclassified

Source: CARB 2011, 2013c

Air quality with respect to criteria air pollutants and toxic air contaminants in the Sacramento Valley Air Basin is regulated by such agencies as the SMAQMD, CARB, and the EPA. Each of these agencies develops rules, regulations, policies, and/or goals to attain the goals or directives imposed through legislation.

Sacramento Metropolitan Air Quality Management District

The SMAQMD coordinates the work of government agencies, businesses, and private citizens to achieve and maintain healthy air quality for the Sacramento area. The SMAQMD develops market-based programs to reduce emissions associated with mobile sources, processes permits, ensures compliance with permit conditions and with SMAQMD rules and regulations, and conducts long-term planning related to air quality.

As a nonattainment area, the region is also required to submit rate-of-progress milestone evaluations in accordance with the Clean Air Act Amendments. These milestone reports include compliance demonstrations that the requirements have been met for the Sacramento nonattainment area. The air quality attainment plans and reports present comprehensive strategies to reduce reactive organic gases (ROG), nitrous oxides (NO_X), and PM_{10} emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations, enhancement of California Environmental Quality Act (CEQA) participation, implementation of a new and modified indirect source review program, adoption of local air quality plans, and stationary-, mobile-, and indirect-source control measures.

Sacramento Area Regional Ozone Attainment Plan

As previously stated, the region is nonattainment for both federal and State ozone standards. The federal 8-hour ozone regulations require that areas classified as serious or above submit a reasonable further progress demonstration plan that shows a minimum of 18 percent volatile organic compound (and/or NO_x) emission reductions over the first six years following the 2002 baseline year and then an average of 3 percent reductions per year for each subsequent three-year period out to the attainment year. The Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan (SMAQMD 2008) includes the information and analyses to fulfill Clean Air Act requirements for demonstrating reasonable further progress toward attaining the 8-hour ozone NAAQS for the Sacramento region. In addition, this plan establishes an updated emissions inventory and maintains existing motor vehicle emission budgets for transportation conformity purposes.

Section 181(b)(3) of the Clean Air Act permits a state to request that the EPA reclassify or "bump up" a nonattainment area to a higher classification and extend the time allowed for attainment. This bump-up process is appropriate for areas that must rely on longer-term strategies to achieve the emission reductions needed for attainment. The air districts in the Sacramento region submitted a letter to CARB in February 2008 to request a voluntary reclassification (bump-up) of the Sacramento federal nonattainment area from a serious to a severe 8-hour ozone nonattainment area with an extended attainment deadline of June 15, 2019. On May 5, 2010, the EPA approved the request effective June 4, 2010.

Sacramento Area Regional PM_{10} Attainment Plan

As previously stated, the region is nonattainment for both national and California PM_{10} and $PM_{2.5}$ standards. The SMAQMD (2010) prepared the PM_{10} Implementation/Maintenance Plan and Re-Designation Request for Sacramento County in compliance with the federal Clean Air Act requirements pertaining to PM_{10} nonattainment areas. The purpose of this plan is to fulfill the requirements for the EPA to redesignate Sacramento County from nonattainment to attainment of the PM_{10} national ambient air quality standards by preparing the following plan elements and tasks:

- Document the extent of the PM_{10} problem in Sacramento County.
- Determine the emission inventory sources contributing to the PM_{10} problem.
- Identify the appropriate control measures that achieved attainment of the PM_{10} NAAQS.
- Demonstrate maintenance of the PM_{10} NAAQS.
- Request formal redesignation to attainment of the PM_{10} NAAQS.

The SMAQMD has also adopted various rules and regulations pertaining to the control of emissions from area and stationary sources. Some of the more pertinent regulatory requirements applicable to the proposed Project are identified as follows (SMAQMD 2011):

- *Rule 402: Nuisance*. The purpose of this rule is to limit emissions which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause or have natural tendency to cause injury or damage to business or property.

- Rule 403: Fugitive Dust. The purpose of this rule is to require that reasonable precautions be taken so as not to cause or allow the emissions of fugitive dust from non-combustion sources from being airborne beyond the property line from which the emission originates.

- Rule 442: The purpose of this rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the district.

City of Elk Grove General Plan

The City of Elk Grove General Plan contains the following policies and actions related to air quality that apply to the proposed Project. These policies and goals are contained in the Conservation and Air Quality Element (City of Elk Grove 2003a). The Project does not include any actions or components that conflict with these General Plan policies. However, it should be noted that the final authority for interpretation of a policy statement, determination of the Project's consistency, ultimately rests with the Elk Grove City Council.

"CAQ-26: It is the policy of the City of Elk Grove to minimize air pollutant emissions from all City facilities and operations to the extent feasible and consistent with the City's need to provide a high level of public service."

"CAQ-27: The City shall promote energy conservation measures in new development to reduce on-site emissions and power plant emissions. The City shall seek to reduce the energy impacts from new residential and commercial projects through investigation and implementation of energy efficiency measures during all phases of design and development."

"CAQ-28: The City shall emphasize "demand management" strategies which seek to reduce single-occupant vehicle use in order to achieve state and federal air quality plan objectives."

"CAQ-29: The City shall seek to ensure that public transit is a viable and attractive alternative to the use of private motor vehicles."

"CAQ-30: All new development projects which have the potential to result in substantial air quality impacts shall incorporate design, construction, and/or operational features to result in a reduction in emissions equal to 15 percent compared to an "unmitigated baseline" project. An "unmitigated baseline project" is a development project which is built and/or operated without the implementation of trip-reduction, energy conservation, or similar features, including any such features which may be required by the Zoning Code or other applicable codes."

"CAQ-32: As part of the environmental review of projects, the City shall identify the air quality impacts of development proposals to avoid significant adverse impacts and require appropriate mitigation measures, potentially including—in the case of projects which may conflict with applicable air quality plans—emission reductions in addition to those required by Policy CAQ-30."

TOXIC AIR CONTAMINANT REGULATIONS

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 Health and Safety Code defines 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 pursuant to subsection (b) of Section 112 of the federal Clean Air Act (42 United States Code Section 7412[b]) is a TAC. Under state law, the California Environmental Protection Agency, acting through CARB, is authorized to identify a substance as a TAC if it determines 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 (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 best available control technology to minimize emissions. CARB has, to date, established formal control measures for eleven 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 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.

