Section 2

Air Quality and Greenhouse Gas Emissions

A. Environmental Setting

The following information is provided in accordance with Section 15125 of the California Environmental Quality Act (CEQA) Guidelines.

1. Study Area for Direct Impacts

The direct impact study area is the Modesto planning area.

2. Study Area for Cumulative Impacts

This analysis will be based on the plan or projection approach to examining cumulative effects, as provided under Section 15130(b)(1)(B) of the State CEQA Guidelines. The air quality information and projections provided for the study area by the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) will form the basis of information on cumulative impacts. The cumulative impact study area is the San Joaquin Valley Air Basin.

3. Existing Physical Conditions in the Study Area

a. Climate and Topography

The project site is located in Stanislaus County in the northern portion of the San Joaquin Valley Air Basin. The California Air Resources Board (CARB) defines the boundaries of the basin by the San Joaquin Valley within the Sierra Nevada Mountains to the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the ocean at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. The San Joaquin Valley, thus, can be considered a "bowl" with the primary opening to the north. The surrounding topographic features restrict air movement through and out of the basin and, as a result, impede the dispersion of air pollutants from the basin. Wind flow is usually down the valley from the north, but the Tehachapi Mountains block or restrict the southward progression of airflow. The Sierra Nevada is a substantial barrier from the usual winds that have a general westerly flow. The topographical features result in weak airflow. The flow is further restricted vertically by inversion layers that are common in the San Joaquin Valley air basin throughout the year. An inversion layer is created when a mass of warm dry air sits over cooler air near the ground, preventing vertical dispersion of pollutants from the air mass below. During the summer, the San Joaquin Valley experiences daytime temperature inversions at elevations from 1,500 to 3,000 feet above the valley floor. Airflow is considerably restricted since mountain ranges surrounding the valley are generally above the inversion. These inversions lead to a buildup of ozone and ozone precursor pollutants. During

the fall and winter months, strong surface-based inversions occur from 500 to 1,000 feet above the valley floor (SJVAPCD 1998). Wintertime inversions trap very stable air near the surface and lead primarily to a buildup of particulate matter air pollutants. Very light winds are also characteristic with these wintertime surface-based inversions.

Air quality is a function of both local climate and local sources of air pollution. Air quality is the balance of the natural dispersal capacity of the atmosphere and emissions of air pollutants from human uses of the environment. Climate and topography are major influences on air quality in the Plan area.

The climate of the project area is characterized by hot dry summers and cool, mild winters. Clear days are common from spring through fall. Daytime temperatures in the summer often approach or exceed 100 degrees Fahrenheit, with lows in the 60s. In the winter, daytime temperatures are usually in the 50s, with lows around 35 degrees Fahrenheit. Radiation fog is common in the winter, and may persist for days. Partly to mostly cloudy days are common in winter, as most precipitation received in the Valley falls from November through April.

Superimposed on this seasonal regime is the diurnal wind cycle. In the San Joaquin Valley, this cycle takes the form of a combination of a modified sea breeze-land breeze and mountain-valley regimes. The sea breeze-land breeze regime typically has a modified sea breeze flowing into the Valley from the north during the late day and evening and then a land breeze flowing out of the Valley late at night and early in the morning. The mountain-valley regime has an upslope (mountain) flow during the day and a down slope (valley) flow at night. These effects create a complexity of regional wind flow and pollutant transport within the Valley.

The pollution potential of the San Joaquin Valley is very high. The San Joaquin Valley has one of the most severe air pollution problems in the State and the Country. Surrounding elevated terrain in conjunction with temperature inversions frequently restrict lateral and vertical dilution of pollutants. Abundant sunshine and warm temperatures in late spring, summer, and early fall are ideal conditions for the formation of ozone, where the Valley frequently experiences unhealthy air pollution days. Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high PM_{10} concentrations.

b. Existing Air Quality Conditions

(1) Air Quality Pollutants

The federal and state governments have established ambient air quality standards for six criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter, and lead. Ozone and particulate matter 10 microns or less in diameter (PM10) are generally considered to be regional pollutants, as these pollutants or their precursors affect air quality on a regional scale. Pollutants such as CO, NO_2, SO_2, and lead are considered to be local pollutants that tend to accumulate in the air locally. PM10 is considered to be a localized pollutant as well as a regional pollutant. In Modesto, PM10 and ozone are of particular concern.

(a) Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_X). The main sources of ROG and NO_X, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

(b) Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. While CO transport is limited, it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

(c) Nitrogen Dioxide

NO_2 is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 also contribute to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO_2 decreases lung function and may reduce resistance to infection. On January 22, 2010, the EPA strengthened the health-based NAAQS for NO_2.

(d) Sulphur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels in the region. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

(e) Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns (PM_{10}). $PM_{2.5}$ refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of PM_{10} and $PM_{2.5}$. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces, and can enter the human body through the lungs. Health effects can include lung irritation and aggravation of chronic lung diseases, increased susceptibility to pneumonia, and heart issues.

(f) Lead

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

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the EPA established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically. Lead can have serious health effects, particularly for children. At high levels, lead can cause brain and central nervous system damage. Lead exposure can cause anemia, hypertension, kidney impairment, and toxicity to reproductive organs.

(2) Toxic Air Contaminants

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants (HAPs) under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the local, State, and federal level.

HAPs are the air contaminants identified by US EPA as known or suspected to cancer, serious illness, birth defects, or death. Many of these contaminants originate from human activities, such as fuel combustion and solvent use. Mobile source air toxics (MSATs) are a subset of the 188 HAPS. Of the 21 HAPs identified by EPA as MSATs, a priority list of six priority HAPs were identified that include: diesel exhaust, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. While vehicle miles traveled in the United States is expected to increase by 64 percent over the period 2000 to 2020, emissions of MSATs are anticipated to decrease substantially as a result of efforts to control mobile source emissions (by 57 percent to 67 percent depending on the contaminant).[1]

California developed a program under the Tanner Toxics Act (Assembly Bill [AB] 1807) to identify, characterize and control TACs. Subsequently, AB 2728 incorporated all 188 HAPs into the AB 1807 process. TACs include all HAPs plus other containments identified by CARB. These are a broad class of compounds known to cause morbidity or mortality (cancer risk). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Particulate matter from diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by ARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB reports that recent air pollution studies have shown an association that diesel exhaust and other cancer-causing toxic air contaminants emitted from vehicles are responsible for much of the overall cancer risk from TACs in California. Particulate matter emitted from diesel-fueled engines (DPM) was found to comprise much of that risk. In August 1998, CARB formally identified DPM as a TAC. DPM is of particular concern since it can be distributed over large regions, thus leading to widespread public exposure. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by EPA as HAPs, and by CARB as TACs. Diesel engines emit particulate matter at a rate about 20 times greater than comparable gasoline engines. The vast majority of diesel exhaust particles (over 90 percent) consist of $PM_{2.5}$, which are the particles that can be inhaled deep into the lung. Like other particles of this size, a portion will eventually become trapped within the lung possibly leading to adverse health effects. While the gaseous portion of diesel exhaust also contains TACs, CARB's 1998 action was specific to DPM, which accounts for much of the cancer-causing potential from diesel exhaust. California has adopted a comprehensive diesel risk reduction program to reduce DPM emissions 85 percent by

[1] Federal Highway Administration, 2006. Interim Guidance on Air Toxic Analysis in NEPA Documents.

2020. The US EPA and CARB adopted low sulfur diesel fuel standards in 2006 that reduce diesel particulate matter substantially.

Smoke from residential wood combustion can be a source of TACs. Wood smoke is typically emitted during wintertime when dispersion conditions are poor. Localized high TAC concentrations can result when cold stagnant air traps smoke near the ground and, with no wind; the pollution can persist for many hours, especially in sheltered valleys during winter. Wood smoke also contains a significant amount of PM_{10} and $PM_{2.5}$. Wood smoke is an irritant and is implicated in worsening asthma and other chronic lung problems.

High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (e.g., truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, and high-volume transit centers. Health risks from TACs are a function of both concentration and duration of exposure.

(3) Sensitive Air Receptors

Some groups of people are more affected by air pollution than others. The State has identified the following people who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks.

(4) Attainment Status

The CARB is required to designate areas of the State as attainment, nonattainment, or unclassified for all State standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. An "unclassified" designation signifies that data does not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category. Attainment status for the Valley with respect to various pollutants of concern is described in Tables V-2-1 and V-2-2, below.

TABLE V-2-1 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1-hour	0.09 ppm (180 µg/m^3)	—
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)
Carbon Monoxide	8-hour	9.0 ppm (10,000 µg/m^3)	9 ppm (10,000 µg/m^3)
	1-hour	20 ppm (23,000 µg/m^3)	35 ppm (40,000 µg/m^3)
Nitrogen dioxide	Annual Average	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
	1-hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3) (3-year average of annual 98th percentile daily maxima)
Sulfur dioxide			
	24-hour	0.04 ppm (105 µg/m^3)	—
	3-hour	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3) (3-year average of annual 99th percentile daily maxima)
Respirable particulate matter (10 micron)	24-hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	—
Fine particulate matter (2.5 micron)	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3 (3-year average)
	24-hour	—	35 µg/m^3 (3-year average of annual 98th percentile daily concentrations)
Sulfates	24-hour	25 µg/m^3	—
Lead	30-day	1.5 µg/m^3	—
	3 Month Rolling Average	—	0.15 µg/m^3

Source: CARB, 2018.
SO_2 Federal 24 hour and annual standards are not applicable in the SJVAPCD.
µg/m^3 = micrograms per cubic meter
ppm = parts per million

TABLE V-2-2 Plan Area Attainment Status

Pollutant	Federal Status	State Status
Ozone (O_3) – 1-Hour Standard	No Designation	Severe Nonattainment
Ozone (O_3) – 8-Hour Standard	Extreme Nonattainment	Nonattainment
Respirable Particulate Matter (PM_{10})	Attainment-Maintenance	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment-Maintenance	Attainment
Nitrogen Dioxide (NO2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Sulfates and Lead	No Designation	Attainment
Hydrogen Sulfide	No Designation	Unclassified
Visibility Reducing Particles	No Designation	Unclassified

Source: CARB and U.S. EPA, 2018

Under the Federal Clean Air Act, the US EPA has classified the region as *serious nonattainment* for the 8-hour O_3 standard. On March 19, 2008, the US EPA posted a final rule in the Federal Register affirming the agency's October 30, 2006 determination that the Valley has attained the NAAQS for PM_{10}. The Valley is designated *nonattainment* for the older 1997 $PM_{2.5}$ NAAQS. SJVAPCD has determined, based on the 2004-06 $PM_{2.5}$ data, that the Valley has attained the 1997 24-Hour $PM_{2.5}$ standard; however, US EPA designated the Valley as nonattainment for the newer 2006 24-hour $PM_{2.5}$ standard. The US EPA classifies the region as *attainment* or *unclassified* for all other air pollutants, which include CO and NO_2.