Since the last update to the TAC list in December 1999, CARB has 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.

California Diesel Risk Reduction Plan

In September 2000, CARB adopted the Diesel Risk Reduction Plan (DRRP), which recommends many control measures to reduce the risks associated with diesel PM and achieve a goal of 85 percent by 2020. The DRRP incorporates measures to reduce emissions from diesel-fueled vehicles and stationary diesel-fueled engines. Ongoing efforts by CARB to reduce diesel-exhaust emissions from these sources include the development of specific statewide regulations, which are designed to further reduce diesel PM emissions. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce diesel PM emissions.

Since the initial adoption of the DRRP in September 2000, CARB has adopted numerous rules related to the reduction of diesel PM from mobile sources, as well as the use of cleaner-burning fuels. Transportation sources addressed by these rules include public transit buses, school buses, on-road heavy-duty trucks, and off-road heavy-duty equipment.

5.3.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the application of the CEQA Guidelines Appendix G environmental checklist. An air quality impact is considered significant if implementation of the Project will:

1) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

2) Expose sensitive receptors to substantial pollutant concentrations.

3) Create objectionable odors affecting a substantial number of people.

4) Conflict with or obstruct implementation of any applicable air quality plan.

5) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

METHODOLOGY

Short-term construction-related and long-term operational air quality impacts are disclosed and assessed in accordance with methodologies recommended by CARB and the SMAQMD and in comparison to the recommended SMAQMD construction significance threshold of 85 pounds per day of NOx and operational significance threshold of 65 pounds per day of NOx and ROG. Construction emissions account for acreage of on-site and off-site improvements. Both short-term construction emissions and long-term operational emissions associated with the proposed Project were calculated using the California Emissions Estimator Model (CalEEMod), version 2013.2, computer program. This model was developed in coordination with the South Coast Air Quality Management District and is the most current emissions model approved for use in California by various air districts. Outputs from the model runs for both construction and operational activity are provided in **Appendix C**.

City General Plan Policy CAQ-23 requires that all new development projects in Elk Grove with the potential to result in substantial air quality impacts incorporate features to result in a reduction in emissions equal to 15 percent compared to an "unmitigated baseline" project. An unmitigated baseline project is a development project that is built and/or operated without the implementation of trip reduction, energy conservation, or similar features. The SMAQMD provides guidance for proposed projects to mitigate estimated air pollutant emissions by 15 percent. According to the SMAQMD, for projects considered in the State Implementation Plan, the creation and implementation of an Operational Air Quality Mitigation Plan represents appropriate mitigation, provided it reduces ozone precursors (ROG and NO_x) below an unmitigated project by 15 percent. The SMAQMD has established a protocol for Air Quality Mitigation Plan preparation (SMAQMD 2013), which states that on a pound-for-pound basis, NOx

reductions provide greater ozone benefits than ROG reductions. As such, the SMAQMD recommends normalizing ozone precursors based on their ozone creation potential in units of Equivalent Oxides of Nitrogen (NO_xe). **Table 5.3-5** shows the NO_xe conversion rate.

TABLE 5.3-5
NO_xE CONVERSION RATE

Ozone Precursor	Equivalent Oxides of Nitrogen
Nitrogen Oxide	1
Reactive Organic Gases (ROG)	0.3

Source: SMAQMD 2013

Table 5.3-6 shows emissions attributable to the Project, without applicable mitigation included in the CalEEMod model (and, therefore, does not include the mitigating features of the Project). To determine the Project's level of reduction in NO_xe, the Project was modeled with the CalEEMod mitigation measures based on characteristics of the Project as proposed, including its urban character, increased density, increased diversity, improved accessibility, transit accessibility, and improved pedestrian network (see discussion in Impact 5.3.2).

TABLE 5.3-6
UNMITIGATED LONG-TERM OPERATIONAL EMISSIONS – PROJECT AREA BUILDOUT

Operations	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Nitrogen Oxide Equivalents (NO_xe)	Coarse Particulate Matter (PM_{10})	Coarse Particulate Matter (PM_{10})
Summer Emissions – Pounds per Day (Mitigated)					
Project Area – Buildout	779.59	538.31	798.17	608.91	173.40
Winter Emissions – Pounds per Day (Mitigated)					
Project Area – Buildout	749.76	606.22	856.14	608.95	173.43
SMAQMD Potentially Significant Impact Threshold	65 pounds/day	65 pounds/day	–	–	–
Exceed Threshold?	**Yes**	**Yes**	**–**	**–**	**–**

Source: CalEEMod version 2013.2. Refer to Appendix C for model data outputs.

Localized CO Concentrations

The SMAQMD provides a project-level screening procedure to determine whether detailed CO hotspot modeling is required for a proposed development project. Analysis of localized CO impacts relies on the screening methodologies recommended by the SMAQMD. Potential short-term exposure to CO associated with the proposed Project was qualitatively assessed based on a review of Project-generated traffic volumes and predicted intersection levels of service.

Exposure to Toxic Air Pollutants

Exposure to localized concentrations of TACs was assessed based on a review of stationary sources within 2,640 feet of the Project area per the SMAQMD. Potential increases in risk

associated with the future development of new sources associated with the Project were also qualitatively assessed. Potential exposure to localized mobile-source pollutants were qualitatively assessed based on a review of major roadways in the vicinity of the Project area and associated predicted risks provided by the SMAQMD.

Exposure to Odorous Emissions

The SMAQMD considers appropriate land use planning the primary method to mitigate odor impacts. Providing a sufficient buffer zone between sensitive receptors and odor sources should be considered prior to analyzing implementation of odor mitigation technology. In accordance with SMAQMD methodologies, potential exposure to odorous emissions was qualitatively assessed, based on a review of nearby potential odor-generating sources obtained from the SMAQMD.

Sports Complex

The proposed Project includes a Sports Complex Overlay; however, a location for the overlay is not defined by the Project and it is not certain that it will be developed. Projected emissions resulting from the construction of a sports complex would include emissions from diesel-powered construction equipment (e.g., graders, excavators, tractor/loader/backhoes, rubber-tired dozers) as well as particulate matter from fugitive dust. Construction of a sports complex would not individually surpass any significance thresholds with the imposition of mitigation; however, developed as part of the Project as a whole, construction emissions with the sports complex would also exceed SMAQMD's significance threshold for NOx. It should be noted that development of the sports complex would result in the reduction of other land uses in the Project area. Consequently, the total emissions for the Project with the sports complex would be dependent upon which uses in the Project are replaced with the sports complex. Operation of a sports complex in combination with the remainder of the Project could exceed thresholds.

The location and design of the sports complex are not known at this time; therefore, the location of sports complex traffic and any affected intersections and associated carbon monoxide impacts cannot be determined. A sports complex would not be a generator of TACs or odors and would not result in a substantial change in terms of TAC or odor generation as compared to uses in the remainder of the Project area.

Because the design of the sports complex is not currently known, the potential air quality impacts of its construction and operation cannot be precisely determined at this time. Typical mitigation to address potential air quality impacts associated with construction of a large-scale sports complex would be similar to mitigation measures **MM 5.3.1a** through **5.3.1g** below. However, pursuant to CEQA Guidelines Section 15145, if the impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact. Therefore, no further discussion is feasible at this time, and the sports complex component of the proposed Project is not addressed in the following impact analysis.

PROJECT IMPACTS AND MITIGATION MEASURES

Short-Term or Construction-Related Air Quality Impacts (Standard of Significance 1)

Impact 5.3.1 Subsequent land use activities associated with implementation of the proposed Project could result in short-term construction emissions that could violate or substantially contribute to a violation of federal and state standards for ozone and coarse and fine particulate matter. This is considered a **significant** impact.

Implementation of the proposed Project will result in short-term emissions from construction activities associated with subsequent development, including grading, paving, building construction, and architectural coating. The model also takes the acreage for off-site improvements into account. Emissions commonly associated with construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. During construction, fugitive dust, the dominant source of PM_{10} and $PM_{2.5}$ emissions, is generated when wheels or blades disturb surface materials. Uncontrolled dust from construction can become a nuisance and potential health hazard to those living and working nearby. Off-road construction equipment is often diesel-powered and can be a substantial source of NOx emissions, in addition to PM_{10} and $PM_{2.5}$ emissions. Worker commute trips and architectural coatings are dominant sources of ROG emissions.

Since the actual phasing of future development allowed under the proposed Project is not known at this time, construction-related emissions were modeled assuming an equal distribution of proposed development over a ten-year period, which coincides with the City General Plan period. For the purposes of this analysis, the Project's nonresidential square footage and residential units are divided by 10 (the number of years between the current year [2014] and the year of the General Plan horizon [2023]) in order to roughly depict potential construction-related air pollutant emissions that could result in any given year over the span of the City General Plan. However, it is important to note that the proposed Project does not include any policy provisions requiring that its growth potential be attained. This impact discussion assumes full growth potential as identified in **Tables 2.0-1** and **2.0-2** of Section 2.0, Project Description, within ten years in order to present the maximum amount of pollutant emissions possible.

Construction-generated emissions from the proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. Modeling was based primarily on the default settings in the computer program for Sacramento County. Construction equipment requirements and usage rates used in the model were based on model default assumptions as shown in **Appendix C**.

Predicted maximum daily construction-generated emissions for the proposed Project are summarized in **Table 5.3-7**. As shown in **Table 5.3-7**, Project emissions resulting from construction will exceed the SMAQMD significance criterion of 85 pounds per day of NO_x.

TABLE 5.3-7
UNMITIGATED CONSTRUCTION-RELATED CRITERIA POLLUTANT AND PRECURSOR EMISSIONS – ONE YEAR OF CONSTRUCTION POTENTIAL

Construction Phases	Reactive Organic Gases (ROG)	Nitrogen Oxide (NOx)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions – Pounds per Day (Unmitigated)						
One Year of Construction[1]	99.16	89.06	129.86	0.18	12.27	7.08
Winter Emissions – Pounds per Day (Unmitigated)						
One Year of Construction[1]	99.99	91.85	140.25	0.17	12.27	7.08
SMAQMD Potentially Significant Impact Threshold	–	85 pounds/day	–	–	–	–

Construction Phases	Reactive Organic Gases (ROG)	Nitrogen Oxide (NOx)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Exceed SMAQMD Threshold?	–	**Yes**	–	–	–	–

Source: CalEEMod version 2013.2. [1]Building construction, paving, and painting activities assumed to occur simultaneously. Refer to Appendix C for model data outputs.

As identified in **Table 5.3-7**, full growth potential under the proposed Project as identified in **Tables 2.0-1** and **2.0-2** of Section 2.0, Project Description, will exceed the SMAQMD NOx threshold. NOx emissions are primarily associated with use of diesel-powered construction equipment (e.g., graders, excavators, tractor/loader/backhoes, rubber-tired dozers).

Although the potential to locally exceed the PM_{10} and $PM_{2.5}$ California ambient air quality standard exists with the proposed Project, the SMAQMD has no established daily thresholds for either of these pollutants during construction activities due to the temporary generation of these emissions. While construction impacts are temporary and will cease once construction is completed, they nevertheless will have an effect on particulate matter emissions while such activities occur. SMAQMD guidance recommends that all construction activities in the Sacramento Valley Air Basin adhere to SMAQMD Rule 403, which stipulates taking reasonable precautions to prevent the emissions of fugitive dust, such as using water or chemicals for control of dust in construction operations or limiting the speed of off-road construction equipment traveling across unpaved surfaces.

Since NOx emissions are projected to surpass thresholds, this is a **potentially significant** impact and mitigation is required. Furthermore, the SMAQMD recommends adherence to SMAQMD Rule 403 during all construction activities in order to address particulate matter emissions. The following mitigation addresses NOx emissions from diesel-powered construction equipment as well as particulate matter from fugitive dust.

Mitigation Measures

MM 5.3.1a In order to comply with SMAQMD Rule 403, all construction contractors shall be required to water all exposed surfaces, graded areas, storage piles, and haul roads at least twice daily during construction. This requirement shall be included as a note in all future construction plans.