At the State level, the region is considered *serious non-attainment* for ground level O_3 and *non-attainment* for PM_{10} and $PM_{2.5}$. California ambient air quality standards are more stringent than the national ambient air quality standards. The region is required to adopt plans on a triennial basis that show progress towards meeting the State O_3 standard. The area is considered attainment or unclassified for all other pollutants.

(5) Greenhouse Gases and Climate Change

Global temperatures are affected by naturally occurring and anthropogenic-generated (generated by humankind) atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. Gases that trap heat in the atmosphere are called greenhouse gases (GHG). Solar radiation enters the earth's atmosphere from space, and a portion of the radiation is absorbed at the surface. The earth emits this radiation back toward space as infrared radiation. Greenhouse gases, which are mostly

transparent to incoming solar radiation, are effective in absorbing infrared radiation and redirecting some of this back to the earth's surface. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This is known as the greenhouse effect. The greenhouse effect helps maintain a habitable climate. Emissions of GHGs from human activities, such as electricity production, motor vehicle use, and agriculture, are elevating the concentration of GHGs in the atmosphere, and are reported to have led to a trend of unnatural warming of the earth's natural climate, known as global warming or global climate change. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred because it implies that there are other consequences to the global climate in addition to rising temperatures. Other than water vapor, the primary GHGs contributing to global climate change include the following gases:

- Carbon dioxide (CO_2), primarily a byproduct of fuel combustion;
- Nitrous oxide (N_2O), a byproduct of fuel combustion; also associated with agricultural operations such as the fertilization of crops;
- Methane (CH_4), commonly created by off-gassing from agricultural practices (e.g. livestock), wastewater treatment and landfill operations;
- Chlorofluorocarbons (CFCs) were used as refrigerants, propellants and cleaning solvents, but their production has been mostly prohibited by international treaty;
- Hydrofluorocarbons (HFCs) are now widely used as a substitute for chlorofluorocarbons in refrigeration and cooling; and,
- Perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) emissions are commonly created by industries such as aluminum production and semiconductor manufacturing.

These gases vary considerably in terms of Global Warming Potential (GWP), a term developed to compare the propensity of each GHG to trap heat in the atmosphere relative to another GHG. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time of gas remains in the atmosphere. The GWP of each GHG is measured relative to CO_2. Accordingly, GHG emissions are typically measured and reported in terms of equivalent CO_2 (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally-occurring resources within California are adversely affected by the global climate change trend. Increased precipitation and sea level rise increases coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

c. Regulatory Framework

The SJVAPCD administers air quality regulations developed at the federal, state, and local levels. Air quality regulations applicable to the proposed project are described below.

4. Existing Regulatory Setting in the Study Area

a. Federal Regulations

At the federal level, the EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required EPA to establish primary and secondary NAAQS and required each state to prepare an air quality control plan referred to as a State Implement Plan (SIP). Federal standards include both primary and secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.[2] The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The EPA has a responsibility to review all state SIPs to determine conformity with the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area which imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in the application of sanctions on transportation funding and stationary air pollution sources in the air basin.

The 1970 FCAA authorized the establishment of national health-based air quality standards and also set deadlines for their attainment. The FCAA Amendments of 1990 changed deadlines for attaining NAAQS as well as the remedial actions required of areas of the nation that exceed the standards. Under the FCAA, State and local agencies in areas that exceed the NAAQS are required to develop SIPs to show how they will achieve the NAAQS by specific dates. The FCAA requires that projects receiving federal funds demonstrate conformity to the approved SIP and local air quality attainment plan for the region. Conformity with the SIP requirements would satisfy the FCAA requirements.

Greenhouse Gases

The United States participates in the United Nations Framework Convention on Climate Change (UNFCCC). While the United States signed the Kyoto Protocol, which would have required reductions in GHGs, Congress never ratified the protocol. The

[2] U.S. Environmental Protection Agency, 2013. Available online: www.epa.gov/air/criteria.html.

federal government chose voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science.

On April 2, 2007, the United States Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the federal CAA. On December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six greenhouse gases (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change.

On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a final joint rule to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy. A second phase for model years 2017 through 2025 was established in 2012.

On May 13, 2010, the EPA issued a final rule to address greenhouse gas emissions from stationary sources under the CAA permitting programs. This final rule sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

b. State Regulations

The California Air Resources Board (CARB) is the agency responsible for the coordination and oversight of State and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), adopted in 1988. The CCAA requires that all air districts in the State achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CCAA specifies that districts should focus on reducing the emissions from transportation and air-wide emission sources, and provides districts with the authority to regulate indirect sources.

CARB is also responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. CARB is primarily responsible for statewide pollution sources and produces a major part of the SIP. Local air districts provide additional strategies for sources under their jurisdiction. CARB combines this data and submits the completed SIP to the EPA. Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

The CARB is required to designate areas of the State as attainment, nonattainment, or unclassified for all State standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an

exceptional event, as defined in the criteria. An "unclassified" designation signifies that data does not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

At the State level, the region is considered *serious non-attainment* for ground level O_3 and *non-attainment* for PM_{10} and $PM_{2.5}$. California ambient air quality standards are more stringent than the national ambient air quality standards. The region is required to adopt plans on a triennial basis that show progress towards meeting the State O_3 standard. The area is considered attainment or unclassified for all other pollutants.

(1) California Clean Air Act (CCAA)

In 1988, the California Clean Air Act (CCAA) required that all air districts in the State endeavor to achieve and maintain CAAQS for carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2) by the earliest practical date. The CCAA provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. State standards for these pollutants are generally more stringent than the national standards.

In 1998, CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.[3] CARB subsequently developed an Air Quality and Land Use Handbook[4] (Handbook) in 2005 that is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. The CARB Handbook recommends that planning agencies consider proximity to air pollution sources when considering new locations for "sensitive" land uses, such as residences, medical facilities, daycare centers, schools, and playgrounds.

A health risk assessment for exposure to TACs requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and CARB develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[5] See the *City of Modesto General Plan Amendment Air Quality and Greenhouse Gas Emissions*

[3] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

[4] California Air Resources Board, 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*.

[5] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment.

Assessment prepared by Illingworth & Rodkin, and included in Appendix B, for detailed risk modeling methodology.

Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners, and large gasoline service stations. Key recommendations in the Handbook relative to the Plan Area include taking steps to consider or avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vpd or rural roads with 50,000 vpd;
- Within 300 feet of gasoline fueling stations; and,
- Within 300 feet of dry-cleaning operations (note that dry cleaning with TACs is being phased out and will be prohibited in 2023).

(2) California Greenhouse Gas Regulations

The State of California is concerned about GHG emissions and their effect on global climate change. The State recognizes that "there appears to be a close relationship between the concentration of GHGs in the atmosphere and global temperatures" and that "the evidence for climate change is overwhelming." The effects of climate change on California, in terms of how it would affect the ecosystem and economy, remain uncertain. The State has many areas of concern regarding climate change with respect to global warming. According to the 2006 Climate Action Team Report, the following climate change effects and conditions can be expected in California over the course of the next century:

- A diminishing Sierra snowpack declining by 70 to 90 percent, effecting the state's water supply;
- Increasing temperatures from 8 to 10.4 degrees °F under the higher emission scenarios, leading to a 25 to 35 percent increase in the number of days ozone pollution standards are exceeded in most urban areas;
- Coastal erosion along the length of California and seawater intrusion into the Sacramento River Delta from a 4- to 33-inch rise in sea level. This would exacerbate flooding in already vulnerable regions;
- Increased vulnerability of forests due to pest infestation and increased temperatures;
- Increased challenges for the State's important agricultural industry from water shortages, increasing temperatures, and saltwater intrusion into the Delta; and,
- Increased electricity demand, particularly in the hot summer months.

Key regulatory actions include:

Assembly Bill 1575 (1975). In 1975, the Legislature created the California Energy Commission (CEC). The CEC regulates electricity production that is one of the major sources of GHGs.

Title 24, Part 6 of the California Code of Regulations (1978). The Energy Efficiency Standards for Residential and Nonresidential Buildings were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

Assembly Bill 1493 (2002). Assembly Bill (AB) 1493 required CARB to develop and adopt regulations that reduce GHG emitted by passenger vehicles and light duty trucks.

State of California Executive Order S-3-05 (2005). The Governor's Executive Order established aggressive emissions reductions goals: by 2010, GHG emissions must be reduced to 2000 levels; by 2020, GHG emissions must be reduced to 1990 levels; and by 2050, GHG emissions must be reduced to 80 percent below 1990 levels.

In June 2005, the Governor of California signed Executive Order S-3-05, which identified Cal/EPA as the lead coordinating State agency for establishing climate change emission reduction targets in California. A "Climate Action Team," a multi-agency group of State agencies, was set up to implement Executive Order S-3-05. Under this order, the State plans to reduce GHG emissions to 80 percent below 1990 levels by 2050. GHG emission reduction strategies and measures to reduce global warming were identified by the California Climate Action Team in 2006.

Assembly Bill 32 (AB 32), California Global Warming Solutions Act (2006). AB 32, the Global Warming Solutions Act of 2006, codifies the State's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State's main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (BAU) is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons of equivalent carbon dioxide ($MMTCO_2e$) as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO2e. Thus, an estimated reduction of 80 MMT of CO2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020. In May of 2015, Governor Jerry Brown issued an emissions reduction target of 40 percent below 1990 levels by 2030, later reinforced by SB 32.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB published a second update to the Scoping Plan[6] to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The

[6] CARB, 2017. *California's 2017 Climate Change Scoping Plan.*

mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and obtain the statewide goals.

Senate Bill 375, California's Regional Transportation and Land Use Planning Efforts (2008). California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 would develop emissions-reduction goals in which regions can apply in planning activities. SB 375 provides incentives for local governments and developers to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows developers to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be achieved from the transportation sector for 2020 and 2035. CARB has established GHG emission reduction targets for passenger vehicle emissions of five percent below 2005 baseline emissions by 2020 and ten percent below 2005 baseline emissions by 2035. StanCOG baseline GHG emissions were approximately 15.9 pounds per capita per day (StanCOG 2014 RTP/SCS PEIR, page 4.9-12). In 2005, daily vehicle miles traveled in Modesto was an estimated 6,835,210 miles.