Timing/Implementation: *During all future grading and construction phases in the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; SMAQMD*

MM 5.3.1b In order to comply with SMAQMD Rule 403, all construction contractors shall limit vehicle speed for on-site construction vehicles to 15 mph. This requirement shall be included as a note on the improvement plan submittal of future development.

Timing/Implementation: *During all future grading and construction phases in the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; SMAQMD*

MM 5.3.1c In order to comply with SMAQMD Rule 403, all construction contractors shall wash dirt off construction vehicles and equipment within the staging area prior to leaving the construction site. Wet power vacuum street sweepers shall be used to remove any visible trackout mud or dirt on adjacent public roads at least once a day. Use of dry power sweeping is prohibited. This requirement shall be noted in improvement plans of future development.

Timing/Implementation: *During all future grading and construction phases in the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; SMAQMD*

MM 5.3.1d In order to comply with SMAQMD Rule 403 when transporting soil or other materials by truck during construction activities, all contractors shall maintain 2 feet of freeboard, and the materials shall be covered. This requirement shall be noted in all future improvement plans.

Timing/Implementation: *During all future grading and construction phases in the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; SMAQMD*

MM 5.3.1e In order to reduce NOx emissions during all construction activities, all rubber-tired dozers, graders, scrapers, excavators, and tractors shall be California Air Resources Board (CARB) Tier 3 Certified or better.[1]

Timing/Implementation: *During all future grading and construction phases in the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; SMAQMD*

MM 5.3.1f In order to reduce NOx emissions, signage shall be posted during all construction activities stating the State-mandated prohibition of all on-site trucks idling in excess of 5 minutes under the Heavy-Duty Vehicle Idling Emission Reduction Program.

[1] The Clean Air Act of 1990 directed the EPA to study, and regulate if warranted, the contribution of off-road internal combustion engines to urban air pollution. The first federal standards (Tier 1) for new off-road diesel engines were adopted in 1994 for engines over 50 horsepower and were phased in from 1996 to 2000. In 1996, a Statement of Principles pertaining to off-road diesel engines was signed between the EPA, CARB, and engine makers (including Caterpillar, Cummins, Deere, Detroit Diesel, Deutz, Isuzu, Komatsu, Kubota, Mitsubishi, Navistar, New Holland, Wis-Con, and Yanmar). On August 27, 1998, the EPA signed the final rule reflecting the provisions of the Statement of Principles. The 1998 regulation introduced Tier 1 standards for equipment under 50 horsepower and increasingly more stringent Tier 2 and Tier 3 standards for all equipment with phase-in schedules from 2000 to 2008. As a result, all off-road, diesel-fueled construction equipment manufactured in 2006 or later has been manufactured to Tier 3 standards.

Timing/Implementation: *During all future grading and construction phases in the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; CARB*

MM 5.3.1g In order to reduce NOx emissions, all construction contractors shall maintain all construction equipment in proper working condition according to manufacturers' specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

Timing/Implementation: *During all future grading and construction phases in the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department*

Table 5.3-8 identifies the construction-generated emissions with implementation of mitigation measures **MM 5.3.1a, MM 5.3.1b,** and **MM 5.3.1g** (mitigation measures **MM 5.3.1c** through **MM 5.3.1f** cannot be quantified for reduction values due to limitations in the modeling software). As shown, the employment of off-road construction equipment manufactured to Tier 3 standards or higher during construction activities would reduce NOx emissions and the enforcement of SMAQMD Rule 403 stipulations would reduce PM emissions.

TABLE 5.3-8
MITIGATED CONSTRUCTION-RELATED CRITERIA POLLUTANT AND PRECURSOR EMISSIONS – ONE YEAR OF CONSTRUCTION POTENTIAL

Construction Phases	Reactive Organic Gases (ROG)	Nitrogen Oxide (NOx)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions – Pounds per Day (Mitigated)				
One Year of Construction[1]	95.38	61.07	10.52	4.72
Winter Emissions – Pounds per Day (Mitigated)				
One Year of Construction[1]	96.20	63.86	10.52	4.73
SMAQMD Potentially Significant Impact Threshold	–	85 pounds/day	–	–
Exceed SMAQMD Threshold?	**–**	**No**	**–**	**–**

Source: CalEEMod version 2013.2. [1]Building construction, paving, and painting activities assumed to occur simultaneously. Refer to Appendix C for model data outputs.

As shown, construction-generated pollutant emissions associated with the proposed Project would not surpass any significance thresholds with the imposition of mitigation measures **MM 5.3.1a** through **MM 5.3.1g**. However, since actual phasing of future development allowed under the proposed Project is not known at this time, actual daily emissions would vary from day to day and would be dependent on the specific activities conducted. Therefore, it is possible that more than the assumed ten-year annualized construction rate could be under construction simultaneously during a given year and would generate combined construction emissions that could surpass this threshold and impact air quality. As such, construction-generated emissions of air pollutants could potentially exceed the SMAQMD's significance threshold for NOx. Thus, this impact is considered **significant and unavoidable**.

Long-Term Increases of Criteria Air Pollutants (Standard of Significance 1)

Impact 5.3.2 The proposed Project could result in long-term operational emissions that could violate or substantially contribute to a violation of federal and state standards for ozone and coarse and fine particulate matter. This is considered a **significant** impact.

Implementation of the Project would result in long-term operational emissions of criteria air pollutants and ozone precursors (i.e., ROG and NOx). Project-generated increases in emissions would be predominantly associated with motor vehicle use. To a lesser extent, area sources, such as the use of natural-gas-fired appliances, landscape maintenance equipment, and architectural coatings, would also contribute to overall increases in emissions.

Operational emissions associated with buildout of the proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects. Modeling was based primarily on the default settings in the computer program for Sacramento County. As discussed under Methodology, long-term operational emissions attributable to the Project without applicable CalEEMod mitigations are summarized in **Table 5.3-6**. Under this scenario, the Project would result in a maximum net increase of approximately 779.59 pounds per day (lbs/day) of ROG, 606.22 lbs/day of NOx, 608.95 lbs/day of PM_{10}, and 173.43 lbs/day of $PM_{2.5}$. (Note that emissions rates differ from summer to winter, because weather factors are dependent on the season, and these factors affect pollutant mixing/dispersion, ozone formation, etc.) Emissions resulting from Project buildout under this scenario would exceed the SMAQMD significance criteria.