Executive Order S-13-08 (2008). This Executive Order directed California agencies to assess and reduce the vulnerability of future construction projects to impacts associated with sea-level rise.

c. San Joaquin Valley Air Pollution Control District

The SJVAPCD is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings Tulare, and the San Joaquin Valley portion of Kern. The primary role of the SJVAPCD is to develop plans and implement control measures in the San Joaquin Valley to control air pollution. These controls primarily affect stationary sources such as industry and power plants. Rules and regulations have been developed by SJVAPCD to control air pollution from a wide range of air pollution sources. In March 2007, an Indirect Source Review (ISR) rule was adopted that controls air pollution from new land developments. Included in the SJVAPCD *Guidance for Assessing and Mitigating Air Quality Impacts*[7] are project-level thresholds and land use screening sizes for criteria air pollutants. However, these are not appropriate for use at the plan level, but would be used to assess the impact of individual proposed projects under buildout of the Plan. SJVAPCD also conducts public education and outreach efforts such as the Spare the Air, Wood Burning, and Smoking Vehicle voluntary programs. These are identified above.

[7] SJVAPCD, 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*.

SJVAPCD Indirect Source Review Rule

On December 15, 2005, the SJVAPCD adopted the Indirect Source Review Rule (ISR or Rule 9510) to reduce ozone precursor (i.e., ROG and NO_x) and PM_{10} emissions from new land use development projects. The rule is the result of state requirements outlined in the regions' portion of the SIP. The SJVAPCD's SIP commitments are contained in the 2016 Ozone Plan and the 2007 PM_{10} Plan. New projects that would generate substantial air pollutant emissions, for which final discretionary approval was granted after March 1, 2006, are subject to this rule. The rule requires projects to mitigate both construction and operational period emissions by applying the SJVAPCD-approved mitigation measures and paying fees to support programs that reduce emissions. Fees apply to the unmitigated portion of the emissions and are based on estimated costs to reduce the emissions from other sources plus expected costs to cover administration of the program.

Regulation VIII – Fugitive PM10

SJVAPCD controls fugitive PM_{10} through Regulation VIII (Fugitive PM_{10} Prohibitions). The purpose of this regulation is to reduce ambient concentrations of PM_{10} by requiring actions to prevent, reduce or mitigate anthropogenic (human caused) fugitive dust emissions. This applies to activities such as construction, bulk materials, open areas, paved and unpaved roads, material transport, and agricultural areas. Sources regulated are required to provide dust control plans that meet the regulation requirements. Fees are collected by SJVAPCD to cover costs for reviewing plans and conducting field inspections.

d. City of Modesto General Plan Goals and Policies

The following goals and policies would be contained in the amended Urban Area General Plan to assist in promoting air quality consistent with federal, state and local standards and regulations an the General Plan area. They are also intended to reduce the emission of greenhouse gases associated with the buildout of land uses envisioned in the amended General Plan.

Land Use Element Goals and Policies

AQ-1. Maintain and improve the integrity of the existing developed City, and promote complete, sustainable, compatible and high-quality development – for living, working, shopping and recreation – across the entire city. (Goal III.B)

AQ-2. Facilitate infill development through active leadership and strategic provision of infrastructure and services, and supporting land uses. Provide incentives for infill development, redevelopment and growth in existing urbanized areas to enhance community character, optimize infrastructure investments, support increased transit use, promote non-motorized transportation, increase housing diversity and enhance commercial viability. Structure fee programs so that infill development is "priced" according to its relative infrastructure efficiencies and the community-wide benefits to be realized. (Policy III.B.1)

AQ-3. To maximize economic and social benefits, and resource efficiencies, prioritize and focus new development within the existing City limits. This will strengthen existing neighborhoods and maximize efficiencies of utility and infrastructure systems. New

development should be accessible via all modes of transportation, both motorized and non-motorized, with an emphasis on availability of public services. (Policy III.B.2)

AQ-4. Create neighborhoods that are complete, compact and sustainable so that housing, jobs, shopping and transit access are within easy walking distance of each other. Include a mix of compatible land uses within close proximity, contain a diversity of housing types to accommodate a wide range of economic levels and age groups, and have a center focus that combines commercial, civic, cultural, and recreational uses in order to facilitate high-quality living environments. Access to healthy foods and grocery stores that sell fresh fruits and vegetables is a high priority. (Goal III.C)

AQ-5. Complete neighborhoods promote livability, sustainability and safety for all residents. Neighborhoods are to contain: a mix of housing types including affordable and market-rate; a range of services and facilities such as schools, parks, retail, services & civic facilities; transit access within ½-mile of all dwelling units; and, complete streets with tree canopy cover that accommodate both motorized and non-motorized mobility. (Policy III.C.1)

AQ-6. Encourage development of local, citywide and regional mixed-use centers that address different community needs and market sectors, and that compliment and are well-integrated with surrounding neighborhoods. (Policy III.C.4)

AQ-7. All parts of new neighborhoods should be within a half-mile of a central gathering place that is located on a collector street or minor arterial and that includes public space, shopping areas, transit access, and community-supportive facilities and services. (Policy III.C.5)

AQ-8. Design new neighborhoods with traditional grid block sizes ranging from 300 to 400 feet in length. Separate sidewalks from the curb with a minimum eight-foot (8') landscaped parkway. Construct context-appropriate traffic-calming improvements, such as traffic circles and intersection bulbouts. (Policy III.C.6)

AQ-9. New neighborhoods include transit stops that support and connect to the citywide transit system, and that are within a half-mile walking distance of all dwelling units. (Policy III.C.7)

AQ-10. Neighborhoods should contain sufficient K-12 schools necessary to serve them. Locate schools on Collector streets, preferably at or near the intersection of two Collector streets. Locate neighborhood parks (see UAGP Chapter VI for parks standards) adjacent to school sites. New schools and parks should be surrounded by streets on all sides wherever possible to encourage access by walking and bicycling. (Policy III.C.8)

AQ-11. Encourage the development of senior housing in neighborhoods that are accessible to public transit, commercial services, and health & community facilities. (Policy III.C.9)

AQ-12. Corridor Studies guide infill development, and re-use / recycling of existing development, along major transportation corridors. Such development will balance vehicular circulation and access against all other travel modes – both motorized and non-motorized. Development along major transportation corridors should mix land uses effectively so that housing, retail and service needs are combined with pedestrian-friendly facilities and gathering places. (Goal III.D)

AQ-13. Development along major transportation corridors that occurs pursuant to an adopted corridor study should be compact, mixed-use, transit- / bicycle- / pedestrian-friendly, and scaled appropriately to match the context and transition to existing nearby neighborhoods. (Goal III.E)

AQ-14. Locate higher-density, transit-oriented, mixed-use development (TOD) along major transportation corridors near significant intersections and public transportation facilities. Development density along major transportation corridors should increase with proximity to transit stops and decrease with distance from transit stops in order to encourage increased transit ridership. Establish specific thresholds, standards and guidelines for TOD and other development types in the applicable corridor study documentation. (Policy III.E.1)

AQ-15. Promote mixed-use infill development along major transportation corridors through the use of corridor studies, zoning, flexible development standards, density bonuses and other development incentives. Locate such development along the back of sidewalk, and oriented to frame the street, while incorporating public plazas and pedestrian amenities that will create people-oriented centers for living, working and gathering. (Policy III.E.2)

AQ-16. Encourage high-quality, compact, multi-story residential infill development along major transportation corridors, through design criteria contained within applicable corridor study documentation. Minimize parking requirements where appropriate. Maintain compatibility with form and function of nearby existing neighborhoods through use of applicable design guidelines. (Policy III.E.3)

AQ-17. Corridor studies may include a form-based code component to guide subsequent development, in order to provide clear and consistent development standards. Other potential implementation mechanisms include, and are not limited to, mixed-use and/or overlay zoning, specific plans, and design guidelines. (Policy III.E.4)

AQ-18. Promote the transformation of major transportation corridors, via formal corridor studies, into boulevards that are attractive, comfortable, and safe for pedestrians by incorporating the following design features: (Policy III.E.5)

i. Wide sidewalks to accommodate pedestrian traffic, amenities and landscaping;
ii. On-street parking between sidewalks and travel lanes;
iii. Few curb cuts and driveways;
vi. Enhanced pedestrian street crossings;
v. Compatible interface / relationship with adjacent existing residential neighborhoods;
v. Buildings located at the back of sidewalk;
vii. Building entrances oriented to the street;
viii. Transparent ground floor frontage;
ix. Street trees and furnishings; and,
x. Pedestrian-scale lighting and signage.

AQ-19. Downtown Modesto is a high-priority area for both public and private investment. Therefore, the City should prioritize and focus infrastructure investments here. Downtown is planned to become a more urban, higher-density, mixed-use, pedestrian-oriented, economically vibrant, innovative center for living, working, socializing and recreating. (Goal III.F)

AQ-20. Implement higher density, mixed-use development to create a balanced, vibrant downtown and active neighborhood centers by streamlining development processing, offering public parking for projects within parking structures in lieu of the provision of private parking, reducing fees and providing for deferral of fees. (Policy III.F.1)

AQ-21. Housing in the Downtown Area should include a variety of unit types and densities, ranging from medium to very high, to act as a catalyst for other types of development. (Policy III.F.2)

AQ-22. Enhance downtown businesses by establishing new downtown residential and mixed-use development, which will provide customers for downtown businesses. (Policy III.F.3)

AQ-23. Higher-density, transit-oriented, mixed-use development (TOD) within the Downtown area should be strategically located near the most significant intersections and public transportation facilities such as the bus depot and passenger rail station. TOD should be designed and oriented toward these and any other major transportation facilities, as they are among the most important building blocks for Downtown Modesto's future. (Policy III.F.6)

AQ-24. Reduce the use of automobiles and the need to own a car by prioritizing infrastructure for pedestrians, bicycles, buses, and rail over automobile infrastructure, which also reduces the need for off-street parking. (Policy III.F.7)

AQ-25. Develop a context-sensitive circulation system that prioritizes and facilitates pedestrians, bicycles, and transit, and which also accommodates automobiles. (Policy III.F.8)

AQ-26. Support development of a downtown passenger rail station, and its connectivity to other transportation modes, to act as a catalyst for intensified mixed-use development within the downtown area. (Policy III.F.9)

AQ-27. Commercial development should strengthen the vehicular, pedestrian and visual connections between shopping centers and their surrounding neighborhoods, and between neighboring retail sites, through physical improvements, public transit and coordinated land use and transportation planning. (Goal III.G)

AQ-28. Support the transformation of auto-oriented shopping centers currently characterized by retail strips surrounded by large surface parking lots into pedestrian- and bicycle-friendly places. Retail activity and shopping in general should be designed for pedestrian, bicyclist and transit user safety and convenience. Wide sidewalks, crosswalks, clear and well-lit storefront windows, varied building facades, awnings, street furniture, public art, extensive landscaping and pedestrian-scaled signage are among the design components to be considered. (Policy III.G.1)

AQ-29. For new shopping center development, and for renovation of older shopping centers where feasible, locate buildings at the "front" of the site (at or near the back of sidewalk) and parking at the "back" of the site, behind the buildings. This policy is intended to be applied where contextually-appropriate, primarily in the more walkable areas of the City. (Policy III.G.2)

AQ-30. Locate employment-intensive uses, such as medical and professional offices, light industry, R&D and skill training, in appropriate areas as designated by the General Plan and the zoning map. Locate Business Parks, Industrial development and other employment centers near access points to major transportation facilities so that they are accessible by all modes of transportation. (Goal III.H)

AQ-31. Design employment center development to accommodate safe and convenient walking, biking and transit use, and provide a high-quality campus-like environment, characterized by the following: (Policy III.H.2)

- Interconnected streets and walkable blocks;
- Buildings sited around common plazas, courtyards, walkways and open spaces;
- On-site landscaping and buffers between buildings and properties;
- Visual screening of areas for outdoor storage, processing and/or other industrial operations;
- A thoughtful and well-executed signage program for business identification and way-finding;
- Landscaping and lighting to promote pedestrian activity;
- Clearly-marked driveways, pedestrian routes and building entries that minimize potential conflicts among trucks, autos, bicycles and pedestrians; and,
- Control of operations regarding lighting, noise, odors, vibrations, hazardous / toxic materials, heavy equipment / truck access and any other environmental considerations that may affect nearby properties.

Transportation Element Goals and Policies

AQ-32. Provide transportation choices that are safe, reliable, effective, and economical for all users to decrease household transportation costs, improve air quality, reduce greenhouse gas emissions, and promote public health. The transportation system will be robustly multi-modal, recognizing that adding capacity for automobiles is often the least cost-effective improvement. (Goal V.A)

AQ-32. Identify gaps in the pedestrian and bicycle transportation systems and plan facilities to close those gaps. (Policy V.A.1)

AQ-34. Streets, pedestrian paths, and bike paths contribute to a system of fully-connected routes to all destinations. Their designs encourage pedestrian and bicycle use when small and spatially defined by buildings, trees, and lighting, and when high-speed traffic is discouraged. (Policy V.A.2)

AQ-35. Prepare and maintain a citywide transportation improvement program for all modes of travel, considering the development context when selecting which improvements should be included in the Capital Improvement Program. (Policy V.A.3)

AQ-36. Update and maintain a Capital Facilities Fee program to contribute to multi-modal transportation improvement projects of local and regional significance. (Policy V.A.4)

AQ-37. In the case of conflict between motorized and non-motorized transportation modes, roadway or right-of-way features may be added or altered to protect pedestrians and bicyclists, consistent with Urban Area General Plan goals. (Policy V.A.5)

AQ-38. Level of Service and Quality of Service for all transportation modes (vehicle, transit, bicycle and pedestrian) on City roadways should be improved over time consistent with the financial resources reasonably available to the City and without unreasonably burdening property owners or developers. On roadways where the automobile LOS is expected to be level F, the City will consider mitigation measures other than road widening, such as the addition of bicycle lanes, improved pedestrian access, improved transit service, and the establishment of walkable development patterns to improve the quality of service for all travel modes. (Policy V.A.6)

AQ-39. Where traffic volumes, development types and access patterns provide opportunity, a four-lane street may be narrowed to a two-lane street, with a center turn lane, in order to better accommodate on-street parking, bicycle facilities and other amenities. These types of complete street retrofit projects are generally intended to enhance facilities for non-motorized travel modes, within an existing right-of-way, without resulting in reduced functionality for the motoring public. Maintaining high-quality transit service is equally important. (Policy V.A.7)

AQ-40. Many streets in the built city are constrained from further widening by existing development. For street segments identified in the table below (also see Figure V-4), right-of-way dedications in conjunction with any development will be limited to obtaining that necessary to close a gap in: a) the number of vehicle lanes; b) bicycle lanes; c) sidewalk / curb / gutter; or, d) be a feasible mitigation measure that can't otherwise be achieved by means such as restriping within the existing right-of-way. Standard design specifications such as travel lane width or intersection design criteria may be waived or modified at the discretion of the City Engineer. Additional right-of-way may be needed at key arterial / arterial intersections to allow for turning lanes, if appropriate at any particular location(s). (Policy V.A.8)

AQ-41. Reduce per capita automobile vehicle miles traveled and per capita automobile trips. To facilitate walking, particularly to and from transit stops, and to reduce automobile trip lengths blocks should be short and streets should frequently intersect. (Goal V.B)

AQ-42. Design roadways and roadway connections to: provide a grid street system featuring short blocks and frequent connections to collectors and arterials to improve connectivity and accessibility for all modes; increase route choice; better accommodate public transit services; and reduce trip lengths, traffic congestion, and pollution. To promote walking, limit block size to no more than 600 feet on a side, and provide internal access via alleys or walkways (any block-face less than 400 feet long need not have alleys or walkways). Cul-de-sacs are discouraged and, when deemed necessary, cul-de-sacs should include pedestrian and bicycle connections to the greatest extent possible. (Policy V.B.1)

AQ-43. Frequent multiple-leg intersections increase street connectivity and walkability, while reducing trip lengths. Intersection density will be used to measure the degree of walkability of an area where streets have not yet been laid out. LEED ND defines walkability as a minimum threshold of 140 intersections per square mile. Higher intersection density indicates that an area is more walkable. By way of example, Modesto's one-square-mile downtown grid contains approximately 140 intersections. (Policy V.B.2)

AQ-44. Streets and roads in the downtown area are constrained (see UAGP Policy V.A.6). Transportation mitigation may be applied to projects in that area to facilitate non-automobile

travel through means such as sidewalk widening and adding bicycle lanes and increasing transit service. (Policy V.C.3)

AQ-45. If it is determined that a site access study is needed in the downtown area, that study shall evaluate movement conflicts across all modes (walking, bicycle, car, bus, train) with an emphasis on facilitating non-automobile travel. (Policy V.C.4)

AQ-46. Outside of the downtown area, consider and balance the effects of automobile traffic mitigation on non-automobile travel – particularly in areas where the city is attempting to improve conditions that support non-automobile travel – when considering solutions to traffic circulation problems. (Policy V.C.5)

AQ-47. Ensure that pedestrians of all ages and abilities feel safe using pedestrian facilities in order to eliminate safety as a barrier to walking for transportation. (Goal V.D)

AQ-48. Add median refuges along arterials and four-lane collectors in areas where pedestrian traffic is to be facilitated to give pedestrians a safe halfway point for street crossings. (Policy V.D.1)

AQ-49. Add sidewalk bulbouts in areas where pedestrian traffic is to be facilitated to reduce crossing distance and improve visibility of pedestrians to other roadway users. (Policy V.D.2)

AQ-50. Identify gaps, needs, and deficiencies in the pedestrian transportation network. (Policy V.D.3)

AQ-51. The green phase of traffic signals citywide should be timed to allow pedestrians of all ages and abilities to safely cross the street. The Federal Highway Administration's Best Practices Design Guide for Designing Sidewalks and Trails for Access, suggests crossing times should allow for pedestrians traveling 3.5 feet per second or slower. (Policy V.D.4)

AQ-51. Consider funding bicycle facilities as a priority in the Capital Improvement Program. (Policy V.E.2)

AQ-52. When streets are repaired or resurfaced, add bicycle facilities to those streets as appropriate with striping, stencils, and/or signage, consistent with UAGP Figure V-3. (Policy V.E.3)

AQ-53. Increase bicycle ridership for transportation purposes through the addition of bicycle facilities, such as a bike-share program, and other system improvements. (Policy V.E.4)

AQ-54. Street projects should be evaluated to determine how the planned bicycle facilities can be accommodated. (Policy V.E.6)

AQ-55. Where right-of-way constraints exist, a "sharrow" may be used to supplement Class II bicycle facilities where vehicle speeds do not exceed 25 mph. (Policy V.E.7)

AQ-56. Protected intersection design features, bike boxes and bicycle detection systems may be used to delineate bicycle facilities, improve safety, and allow bicycle traffic to trigger the green phase of a traffic signal. In accordance with California Vehicle Code Section 21450.5, sensors that detect the presence of a waiting bicycle should be added to signalized

intersections when signals are installed, upgraded and/or maintained. Other markings and signage may be used as approved by the City Engineer. (Policy V.E.8)

AQ-57. The green phase of traffic signals throughout Modesto should be timed to allow bicycle riders of all ages and abilities to cross the street safely. (Policy V.E.9)

AQ-58. Increase transit use through higher-frequency service of at least 15-minute headways downtown and along major transportation corridors. Transit and land use will be interconnected to support increased ridership. (Goal V.F)

AQ-59. Provide the most frequent service feasible in order to facilitate the highest quality public transportation. (Policy V.F.1)

AQ-60. Maintain farebox recovery ratios sufficient to meet state requirements while maximizing service, especially in the heavy use areas identified in UAGP Goal V.F. (Policy V.F.2)

AQ-61. Provide service on a half-mile grid where feasible to make the service as accessible as possible. Newly developing areas should provide a street pattern capable of accommodating transit service on a half-mile grid. Sidewalks should be provided in the development of new roadway systems to accommodate bus stops, and to minimize walking distance between them. (Policy V.F.3)

AQ-62. Coordinate bus and other feeder service with passenger rail and other long-distance transit service to facilitate transfers between services and reduce auto use. (Policy V.F.9)

AQ-63. Strengthen Modesto's value as county seat and center of activity and transportation in Stanislaus County by building a passenger rail station in downtown, consistent with the California High Speed Rail Authority's service goals and with the Altamont Commuter Express' expansion plans. (Goal V.G)

AQ-64. Support a healthy, safe Modesto by reducing trip lengths and vehicle miles traveled per capita, reducing collision rates, supporting the increased use of alternative modes, and helping reduce greenhouse gas emissions and other air pollutants, while balancing the transportation needs of all travelers. (Goal V.H)

Air Quality Element Goals and Policies

AQ-65. Implement measures to reduce motor vehicle use and related ozone precursor and PM10 emissions through changes to the transportation infrastructure. Potential measures to be implemented may include those shown in Section V-2 of the Final Master Environmental Impact Report. (Policy VII.H.2.a)

AQ-66. Implement measures to reduce vehicle use and associated emissions related to existing and future land use development in the City of Modesto. Potential measures to be implemented may include those shown in Section V-2 of the Final Master Environmental Impact Report. (Policy VII.H.2.a)

AQ-67. Implement measures to reduce emissions associated with energy use by residences and businesses. Potential measures to be implemented may include those shown in Section V-2 of the Draft Master EIR. (Policy VII.H.2.c)

AQ-68. The City of Modesto recognizes the efforts of the San Joaquin Valley Air Pollution Control District to identify the cumulative transportation and air quality impacts of all General Plan amendments approved during the previous year. This measure is intended to track the effectiveness of current air quality–related programs and guide revision to these programs through periodic review of cumulative air quality impacts in the City. (Policy VII.H.2.d)

The City of Modesto encourages employers to implement the following measures:

1) In-house matching services (for carpools and vanpools) at employers with over 100 weekday employees, or at large development sites occupied by several smaller employers, or coordination with Caltrans' "Commuter Computer" program;
2) Employer-based dissemination of commute information;
3) Employer subsidies for transit passes and incorporation of transit stop facilities into site design;
4) A program to guarantee rideshare participants a ride home in case of emergency;
5) Flex-time scheduling;
6) Site plan design that encourages pedestrian movement between adjacent land uses;
7) Incentives such as preferred parking for carpoolers;
8) Encouraging submission of site plans featuring mixed land uses or "neo-traditional" design; and,
9) Encouraging employers to experiment with telecommuting options, where feasible.