As noted above, this baseline scenario does not account for characteristics of the Project that would result in reductions in emissions from the Project. The primary objective for the Southeast Policy Area Strategic Plan is to provide a range of job opportunities that are supported by a mix of residential densities and locally oriented retail uses. The Southeast Policy Area Strategic Plan, through its proposed Guiding Principles, would integrate with surrounding land uses through the incorporation of parks and open space, trails, and landscape buffers. The Project proposes a complete transportation network made up of roadways, sidewalks, trails, and transit (including light rail) that would allow for the safe and effective movement of people and goods within the plan and connect them with other parts of the City and region. Development would be of quality design and materials that contribute to the sense of place and identity for the area. As stated in Section 2.0, Project Description, most job-generating land uses would be located in the core area, including most of the Office, Light Industrial/Flex Space, and Mixed Use land uses planned for the Project. Residential densities have been laid out with the most intense residential areas closest to the core area, becoming less dense as the distance from the core area increases. This situates the highest densities and concentrations of both residents and jobs closest to transit and major roads. The Project also includes a mixed-use component, which would allow for the development of residential units and office and retail uses. The mixed-use areas would create a Village Center at the core of the Project area, which combines aspects of residential and nonresidential land uses to form a more urban development type, more dense than the rest of the City, including the development of a future light rail station. These development areas are expected to make use of vertical space, with retail uses on the ground floor and office or residential uses on upper floors. The core area has been designed to be centrally located within the Project area and to be easily accessible by a range of uses and services. As a result of these Project characteristics, the Project area would be less reliant upon automobiles and vehicle miles traveled would be reduced, and the Project would have a corresponding reduction in air pollutant emissions. Long-term operational emissions attributable to the proposed Project

accounting for land use plan and mixed-use characteristics of the proposed Project are shown in **Table 5.3-9**.

TABLE 5.3-9
LONG-TERM OPERATIONAL EMISSIONS ACCOUNTING FOR EFFICIENT LAND USE – PROJECT AREA BUILDOUT

Operations	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_X)	Nitrogen Oxide Equivalents (NO_xe)	Coarse Particulate Matter (PM_{10})	Coarse Particulate Matter (PM_{10})
Summer Emissions – Pounds per Day (Mitigated)					
Project Area – Buildout	751.67	407.40	657.95	392.78	113.80
Percent Reduction from Baseline	4%	24%	17.5%	35%	34%
Percent Reduction Threshold	--	--	15%	15%	15%
Achieve Necessary Reduction?	**--**	**--**	**Yes**	**Yes**	**Yes**
Winter Emissions – Pounds per Day (Mitigated)					
Project Area – Buildout	723.56	454.29	695.47	392.82	113.83
Percent Reduction from Baseline	3.5%	25%	19%	35%	34%
Percent Reduction Threshold	--	--	15%	15%	15%
Achieve Necessary Reduction?	**--**	**--**	**Yes**	**Yes**	**Yes**

Source: CalEEMod version 2013.2. To account for Southeast Policy Area Strategic Plan Guiding Principles, a project diversity metric of 9.5 dwellings per residential acreage and 49 jobs per "job acre" is employed in the modeling software. In addition, an increase in density and improvement of pedestrian network is accounted as well as the assumption that all future residents of the Project are located 1 mile from a job center and 1 mile from mass transit. Refer to Appendix C for model data outputs.

As previously described, City General Plan Policy CAQ-23 requires that all new development projects in Elk Grove which have the potential to result in substantial air quality impacts incorporate features to result in a reduction in emissions equal to 15 percent compared to an "unmitigated baseline" project. An unmitigated baseline project is a development project that is built and/or operated without the implementation of trip reduction, energy conservation, or similar features. As shown in **Table 5.3-9**, emissions reductions achieved by the Project as proposed would exceed the 15 percent requirement in General Plan Policy CAQ-23.

While the Project as proposed achieves the 15 percent reduction called for in the General Plan, the SMAQMD provides guidance for proposed projects to prepare and implement an Operational Air Quality Mitigation Plan (AQMP) that reduces ozone precursors (ROG and NO_x) below an unmitigated project by 15 percent for projects considered in the State Implementation Plan. The SMAQMD provides direction that the AQMP should be included as a mitigation measure in the environmental document. The City is currently coordinating with SMAQMD staff for the preparation of the AQMP, and consistent with SMAQMD direction, a mitigation measure requiring the preparation of the AQMP is also included in this DEIR.

The proposed Project would be consistent with City General Plan Policy CAQ-23 and achieve the SMAQMD's goal for NO_xe reductions, but Project emissions would exceed the SMAQMD significance thresholds of 65 pounds per day of ROG and NO_x. This would be a **potentially significant** impact.

Mitigation Measures

MM 5.3.2 The City shall prepare an Air Quality Management Plan that demonstrates a 15 percent reduction in NO_x equivalents for the Southeast Policy Area Project, compared to an unmitigated project. The Air Quality Management Plan shall be submitted to the Sacramento Metropolitan Air Quality Management District for review and endorsement.

Timing/Implementation: *Prior to final map approval*

Enforcement/Monitoring: *City of Elk Grove Planning Department; Sacramento Metropolitan Air Quality Management District*

The analysis prepared pursuant to SMAQMD guidance (SMAQMD 2013) demonstrates a NO_xe reduction of more than 15 percent, as shown in **Table 5.3-9,** and reductions of coarse and fine particulate matter surpass 15 percent. Therefore, the proposed Project would be consistent with City General Plan Policy CAQ-23 and achieve the SMAQMD's goal for NO_xe reductions. However, Project emissions would exceed the SMAQMD significance thresholds of 65 pounds per day of ROG and NO_x. Therefore, operational emissions would represent a **significant and unavoidable** impact.

Exposes Sensitive Receptors to Substantial Carbon Monoxide Pollutant Concentrations (Standard of Significance 2)

Impact 5.3.3 The Project would not contribute to localized concentrations of mobile-source carbon monoxide that would exceed applicable ambient air quality standards. This is considered a **less than significant** impact.

The primary mobile-source criteria pollutant of local concern is carbon monoxide (CO). As noted previously, Sacramento County, which encompasses Elk Grove, is currently designated attainment for both California and national CO ambient air quality standards, and the county typically experiences low background CO concentrations.

Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Transport of this criteria pollutant is extremely limited; CO disperses rapidly with distance from the source under normal meteorological conditions. Under certain meteorological conditions, however, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hotspots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. Therefore, modeling is typically conducted for intersections that are projected to operate at unacceptable levels of service during peak commute hours.

The SMAQMD provides a two-tiered, project-level screening procedure to determine whether detailed CO hotspot modeling is required for a proposed development project (SMAQMD 2011).

This preliminary screening methodology provides lead agencies with a conservative indication of whether project-generated vehicle trips would result in the generation of CO emissions that contribute to an exceedance of the thresholds of significance. According to the SMAQMD, the proposed Project would result in a less than significant impact to air quality for local CO if:

- Traffic generated by the proposed Project would not result in deterioration of intersection level of service (LOS) to LOS E or F;[2] or

- The Project would not contribute additional traffic to an intersection that already operates at LOS of E or F.

As identified in the transportation impact analysis prepared for the Project, most study intersections currently operate acceptably at LOS D or better during both peak hours (Fehr & Peers 2014, pp. 60–64). However, the addition of the proposed Project would result in unacceptable LOS E or F operations at several study intersections that cannot be mitigated to less than significant levels. These include the following:

- Elk Grove Boulevard/Bruceville Road – LOS E during the PM peak hour

- Elk Grove Boulevard/Big Horn Boulevard – LOS E during the AM peak hour and LOS F during the PM peak hour

- Elk Grove Boulevard/Laguna Springs Drive – LOS E during the AM peak hour and PM peak hour

- Kammerer Road/Promenade Parkway – LOS E during the PM peak hour

According to the SMAQMD, if the first tier of screening criteria is not met, the second tier of screening criteria is to be examined. The second tier of the screening criteria states that the proposed Project would result in a less than significant impact to air quality for local CO if:

- The Project will not result in an affected intersection experiencing more than 31,600 vehicles per hour;

- The Project will not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway, or other locations where horizontal or vertical mixing of air will be substantially limited; and

- The mix of vehicle types at the intersection is not anticipated to be substantially different from the County average (as identified by the EMFAC or CalEEMod models).

According to the transportation impact analysis prepared for the Project, none of the intersections identified above would accommodate more than 31,600 vehicles per hour (Fehr & Peers 2014, Appendix 5.13). For instance, the Elk Grove Boulevard/Bruceville Road intersection will experience 7,080 vehicle trips during the PM peak hour and 5,900 vehicles at the AM peak hour, and the Elk Grove Boulevard/Big Horn Boulevard intersection will experience 7,610 vehicle trips during the PM peak hour and 7,370 vehicles at the AM peak hour. The Elk Grove

[2] Level of service (LOS) is a measure used by traffic engineers to determine the effectiveness of transportation infrastructure. LOS is most commonly used to analyze intersections by categorizing traffic flow with corresponding safe driving conditions. LOS A is considered the most efficient level of service and LOS F the least efficient.

Boulevard/Laguna Springs Drive intersection will experience 6,590 vehicle trips during the PM peak hour and 6,220 vehicles at the AM peak hour, and the Kammerer Road/Promenade Parkway intersection will experience 7,520 vehicle trips during the PM peak hour and 6,400 vehicles at the AM peak hour. In addition, the Project would not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway, and the mix of vehicle types is not anticipated to be any different from the county average. As such, the proposed Project would not exceed the SMAQMD's significance thresholds for carbon monoxide. This would be considered a **less than significant** impact.

Mitigation Measures

None required.

Exposure of Sensitive Receptors to Toxic Air Contaminant Pollutant Concentrations (Standard of Significance 2)

Impact 5.3.4 The proposed Project could result in increased exposure of existing or planned sensitive land uses to stationary or mobile-source TACs that would exceed applicable standards. As a result, this impact is considered **potentially significant**.

Sensitive land uses are generally defined as locations where people reside or where the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, schoolchildren, hospital patients, and the elderly.

Short-Term Construction Sources

Potential sources of TACs associated with construction-related activities are primarily associated with the diesel PM associated with the use of diesel-powered construction equipment. CARB identified particulate exhaust emissions from diesel-fueled engines as a toxic air contaminant in 1998.

Health-related risks associated with diesel PM are primarily linked to long-term exposure and the associated risk of contracting cancer. According to the Office of Environmental Health Hazard Assessment (OEHHA) (2003), the calculation of cancer risk associated with exposure to TACs should be based on a 70-year period of exposure; however, such assessments should be limited to the period/duration of activities associated with the Project. Thus, the duration of the proposed construction activities would only constitute a small percentage of the total 70-year exposure period. As previously stated, the actual phasing of future construction allowed under the proposed Project is not known at this time. However, while it is not anticipated that construction of the entire Project area will last 70 years, the construction of uses allowed in the Project area could occur over several years. This is considered a potentially significant impact.

In order to ensure that no negative effects result from short-term construction-related TAC generation, the SMAQMD recommends implementation of SMAQMD Basic Construction Emission Control Practices, such as those contained in SMAQMD Rule 403 and required under mitigation measures **MM 5.3.1a** through **MM 5.3.1d** and **MM 5.3.1f** through **MM 5.3.1g**. In addition, SMAQMD recommends their Enhanced Exhaust Control Practices for off-road construction equipment, which reduce particulate exhaust emissions by 45 percent and regulate the opacity of exhaust from all off-road diesel-powered equipment.

Mitigation Measures

MM 5.3.4a Subsequent development projects within the Project area shall provide a plan for approval by the SMAQMD demonstrating that the heavy-duty (50 horsepower [hp] or more) off-road vehicles to be used in the construction of the Project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet-average 20 percent NOx reduction and 45 percent particulate reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

Timing/Implementation: *Plan shall be submitted to the SMAQMD for review and approval prior to approval of improvement plans and shall be implemented during all grading and construction within the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; SMAQMD*

MM 5.3.4b Subsequent development projects within the Project area shall ensure that emissions from all off-road diesel powered equipment used do not exceed 40 percent opacity for more than 3 minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Noncompliant equipment shall be documented and a summary provided to the City Planning Department and the SMAQMD monthly. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of construction, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed and the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this measure shall supersede other SMAQMD or State rules or regulations.

Timing/Implementation: *During all grading and construction within the Project area*

Enforcement/Monitoring: *City of Elk Grove Planning Department; SMAQMD*

Implementation of mitigation measures **MM 5.3.4a** and **MM 5.3.4b** would reduce NOx emissions by 20 percent and particulate exhaust emissions by 45 percent according to the SMAQMD. As a result of these reductions, diesel PM generated by Project construction would not be expected to create conditions where the probability of contracting cancer is greater than 10 in 1 million for nearby receptors. Associated impacts would be **less than significant**.

Long-Term Operational Sources

According to the SMAQMD, when a project would include the development of new sensitive receptors, such as residences, schools, and parks, all sources of TACs that could potentially affect the proposed development within a half mile (2,640 feet) of the Project area should be analyzed. According to CARB's (2004) Community Health Air Pollution Information System, there are no stationary sources of TACs with a half mile of the Project area. This search was augmented by the EPA's (2013) National Toxic Program Release Chemical Report, which identifies that the nearest stationary source of toxics to the Project area is located at Dwight Road over 4 miles to the northwest. Therefore, there are no sources of stationary emitting sources of TACs within a half mile (2,640 feet) of the Project area.

In the case that a new stationary source of TACs is proposed to be sited within or in the vicinity of the Project area, it would subject to the rules under SMAQMD Regulation 2, Permits. Under this regulation, each new stationary source is evaluated by the SMAQMD to determine whether it has the potential to emit TACs. The SMAQMD would assess the impact from TACs based on its guidance document, *Supplemental Risk Assessment Guidelines for New and Modified Sources*, as well guidance documents from Office of Environmental Health Hazard Assessment (OEHHA), CARB and the California Air Pollution Control Officers Association. The SMAQMD requires emission controls, similar to Best Available Control Technology (BACT), called Toxic Best Available Control Technology (T-BACT) for certain sources. In addition to T-BACT requirements, permits for equipment that may emit TACs may also contain conditions required by the National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Air Toxic Control Measures (ATCMs) promulgated by the EPA and CARB, respectively. In short, a new stationary source of TACs would not receive the authority to construct or permit to operate if it would result in:

- An incremental increase in cancer risk greater than 10 in one million at any off-site receptor; and/or

- An off-site ground-level concentration of non-carcinogenic TACs generated from the use that would result in a Hazard Index greater than 1 (unless approved by OEHHA).

These permitting requirements are identical to the SMAQMD's thresholds of significance for TACs generated by stationary sources or land uses that include non-permitted sources (e.g., truck distribution yards). Therefore, lead agencies can determine that a new stationary source of TACs that attains the authority to construct and permit to operate from the district would not exceed the SMAQMD's applicable TAC thresholds of significance.

Major freeways and major roadways, defined by CARB as facilities that accommodate more than 100,000 daily vehicle trips, are another source of TACs. Locating sensitive land uses such as residences, schools, or parks near major freeways and major roadways that accommodate more than 100,000 daily vehicle trips could result in negative health effects, as these roadways are sources of diesel PM.

In April 2005, CARB released the *Air Quality and Land Use Handbook: A Community Health Perspective*, which offers guidance on siting sensitive land uses in proximity to sources of air toxics. The handbook recommends that sensitive land uses be sited no closer than 500 feet from a major freeway or major roadway, a buffer area that was developed to protect sensitive receptors from exposure to diesel PM, which was based on traffic-related studies that showed a 70 percent drop in particulate matter concentrations at a distance of 500 feet from the roadway. Presumably, acute and chronic risks as well as lifetime cancer risk due to diesel PM exposure are lowered proportionately.

The nearest freeway in relation to the Project area is State Route (SR) 99, adjacent to the northeastern boundary of the Project area. SR 99 is a north–south freeway that provides a connection between all of the major cities in the Central Valley, from Sacramento and Stockton in the north to the cities of Modesto, Merced, Fresno, and Bakersfield in the south. SR 99 is the most heavily traveled traffic facility in the Project area vicinity. The segment of SR 99 adjacent to the Project area averages 70,000 vehicle trips daily, which is under the CARB-defined trip threshold of 100,000 daily trips to be considered a major freeway. Furthermore, a review of the proposed land use plan (see **Figure 2.0-3**) shows that office land uses are proposed for the areas adjacent to SR 99; this land use is not considered a sensitive receptor. The proposed sensitive land use nearest to SR 99 (residential) is more than 1,000 feet west of SR 99, which is beyond the CARB-recommended buffer of 500 feet. Therefore, the segment of SR 99 adjacent to the Project area is not considered a major freeway segment, and all proposed Project area sensitive land uses will be located beyond the recommended buffer area associated with a major freeway segment. Thus, the proposed Project would not expose existing or planned sensitive land uses to stationary or mobile-source TACs and therefore would result in a **less than significant** impact.

Mitigation Measures

None required.

Exposure of Sensitive Receptors to Odorous Emissions (Standard of Significance 3)

Impact 5.3.5 Implementation of the proposed Project would not result in increased exposure of sensitive receptors to odorous emissions. As a result, potential exposure of sensitive receptors to odors would be considered **less than significant**.

The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source, wind speed and direction, and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they can be unpleasant and lead to distress among the public and generate citizen complaints to local governments and regulatory agencies. Land uses commonly considered to be potential sources of odorous emissions include wastewater treatment plants, sanitary landfills, food processing facilities, chemical manufacturing plants, rendering plants, paint/coating operations, and agricultural feedlots and dairies.

While implementation of the proposed Project could result in the development of industrial land uses that could be a source of odors, the actual uses that would be developed is not known at this time, as no specific development projects are currently proposed. Therefore, the evaluation of specific odor impacts would be speculative for the purposes of this analysis. However, future development allowed under the proposed Project would be subject to City General Plan Policy AQ-22, which requires the provision of buffers between sensitive land uses and sources of odor. Therefore, future development allowed under the proposed Project would be subject to a review of proposed land uses for compatibility with each other as well as with existing land uses, and buffer areas to protect development from odor impacts will be established between incompatible uses.