AQ-69. Work with neighboring jurisdictions and affected agencies to address cross-jurisdictional and regional transportation and air quality issues. (Policy VII.H.2.e)

AQ-70. Coordinate with other jurisdictions and other regional agencies in the San Joaquin valley to establish parallel air quality programs and implementation measures (trip reduction ordinances, indirect source programs, etc.). (Policy VII.H.2.f)

AQ-71. Implement measures to reduce emissions associated with future development through the CEQA review process. Section V-2 of the MEIR describes those measures to be implement-ted, as well as additional measures that may be implemented at the discretion of the City. (Policy VII.H.2.g)

AQ-72. Consult with the SJVAPCD during CEQA review for discretionary projects with the potential for causing adverse air quality impacts. (Policy VII.H.2.h)

AQ-73. Consider supporting investment in geographic information system technology. (Policy VII.H.2.i)

AQ-74. Work to improve the public's understanding of the land use, transportation, and air quality relationships. (Policy VII.H.2.j)

AQ-75. Encourage local public and private groups to provide air quality education programs. (Policy VII.H.2.k)

AQ-76. Encourage new air pollution sources such as, but not limited to, industrial, manufacturing, and processing facilities to be located an adequate distance (based on pollutant dispersion characteristics, site orientation, prevailing winds, etc.) from residential areas and other sensitive receptors. (Policy VII.H.2.l)

AQ-77. Implement measures to reduce the temporary, yet potentially significant, local air quality impacts from construction activities. Potential measures to be implemented may include those measures shown in Section V-2 of Master Environmental Impact Report. (Policy VII.H.2.m)

AQ-78. Require residential development projects and projects categorized as sensitive receptors (hospitals, schools, convalescent homes, etc.) to be located an adequate distance from existing and potential sources of toxic and/or odorous emissions such as freeways, major arterials, industrial sites, refuse transfer or disposal sites, and hazardous material locations. (Policy VII.H.2.n)

AQ-79. Determine project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD. (Policy VII.H.2.o)

AQ-80. Ensure that air quality impacts identified during CEQA review are consistently and fairly mitigated. (Policy VII.H.2.p)

AQ-81. Ensure all air quality mitigation measures are feasible, implementable, and cost effective. (Policy VII.H.2.q)

AQ-82. Identify the cumulative transportation and air quality impacts of all General Plan amendments approved during the previous year. (Policy VII.H.2.r)

AQ-83. Reduce the air quality impacts of development projects that may be insignificant by themselves, but cumulatively are significant. (Policy VII.H.2.s)

AQ-84. Encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties. (Policy VII.H.2.t)

AQ-85. Review of new development shall be coordinated with SJVAPCD staff to ensure all projects subject to the SJVAPCD Rule 9510 (Indirect Source Review) comply fully with the rule. This rule fulfills the SJVAPCD's emission reduction commitments in the PM10 and Ozone Attainment Plans through emission reductions from the construction and use of development projects through design features and onsite measures. Rule 9510 applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which meets certain minimum thresholds. (Policy VII.H.2.u)

AQ-86. A Construction Health Risk Assessment shall be required on a project-by-project basis if, at the direction of SJVAPCD after applicant consultation, the specific project is considered to have a potentially significant project-level health risk impact, through refined modeling using 2015 OEHHA guidance (or the latest accepted methodology), to identify impacts and, if necessary, include measures determined by SJVAPCD to reduce exposure. (Policy VII.H.2.v)

AQ-87. Future development that includes sensitive receptors (such as schools, hospitals, daycare centers, or retirement homes) located within the setback distances from highways, railroads, local roadways, and stationary sources specified below shall require site-specific analysis to determine the level of TAC and $PM_{2.5}$ exposure. This analysis shall be conducted following methodology and procedures recommended by SJVAPCD and OEHHA. If the site-specific analysis reveals significant exposures, such as cancer risk greater than 20 in one million or acute or chronic hazards with a Hazard Index greater than 1.0, additional measures (described below) shall be required to reduce the risk below the threshold. (Policy VII.H.2.w)

Setback screening distances:

a) Gasoline dispensing facilities: 300 feet for large facilities (3.6 million gallons of throughput a year or more) and 50 feet for smaller facilities;
b) Dry cleaning facilities: 300 feet for facilities that emit Perchlorethylene;
c) Distribution centers: 1,000 feet;
d) Chrome platers: 1,000 feet;
e) Freeways, urban roads with 100,000 vehicles/day or rural roads with 50,000 vehicles/day or more: 500 feet;
f) BNSF rail line: 800 feet from 2020-2024, and 500 feet for 2025 and later; and,
g) UP rail line: 200 feet east of the rail line and 300 feet west of the rail line from 2020-2024, and 100 feet east of the rail line and 200 feet west of the rail line for 2025 and later.

Future non-residential developments containing potentially significant TAC sources would be evaluated in consultation with SJVAPCD to ensure that they do not cause a significant health risk in terms of excess cancer risk greater than 20 in one million, or acute or chronic hazards with a Hazard Index greater than 1.0. This analysis shall be conducted following methodology and procedures recommended by SJVAPCD and OEHHA. If the site-specific analysis reveals significant exposures, additional measures shall be required as described below to reduce the risk to below the threshold.

If the analysis shows the cancer risk exposure is significant,Then the project sponsor shall submit performance specifications and design details to demonstrate that lifetime residential exposures would be reduced to a level of less-than-significant under the applicable threshold subject to approval by the City. The specifications or design standards may include the following or other comparable measures:

i. Install air filtration systems rated MERV-13 or higher and a maintenance plan for the air filtration system shall be implemented.

ii. Plant trees and/or vegetation between sensitive receptors and pollution sources, if feasible. Trees that are best suited to trapping particulate matter shall be planted, including the following: Pine (Pinus nigra var. maritime), Cypress (X Cupressocyparis leylandii), Hybrid popular (Populus deltoids X trichocarpa), and Redwoods (Sequoia sempervirens).

iii. Design sites to locate sensitive receptors as far as possible from any freeways, roadways, diesel generators, distribution centers, and rail lines.

iv. Locate operable windows, balconies, and building air intakes as far away from these sources as feasible. If near a distribution center, residents shall not be located immediately adjacent to a loading dock or where trucks concentrate to deliver goods.

AQ-88. Coordinate land use planning to prevent new odor complaints. Consult with SJVAPCD, as necessary, to identify the potential for odor complaints from various existing and planned or proposed land uses and development projects. Prohibit new sources of odors that have the potential to result in frequent odor complaints unless it can be shown that potential odor complaints can be mitigated where feasible. Prohibit sensitive receptors from locating near odor sources where frequent odor complaints would occur, unless it can be shown that potential odor complaints can be mitigated where feasible. (Policy VII.H.2.x)

AQ-89. Consider air quality when planning the land uses and transportation systems to accommodate the expected growth in this community. (Policy VII.H.2.y)

AQ-90. All transportation improvement projects to be included in regional transportation plans (RTP, RTIP, CMP, etc.) should be consistent with the air quality goals and policies of the General Plan. (Policy VII.H.2.z)

AQ-91. Consult with transit providers to determine project impacts on long-range transit plans and ensure that impacts are mitigated where feasible. (Policy VII.H.2.aa)

AQ-92. Work with the Housing Authority, transit providers, and developers to encourage the construction of low-income housing developments that use transit-oriented and pedestrian-oriented design principles. (Policy VII.H.2.bb)

AQ-93. Work with Caltrans and the Regional Transportation Planning Agency to minimize the air quality, mobility, and social impacts of large scale transportation projects on existing neighborhoods. (Policy VII.H.2.cc)

AQ-94. Implement employer-based trip reduction programs for their employees. (Policy VII.H.2.dd)

AQ-95. Replace or convert conventional fuel vehicles with clean fuel vehicles as feasible, within the City's motorpool fleet, considering budgetary constraints. (Policy VII.H.2.ee)

AQ-96. Support the use of teleconferencing in lieu of employee travel to conferences and meetings when feasible. (Policy VII.H.2.ff)

AQ-97. Work with employers and developers to provide employees and residents with attractive, affordable transportation alternatives. (Policy VII.H.2.gg)

AQ-98. Work to establish public / private partnerships to develop satellite and neighborhood work centers for telecommuting. (Policy VII.H.2.hh)

AQ-99. Encourage the development of state of the art communication infrastructure linked to the rest of the world. (Policy VII.H.2.ii)

AQ-100. Reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible in accordance with the requirements of SJVAPCD Regulation VIII. Regulation VIII was adopted to reduce the amount of particulate matter suspended in the atmosphere as a result of emissions generated from anthropogenic (man-made) fugitive dust sources. (Policy VII.H.2.jj)

AQ-101. Require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions in accordance with the requirements of SJVAPCD Regulation VIII and are appropriate to the scale and intensity of use. (Policy VII.H.2.kk)

AQ-102. Reduce PM_{10} emissions from City–maintained roads to the maximum extent feasible. (Policy VII.H.2.ll)

AQ-103. Effectively stabilize dust emissions using water, chemical stabilizer / suppressant, cover with a tarp or other suitable cover or vegetative ground cover, all disturbed areas, including storage piles, which are not being actively utilized for construction purposes. (Policy VII.H.2.mm)

AQ-104. Effectively stabilize dust emissions using water or chemical stabilizer / suppressant, all onsite unpaved roads and off-site unpaved access roads. (Policy VII.H.2.nn)

AQ-105. Effectively control fugitive dust emissions utilizing application of water or by presoaking all land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities. (Policy VII.H.2.oo)

AQ-106. Wet all exterior surfaces of buildings that are more than six stories tall during demolition. (Policy VII.H.2.pp)

AQ-107. When materials are transported off site, cover all materials, or effectively wet them to limit visible dust emissions, and maintain at least six inches of freeboard from top of container. (Policy VII.H.2.qq)

AQ-108. Limit operations or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday (the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.) (Policy VII.H.2.rr)

AQ-109. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, effectively stabilize said piles for fugitive dust emissions utilizing sufficient water or chemical stabilizer / suppressant. (Policy VII.H.2.ss)

AQ-110. Within urban areas, immediately remove trackout when it extends 50 or more feet from the site and at the end of each workday. (Policy VII.H.2.tt)

AQ-111. Prevent carryout and trackout for any site with 150 or more vehicle trips per day. (Policy VII.H.2.uu)

AQ-112. Limit traffic speeds on unpaved roads to 15 mph. (Policy VII.H.2.vv)

AQ-113. Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent (1%). (Policy VII.H.2.ww)

AQ-114. Install wheel washers for all exiting trucks, or wash all trucks and equipment leaving the site. (Policy VII.H.2.xx)

AQ-115. Install wind breaks at windward side(s) of construction areas. (Policy VII.H.2.yy)

AQ-116. Suspend excavation and grading activity when winds exceed 20 mph (regardless of windspeed, an owner/operator must comply with Regulation VIII's 20 percent opacity limit). (Policy VII.H.2.zz)

AQ-117. Limit the area subject to excavation, grading, and other construction activity at any one time. (Policy VII.H.2.aaa)

5. Policies That Reduce or Avoid Impacts

City of Modesto policies are in effect and have been determined to reduce, avoid, or mitigate environmental impacts within the existing city limits and within the Planned Urbanizing General Plan areas as they annex and develop. SJVAPCD policies are included because they reduce or avoid cumulative impacts. The policy reference numbers are listed, the full text of these policies is found in Section A-4 above, *Existing Policies Applying to the Study Area*.

a. San Joaquin Valley Air Pollution Control District

The SJVAPCD has implemented a number of programs and regulations that regulate pollutants emissions, will limit cumulative air quality impacts and are intended to bring the air basin into attainment with air quality standards over time.

b. City of Modesto Policies

The UAGP provides a long list of goals and policies (shown above) that would serve to reduce adverse impacts related to air quality and greenhouse gas emissions, when applied on a project-by-project basis.

B. Consideration and Discussion of Significant Impacts

The following information is provided in accordance with State CEQA Guidelines Section 15126.2.

1. Thresholds of Significance

Thresholds of significance for air quality impacts have been established for this assessment based on the CEQA Environmental Checklist found in Appendix G of the State CEQA Guidelines. Based on that source, a proposed project would result in a significant impact on air quality if it would:

a. Conflict with or obstruct implementation of the applicable air quality plan;
b. Violate any air quality standard or contribute substantially to existing or projected air quality violation;
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality

standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
d. Expose sensitive receptors to substantial pollutant concentrations;
e. Create objectionable odors affecting a substantial number of people;
f. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or,
g. Conflict with an applicable plan, policy, or regulation adopted for the purpose of *reducing the emissions of greenhouse gases*.

The CEQA Guidelines further state that the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the determinations from Appendix G of the State CEQA Guidelines. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has specified significance thresholds within its Guide for Assessing and Mitigating Air Quality Impacts (San Joaquin Valley Air Pollution Control District, 2015) to determine air quality impacts for projects located within the valley air basin.

The SJVAPCD has determined that compliance with its Regulation VIII Fugitive PM10 Prohibitions, including implementation of all feasible control measures specified in *its Guide for Assessing and Mitigating Air Quality Impacts,* is sufficient mitigation to minimize adverse air quality effects from construction-related PM10 emissions to less-than-significant levels (San Joaquin Valley Air Pollution Control District 2002). Since the publication of the SJVAPCD's guidance manual, the SJVAPCD has revised various rules comprising Regulation VIII. Guidance from SJVAPCD staff indicates that implementation of a dust control plan would satisfy all of the requirements of SJVAPCD Regulation VIII.

As discussed above, the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts[8] includes project-level thresholds and land use screening sizes for criteria air pollutants. However, these are not appropriate for use at the plan level, but would be used to assess the impact of individual proposed projects under buildout of the Plan. Individual projects would need to comply with the SJVAPCD's Regulation VIII regarding particulate matter emissions from construction activities. Compliance with SJVAPCD Regulation VIII and the local zoning code will reduce particulate emission impacts to levels that are considered less than significant by the SJVAPCD.

In June of 2005, SJVAPCD revised their *Air Quality Guidelines for General Plans.* In it they outline goals and policies that general plans should City's should adopt as part of implementation of their general plan.

The SJVAPCD GAMAQI considers exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk or hazard, to be significant. For cancer risk, which is a concern with diesel particulate matter and other mobile-source TACs, the SJVAPCD considers an increased risk of contracting cancer that is 20 in one million chances or greater, to be significant risk for a single source. Non-cancer risk would be considered significant if the computed Hazard Index (HI) is greater than 1.0.[9]

[8] SJVAPCD, 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*.
[9] The Hazard Index is the ratio of the computed receptor exposure level to the level known to cause acute or chronic adverse health impacts.

2. Significant Direct Impacts

Approval and build-out of the Urban Area General Plan would be expected to have the following direct impacts with respect to air quality and greenhouse gas emissions.

a. Conflict with or obstruction of implementation of an applicable air quality plan.

The SJVAPCD is the regional agency responsible for overseeing compliance with State and federal laws, regulations, and programs within the Valley. The SJVAPCD has developed CEQA guidelines to assist lead agencies in evaluating the significance of air quality impacts from the implementation of General Plans. Land use planning affects vehicle travel, which in turn affects region-wide emissions of air pollutants and GHGs.

The proposed General Plan land use diagram and circulation element are consistent with StanCOG's 2014 Sustainable Communities Strategy, which reflects Modesto's General Plan. Vehicle miles traveled would be reduced for the proposed General Plan amendment as compared to the existing General Plan (No Project), which is the scenario reflected in the 2014 Sustainable Communities Strategy. The Sustainable Communities Strategy was approved by CARB, who is responsible for determining consistency with California plans and regulations to reduce air pollutants and GHG emissions.

In June of 2005, SJVAPCD revised their *Air Quality Guidelines for General Plans*, which outlines goals and policies that cities should adopt as general plan implementation. See the *City of Modesto General Plan Amendment Air Quality and Greenhouse Gas Emissions Assessment* prepared by Illingworth & Rodkin, and included in Appendix B, which lists these recommended goals and policies and indicates whether or not the proposed General Plan Amendment would be consistent.

As indicated in *City of Modesto General Plan Amendment Air Quality and Greenhouse Gas Emissions Assessment* prepared by Illingworth & Rodkin (Appendix B), the proposed Project would include features, policies, and implementing measures that are generally consistent with the SJVAPCD goals and policies. The proposed General Plan land use diagram and Transportation element are consistent with StanCOG's 2014 Sustainable Communities Strategy, which reflects Modesto's adopted General Plan. There would be no impacts relative to conflict or obstruction with regard to any applicable air quality plan.

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

Implementation of the proposed General Plan Amendment would result in short-term emissions from construction activities associated with subsequent development, including site grading, asphalt paving, building construction, and architectural coating. 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. The potential health risk impacts from construction are addressed below under Significance Threshold "d" (Expose Sensitive Receptors to Substantial Pollutant Concentrations).

Demolition and renovation of buildings can also generate PM_{10} and $PM_{2.5}$ emissions. Off-road construction equipment is often diesel-powered and can be a substantial source of NO_X emissions, in addition to PM_{10} and $PM_{2.5}$ emissions. Worker commute trips and architectural coatings are dominant sources of ROG emissions. The SJVAPCD GAMAQI does not identify plan-level thresholds that apply to construction. The SJVAPCD GAMAQI emphasizes implementation of effective and comprehensive control measures rather than requiring a detailed quantification of construction emissions. SJVAPCD adopted a set of PM_{10} fugitive dust rules collectively called Regulation VIII. This regulation essentially prohibits the emissions of visible dust (limited to 20 percent opacity) and requires that disturbed areas or soils be stabilized. Compliance with Regulation VIII during the construction phases of the various projects under the General Plan Amendment would be required. Prior to construction of each project, the applicant would be required to submit a dust control plan to the District that meets the regulation requirements. These plans are reviewed by SJVAPCD and construction cannot begin until District approval is obtained. Anyone who prepares or implements a Dust Control Plan must attend a training course conducted by the District. Construction sites are subject to SJVAPCD inspections under this regulation.

The SJVAPCD Indirect Source Review Rule (Rule 9510) applies to construction of projects that would exceed certain sizes. Rule 9510 ensures that projects contribute their share of emission reductions in order to achieve the basin-wide reduction targets established in the Air District's ozone and particulate matter attainment plans. Rule 9510 would require that projects reduce construction exhaust emissions by 20 percent for NO_x and 45 percent for PM_{10}. SJVAPCD encourages reductions through on-site mitigation measures (note: use of the term "mitigation" under Rule 9510 does not necessarily refer to mitigation of impacts under CEQA. If a project would not exceed the CEQA significance thresholds, no mitigation under CEQA would be required). A combination of on-site and off-site (fee-based) measures can be implemented to meet the overall emission reduction requirements.

Without application of appropriate control measures to reduce construction dust and exhaust, construction period impacts at the project level would be considered a potentially significant impact. Implementation of proposed General Plan amendment Policies VII.H.2.jj through VII.H.2.aaa, as applicable, would reduce this impact to less than significant.

As discussed above, Rule 9510 would not be considered mitigation under CEQA. However, it would require that construction exhaust emissions be reduced by 20 percent for NO_x and 45 percent for $PM_{10.}$ Additionally, implementation of the proposed Project could result in cumulatively considerable long-term area and mobile source emissions, resulting from operation and use of subsequent development. This impact would be significant and unavoidable.

Implementation of the General Plan amendment could include stationary sources of pollutants that would be required to obtain permits to operate in compliance with SJVAPCD rules. These sources include, but are not limited to, gasoline stations, dry cleaners, internal combustion engines, and surface coating operations. The permit process ensures that these sources would be equipped with the required emission controls and that, individually, these sources would result in a less than significant impact.

As discussed above, the SJVAPCD GAMAQI does not have thresholds related to direct and indirect regional criteria pollutant emissions resulting from plan implementation. Under Rule 9510, projects would be required to reduce operational NO_x emissions by 33 percent and operational PM_{10} emissions by 50 percent over ten years.

c. Violate any air quality standards or contribute substantially to an existing or projected air quality violation.