No major sources of odors were identified in the vicinity of the Project area that could potentially affect proposed on-site land uses, with the exception of existing dairy operations scattered throughout the Project area and vicinity. However, City General Plan Policy AG-4 states that prospective buyers of agricultural land or property adjacent to agricultural land are required to

be notified through the title report that they could be subject to inconvenience or discomfort, including odors, resulting from accepted farming activities.

As a result of the General Plan requirement to review proposed land uses for compatibility with each other as well as with existing land uses in terms of odors on a case-by-case basis, exposure of sensitive receptors to odorous emissions would be considered **less than significant**.

Mitigation Measures

None required.

5.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for air quality is the Sacramento Valley Air Basin. The SVAB includes the counties of Sacramento, Placer, Yuba, Sutter, and parts of Solano and Yolo counties. The climate and geography of the lower SVAB severely limits the dilution and transportation of any air pollutants that are released to the atmosphere. At current levels of development (residential, commercial, industrial, etc.) and activity, the air basin exceeds the state/federal ambient standards for particulates and ozone. As a result, the region is required to submit air quality attainment plans (i.e., Sacramento Area Regional Ozone Attainment Plan and/or the Sacramento Area Regional PM_{10} Attainment Plan) that present comprehensive strategies to reduce air pollutant emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations, enhancement of CEQA participation, implementation of a new and modified indirect source review program, adoption of local air quality plans, and stationary-, mobile-, and indirect-source control measures. Cumulative growth in population, vehicle use, and industrial activity in the SVAB region could inhibit efforts to improve regional air quality and attain the ambient air quality standards. For example, the Capitol Southeast Connector project has proposed to construct a 35-mile-long multimodal transportation facility that will link communities in Sacramento and El Dorado counties, including Elk Grove, Rancho Cordova, Folsom, and El Dorado Hills. According to the draft EIR prepared for the Capitol Southeast Connector project (JPA 2011), it will have a significant cumulative impact on NOx emissions and there is no feasible mitigation to reduce NOx emissions to a less than significant level. Therefore, the combined emissions from the Capitol Southeast Connector project and the proposed Project would also exceed significance thresholds.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Result in a Cumulatively Considerable Net Increase in Nonattainment Criteria Pollutant (Standards of Significance 4 and 5)

Impact 5.3.6 The proposed Project in combination with growth throughout the air basin will exacerbate existing regional problems with ozone and particulate matter. This is considered a **cumulatively considerable** impact.

Due to the region's nonattainment status for ozone and PM, if Project-generated emissions of either of the ozone precursor pollutants (i.e., ROG and NOx) or PM exceed the long-term SMAQMD thresholds, then the Project's cumulative impacts will be considered significant as determined by the SMAQMD. In addition, if the Project results in a change in land use and corresponding increases in vehicle miles traveled (VMT), the regional emissions inventories

contained in regional air quality control plans, such as the Sacramento Area Regional Ozone Attainment Plan and/or the Sacramento Area Regional PM_{10} Attainment Plan, may not account for the resultant increase in VMT. Substantial increases in VMT that are not accounted for in the emissions inventory may result in a considerable cumulative contribution to the region's existing air quality nonattainment status.

As discussed in Impact 5.3.2, predicted long-term operational emissions attributable to the proposed Project would exceed SMAQMD significance thresholds. Furthermore, the proposed Project will require the approval of a rezone to Special Planning Area District; thus, the Project will result in a change in land use that could result in a potential increase in VMT not accounted for in regional emissions inventories contained in regional air quality control plans. For these reasons, the proposed Project would result in a cumulatively considerable contribution to regional problems with ozone and PM.

Mitigation Measures

Implement mitigation measures **MM 5.3.1a** through **MM 5.3.1g**, **MM 5.3.2**, **MM 5.3.4a,** and **MM 5.3.4b**.

Even with implementation of the above measures, the Project would contribute emissions in the SVAB that already exceed thresholds. Therefore, this would be a **cumulatively considerable** and **significant and unavoidable** impact.

REFERENCES

Caltrans (California Department of Transportation). 2013. Caltrans Traffic and Vehicle Data Systems Unit. http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2012all/index.html.

CAPCOA (California Air Pollution Control Officers Association). 2011. Website: *Health Effects*. http://www.capcoa.org/health-effects/

CARB (California Air Resources Board). 1992. Aerometric Data Division. *California Surface Wind Climatology*.

———. 1999. *Final Staff Report: Update to the Toxic Air Contaminant List.*

———. 2004. *Community Health Air Pollution Information System (CHAPIS*). http://www.arb.ca.gov/gismo2/chapis_v01_6_1_04/.

———. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.*

———. 2009. *The California Almanac of Emissions and Air Quality: 2009 Edition*.

———. 2011. Federal Area Designation Map. http://www.arb.ca.gov/desig/adm /adm.htm.

———. 2013a. *Air Quality Data Statistics.* http://www.arb.ca.gov/adam/index.html.

———. 2013b. *Ambient Air Quality Standards*. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

———. 2013c. State Area Designation Map. http://www.arb.ca.gov/desig/adm /adm.htm.

City of Elk Grove. 2003. *City of Elk Grove General Plan.*

EPA (Environmental Protection Agency). 2013. *National Air Toxics Program: Release Chemical Report*. http://iaspub.epa.gov/triexplorer/tri_release.chemical.

Fehr & Peers. 2014. *Draft Transportation Impact Analysis: Southeast Policy Area*.

JPA (Capitol Southeast Connector Joint Powers Authority). 2011. *Capital Southeast Connector Revised Draft Environmental Impact Report*.

OEHHA (Office of Environmental Health Hazard Assessment). 2003. *The Air Toxics Hot Spot Program Guidance Manual for Preparation of Health Risk Assessments.*

SMAQMD (Sacramento Metropolitan Air Quality Management District). 2008. *Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan*.

———. 2010a. *Federal Ozone Planning.* http://www.airquality.org/plans/federal/ozone/index.shtml.

———. 2010b. *PM_{10} Implementation/Maintenance Plan and Re-Designation Request for Sacramento County.*

———. 2011. *Guide to Air Quality Assessment in Sacramento County*. http://www.airquality.org/ceqa/ceqaguideupdate.shtml.

———. 2013. *Recommended Guidance for Land Use Emission Reduction (for Operational Emissions) version 3.0.*