Project traffic associated with General Plan build-out land uses would increase concentrations of carbon monoxide along roadways providing access to the project. Carbon monoxide is a localized air pollutant, where highest concentrations are found very near sources. The major source of carbon monoxide is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volume and congestion. Emissions and ambient concentrations of CO have decreased greatly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and reformulated motor vehicle fuels. No exceedances of the State or federal CO standards have been recorded at any of San Joaquin Valley's monitoring stations in the past 15 years. The San Joaquin Valley Air Basin has attained the State and National CO standards. No monitoring of CO concentrations has been conducted in Stanislaus County for the past three years at the various air monitoring stations operated by CARB.[10]

Emissions of other local pollutants, such as lead (Pb) and sulfur dioxide (SO_2) would not occur, and air quality standards for them are being met throughout the Air Basin. Since it is evident that the project would not result in impacts involving these or other local pollutants, these pollutants are not evaluated in this document and any related impacts would be less than significant.

d. Expose sensitive receptors to substantial pollutant concentrations.

Subsequent land use activities associated with implementation of the General Plan Amendment could potentially include short-term construction sources of TACs and long-term operational sources of TACs, including stationary and mobile sources.

Temporary Construction Sources

Implementation of the General Plan Amendment would result in the potential construction of a variety of projects. This construction would result in short-term emissions of diesel particulate matter (DPM), a TAC. Construction would result in the generation of DPM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities. The amount to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer. The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. Cancer risk and $PM_{2.5}$ exposure would have to be analyzed through project-level analysis to identify the potential for significant impacts and measures to reduce those impacts to less than significant. Health risks associated with temporary construction would, therefore, be considered potentially significant. Application of proposed General Plan amendment Policy AQ-86 (which calls for a construction health risk assessment to be prepared when warranted; listed above) would reduce this impact to a less than significant level.

[10] CARB, 2016. iADAM: Air Quality Data Statistics. Available online: http://www.arb.ca.gov/adam/. Accessed: July 13, 2016.

Long-Term Operational Sources

The SJVAPCD GAMAQI considers exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk or hazard, to be significant. For cancer risk, which is a concern with diesel particulate matter and other mobile-source TACs, the SJVAPCD considers an increased risk of contracting cancer that is 20 in one million chances or greater, to be significant risk for a single source. Non-cancer risk would be considered significant if the computed Hazard Index (HI) is greater than 1.0.[11]

The proposed General Plan amendment would permit and facilitate the development of new sensitive receptors, such as new homes, in locations near arterial and collector roadways, highways, rail lines, and stationary sources of TAC emissions. Sensitive receptors within the Planning Area would be exposed to levels of TACs and/or $PM_{2.5}$ that could cause an unacceptable risk or hazard.

Stationary Sources
The Planning Area has numerous permitted stationary sources. These sources are located throughout the City, but mostly in industrial and commercial areas. The impact of these sources can only be addressed on a project-by-project basis, since impacts are generally localized. New residences and sensitive receptors could be located near stationary sources of TACs located throughout the City, such as gasoline dispensing stations, emergency back-up diesel generators, and dry cleaners. Without proper setbacks or mitigation measures, these sources could result in TAC levels that would be significant for new sensitive receptors.

Gasoline Stations
CARB recommends a setback of 300 feet for large gasoline dispensing facilities (3.6 million gallons of throughput a year) and 50 feet for small facilities.

Dry Cleaning Facilities
Perchlorethylene (Perc) is the solvent used commonly in past dry cleaning operations. Perc is a TAC because it has the potential to cause cancer. In 2005, CARB recommended setbacks of 300 feet between dry cleaning facilities that emit Perc and sensitive land uses. Since then, CARB has enacted new rules to substantially reduce Perc emissions and phase out the use of TACs in dry cleaning by 2023. Most dry cleaning facilities would need to be analyzed on a project-by-project basis, starting by determining if the facility in question uses Perc or not.

Emergency Back-Up Generators
Electricity generators that are powered by diesel engines are common. They are typically located at facilities where uninterrupted electricity is necessary. Common facilities include fire and police stations, hospital or medical treatment facilities, pump stations, schools, offices, and data centers. Diesel engines powering these generators are regulated by SJVAPCD and CARB. CARB has established strict emissions limits and operating restrictions for engines larger than 50 horsepower. As a result, all new engines have very localized impacts and would not be permitted if they would cause significant cancer risks or hazards.

Other Sources
CARB recommends a setback of 1,000 feet for both distribution centers and chrome platers.

[11] SJVAPCD, *Air Quality Thresholds of Significance – Toxic Air Contaminants*. Available online: http://www.valleyair.org/transportation/0714-GAMAQI-TACs-Thresholds-of-Significance.pdf.

Highway and Roadway Traffic

The CARB Air Quality and Land Use Handbook recommends avoiding siting new sensitive receptors within 500 feet of a freeway, urban roads with 100,000 vpd or rural roads with 50,000 vpd. However, this is not always feasible. Project-level analysis would be required for proposed receptor setbacks of lesser distances, including possible refined dispersion modeling of TACs.

Railroad Operations

Potential health effects from railroad traffic along the Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe Railway (BNSF) rail lines in Modesto were evaluated. The BNSF rail line is located along the eastern edge of Modesto and the UPRR rail line parallels Highway 99 along the western side of the city. The BNSF rail line is used by trains for passenger and freight service, while the UP rail line is used only for freight service. Passenger rail service on the BNSF line consists of the Amtrak San Joaquin passenger line with 14 trains per day. In addition, based on data from the U.S. Department of Transportation there are about 46 freight trains that use the BNSF rail line and 18 to 20 freight trains on the UP line on a daily basis.[12] All passenger and freight trains using these rail lines use diesel powered locomotives and emit diesel exhaust from the engines.

The rail analysis is meant to show screening levels of increased cancer risks to new residents who would be locating in areas designated as residential, village residential, or mixed use along the rail lines. Since DPM emissions from locomotives will be decreasing over time due to on-going implementation of U.S. EPA locomotive emission standards, cancer risks were evaluated for two exposure scenarios. The first one is where exposure would begin in about 2020 and the second where exposure would begin in about 2025.

The volume of train activity, operating characteristics, and rail line orientation has a considerable effect on the level of exposure to DPM and cancer risk. For this analysis, approximately 3,000-foot segments of the rail line in the vicinity of potential future residences were evaluated. To account for differences in rail line locations and operating characteristics, two cases were evaluated.

Case 1 is for trains traveling on the BNSF rail line on a segment of the rail line adjacent to areas of potential future residential development in the eastern side of the General Plan area. Passenger and freight trains running along this section of rail line were assumed to be traveling at an average speed of 40 mph.

Case 2 is for freight trains traveling on the UPRR rail line on a segment of the rail line adjacent to areas of potential future residential development in the western side of the General Plan area. Freight trains running along this section of rail line were assumed to be traveling at an average speed of 40 mph.

The locations of the BNSF and UPRR rail line segments evaluated are shown in Figure V-2-1.

Rail Line Emissions Modeling

DPM emissions from trains on the rail line were calculated using EPA emission factors for locomotives (EPA, 2009) and CARB adjustment factors to account for fuels used in California (CARB, 2006). Since the exposure duration used in calculating cancer risks is 70 years,

[12] U.S. Department of Transportation, Federal Railroad Administration, U.S. DOT Crossing inventory Form for DOT Crossing Inventory number 028744N (2nd Street, Empire) and 752855A (Woodland Avenue in Modesto).

emissions for the period from 2020 through 2089 were calculated evaluating exposures starting in 2020 and for 2025 through 2094 for exposures starting in 2025. Average DPM emissions were calculated based on EPA emission factors for the periods 2020-2024, 2025-2030, 2030-2089 and 2030-2094.

Amtrak's passenger trains in this area generally use locomotives with 3,200 horsepower (hp) diesel engines. In estimating diesel locomotive emissions, all passenger train locomotives were assumed to have 3,200 hp engines. Each passenger train was assumed to use one locomotive and would be traveling at an average speed of 40 mph. UPRR freight trains in California range in size from about 1,500 hp to 4,000 hp, with a fleet average horsepower of about 2,200 hp.[13] For this evaluation, it was assumed that the UPRR freight train locomotives use 2,300 hp engines. BNSF freight trains in California range in size from about 1,200 hp to 4,400 hp, with a fleet average horsepower of about 3,440 hp.[14] For this evaluation, it was assumed that the BNSF freight train locomotives use 3,600 hp engines. Emissions from the freight trains were calculated assuming they would use three locomotives and would be traveling at about 40 mph.

Rail Line Dispersion Modeling

Modeling of locomotive emissions was conducted using the EPA's AERMOD dispersion model and five years (2010-2014) of hourly meteorological data from the Modesto Airport prepared for use with the AERMOD model by the San Joaquin Valley Air Pollution Control District (SJVAPCD). Locomotive emissions over the rail segments evaluated were modeled as a line sources (a series of adjacent volume sources) along about 3,000 feet of track. A volume source release height of 5 meters with a plume height of 6 meters was used in the modeling.

Concentrations were calculated at receptors that were placed on both sides of the rail line segments, perpendicular to the rail line, at a distance of 50 feet then at every 100 feet out to 1,000 feet from the track centerline, spaced every 164 feet (50 meters) along the rail line segments. Receptor heights were set at 1.5 meters (about 5 feet).

Rail Line Cancer Risk Impacts

Using the modeled long-term average DPM concentrations at each receptor location, the increased cancer risks were computed using the most recent methods recommended by SJVAPCD.[15] The factors used to compute cancer risk are highly dependent on modeled concentrations, exposure period or duration, and the type of receptor. The exposure level is determined by the modeled concentration; however, it has to be averaged over a representative exposure period. The averaging period is dependent on many factors, but mostly the type of sensitive receptor being evaluated. This assessment conservatively assumed long-term 70 year residential exposures for two cases, one with the exposure period starting in 2020 and the other with the exposures starting in 2025. The SJVAPCD has developed exposure assumptions for typical types of sensitive receptors. A description of how the cancer risk impacts are computed is contained in the Technical Appendix of the MEIR.

[13] Based on *2009 UPRR California Intrastate Locomotives*, Available at: http://www.arb.ca.gov/railyard/rrsubmittal/0410upinventory.pdf

[14] Based on *2009 UPRR California Intrastate Locomotives*, Available at: http://www.arb.ca.gov/railyard/rrsubmittal/0410bnsfinventory.pdf

[15] SJVAPCD. 2015. *Final Staff Report, Update to District's Risk Management Policy to Address OEHHA's Revised Risk Assessment Guidance Document*. May 28, 2015

It should be noted that the procedure to calculate maximum cancer risk assumes that exposure starts at infancy (3rd trimester of pregnancy to age 2) and continues through childhood (ages 2 to 16) and adulthood (ages 16 to 70) and that infants will be present at all receptor locations at the beginning of the exposure period.

The maximum cancer risks from both the BNSF and UPRR rail lines occurred 50 feet from the railroad track centerline and decrease with distance from the rail lines. Figures V-2-2 and V-2-3 show the sections of rail line segments evaluated and receptor locations relative to the rail lines, and list the computed maximum increased cancer risks for trains traveling on the BNSF rail line and UPRR rail line, respectively. Maximum increased cancer risks to new residents locating near the rail lines are show for new residential exposure starting in 2020 and 2025. As indicated in Figure V-2-2, trains on the BNSF rail line would have a significant cancer risk (above 20 in one million excess cancer risk) within approximately 800 feet from the rail line for exposures starting in 2020 and within about 500 feet for exposures starting in 2025. For the UP rail line shown in Figure 3, trains would have a significant cancer risk within about 200 feet east of the rail line and 300 feet west of the rail line for exposures starting in 2020. For exposures starting in 2025, trains would have a significant caner risk within about 100 feet east of, and 200 feet west of, the rail line. Potentially significant setback distances for acute and chronic Hazard Index would be greater than those identified above for excess cancer risk.

Since it is unlikely that this impact could feasibly be reduced to a less than significant level, the impact would remain significant and unavoidable. Details of the locomotive emission calculations, rail line modeling, and cancer risk calculations are included in Technical Appendix B of this MEIR.

e. Create objectionable odors affecting a substantial number of people.

Subsequent land use activities associated with implementation of the proposed General Plan amendment could allow for the development of uses that have the potential to produce odorous emissions either during construction or operation of new development. Additionally, subsequent development activity may result in the construction of sensitive land uses (i.e., residential development, schools, parks, offices, etc.) near existing or future sources of odorous emissions. Future construction activities could result in odorous emissions from diesel exhaust associated with construction equipment. However, because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, exposure of sensitive receptors to these emissions would be limited.

Significant sources of offending odors are typically identified based on complaint histories received and compiled by SJVAPCD. It is difficult to identify sources of odors without requesting information by specific facility from SJVAPCD. Typical large sources of odors that result in complaints are wastewater treatment facilities, landfills including composting operations, asphalt batch plants, fiberglass manufacturing, feed lots / dairy, food processing facilities, and chemical and rendering plants. Other sources, such as restaurants, paint or auto-body shops, and coffee roasters typically result in localized sources of odors. SJVAPCD considers odor impacts to be significant when there is more than one confirmed complaint per year averaged over a three-year period, or three unconfirmed complaints per year averaged over a three-year period. Table V-2-3 contains the screening distances for potentially significant odor impacts.

TABLE V-2-3: Screening Distances for Potentially Significant Odor Impacts

Type of Facility	Distance
Wastewater Treatment Facility	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting / Coating Operations (e.g., auto body shops)	1 mile
Food Processing Facility	1 mile
Feed Lot / Dairy	1 mile
Rendering Plant	1 mile

The Plan Area includes potential odor sources throughout that could affect new sensitive receptors. Most of these major existing sources are already buffered. However, it is possible that odors may be present. Responses to odors are subjective, and vary by individual and type of use. Sensitive land uses that include outdoor uses, such as residences and possibly daycare facilities, are likely to be affected most by existing odors. The proposed Project does not include policies or implementing measures that address potential conflicts in land uses that could result in odor complaints. As a result, the impact would be considered potentially significant. Application of proposed General Plan amendment Policy AQ-88 (listed above) would reduce this impact to a less than significant level by resulting in coordination of land use planning efforts with SJVAPCD to prohibit sensitive receptors from locating near odor sources.

f. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

SJVAPCD's *Guidance for Valley Land-Use Agencies in Addressing GHG Emissions Impacts for New Projects Under CEQA* establishes a requirement that land use development projects demonstrate a 29 percent reduction in GHG emissions from Business-As-Usual (BAU). However, this would apply at the project level and SJVAPCD does not have a recommended threshold of significance for general plans. Further, this method of demonstrating 29 percent reduction from BAU was called into question in the Newhall case (Center for Biological Diversity v. California Department of Fish and Wildlife, Los Angeles Super. Ct. No. BS131347). In the second update to the Scoping Plan,[16] CARB recommends that local governments aim to achieve community-wide emissions of no more than 6 MT CO_2e per capita by 2030 and no more than 2 MT CO_2e per capita by 2050. A simple interpolation between the two goals results in a 2040 substantial progress goal of no more than 4 MT CO_2e per capita.

GHG emissions were computed for the full build-out traffic scenario and for the alternative scenario, with operational emissions in 2040 using the California Emissions Estimator Model Version 2016.3.2 (CalEEMod). General Plan land use types and size, and trip generation rate were

[16] CARB, 2017. *California's Climate Change Scoping Plan.*

input to CalEEMod. CalEEMod predicts emissions of GHG in the form of equivalent carbon dioxide emissions or CO_2e.

Operational Period Emissions

The CalEEMod model and EMFAC2017 model along with the project vehicle miles traveled (VMT) estimates were used to predict GHG emissions associated with operation of fully developed sites under the General Plan Amendment. CARB's EMFAC2017 model is sensitive to the year selected, since vehicle emissions have and continue to be reduced due to more stringent exhaust controls, newer vehicle fleet, fuel efficiency standards, and low carbon fuels. Adjustments to the modeling are described below. CalEEMod and EMFAC2017 output worksheets are provided in Technical Appendix of the MEIR.

Year of Analysis

Emissions associated with vehicle travel depend on the year of analysis. The earlier the year, the higher the emission rates, as the models assume reduced emission rates as newer vehicles with lower emission rates replace older, more polluting vehicles through attrition of the overall vehicle fleet. The earliest theoretical Project "build-out" year is 2040.

Land Use Descriptions

The following land uses types and sizes were input to CalEEMod for the Existing run (which was run using historical energy consumption data): "Single Family Housing" (62,490 dwelling units), "Apartments Mid Rise" (23,180 dwelling units), "Strip Mall" / retail (14,211,500 square feet), "General Office Building" (13,985,455 square feet), "General Heavy Industry" (4,667,500 square feet), "Government (Civic Center)" (1,860,000 square feet), "High School"/education (4,287,500 square feet), "Hotel" (2,545,500 square feet),[17] and "Health Club" (2,745,455 square feet).

For the net General Plan buildout (which was added to the Existing run to represent the proposed General Plan buildout), the following land uses were input to CalEEMod: "Single Family Housing" (34,473 units), "Apartments Mid Rise" (13,120 units), "Strip Mall" / retail (9,884,718 square feet), "General Office Building" (19,925,399 square feet), "General Heavy Industry" (18,212,041 square feet), "Government (Civic Center)" (696,043 square feet), "High School" / education (3,163,002 square feet), "Hotel" (6,223,845 square feet),[18] and "Health Club" (9,155,416 square feet).

Trip Generation Rates and Travel Distances

Mobile emissions were calculated using daily vehicle miles traveled (VMT) provided in the traffic study. For each project scenario (Boundary Method, OD Shared Accounting Method, and OD Full Accounting Method), the daily VMT was provided. These data were applied to the average GHG emission factor using the CARB EMFAC2017 emissions factor model.

Electricity Generation

For the Existing run, historical data from 2005 were conservatively used for energy consumption. For the net General Plan buildout and Project Alternative runs, default rates for energy consumption were assumed in the model, which represent energy consumption rates for the 2016 Title 24 California building standards.

GHG Operational Emissions

[17] 1,753 hotel rooms were assumed, which corresponds closest to the estimated 2,545,500 s.f.
[18] 4,287 hotel rooms were assumed, which corresponds closest to the estimated net 6,223,845 s.f.

Tables V-2-4, V-2-5 and V-2-6 present the results of the CalEEMod and EMFAC analysis in terms of annual metric tons of equivalent CO_2e emissions (MT of CO_2e/yr) and per capita values for the Boundary Method, OD Shared Accounting Method, and OD Full Accounting Method, respectively. The CalEEMod modeling data are provided in the Technical Appendix of the MEIR.

As shown in Tables V-2-4, V-2-5 and V-2-6, 2040 full build-out operation of the General Plan Amendment would have per capita emissions of 5.3 – 6.3 MT of CO_2e/yr depending on the VMT accounting method. As discussed above, SJVAPCD does not have a GHG significance threshold at the plan level. The proposed Project would exceed CARB's recommended 2050 goal of 2 MT of CO_2e/yr/capita and the interpolated 2040 substantial progress goal of 4 MT CO_2e per capita. Therefore, it cannot be concluded that 2040 General Plan GHG emissions would be in line with EO S-3-05 and EO B-30-15 goals, as these represent substantial reductions beyond AB32 goals. There are no additional feasible and reasonable measures beyond those outlined in Table 5 of the Technical Appendix of the MEIR to reduce Plan Area VMT. The proposed General Plan amendment includes many policies (see generally transportation policies, above, and Section V-18 – Energy) to ensure energy-efficiency in the City, but these would not reduce the impact(s) to a less than significant level.

TABLE V-2-4:
2040 Project GHG Emissions (Metric Tons CO_2e), Boundary Method

Source Category	Existing (Base Year)	2040 Project
Area	149,772	182,291
Energy Consumption	533,369	1,013,501
Mobile	403,173	724,206
Solid Waste Generation	71,162	149,430
Water Usage	45,737	95,327
Total	1,203,213	2,164,755
Service Population Emissions[1]	N/A	5.5

Notes: [1]Based on a future Plan Area population of approximately 390,000.

TABLE V-2-5:
2040 Project GHG Emissions (Metric Tons CO_2e), OD Shared Accounting Method

Source Category	Existing (Base Year)	2040 Project
Area	149,772	182,291
Energy Consumption	533,369	1,013,501
Mobile	278,574	612,215
Solid Waste Generation	71,162	149,430
Water Usage	45,737	95,327
Total	1,078,614	2,052,764
Service Population Emissions[1]	N/A	5.3

Notes: [1]Based on a future Plan Area population of approximately 390,000.

TABLE V-2-6:
2040 Project GHG Emissions (Metric Tons CO_2e), OD Full Accounting Method

Source Category	Existing (Base Year)	2040 Project
Area	149,772	182,291
Energy Consumption	533,369	1,013,501
Mobile	422,073	1,000,588
Solid Waste Generation	71,162	149,430
Water Usage	45,737	95,327
Total	1,222,113	2,441,137
Service Population Emissions[1]	N/A	6.3

Notes: [1]Based a future on Plan Area population of approximately 390,000.

h. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, codifies the State of California's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, CARB, California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State of California's main strategies to reduce GHGs from business-as-usual (BAU) emissions projected in 2020 back down to 1990 levels. BAU is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. It required CARB and other state agencies to develop and adopt regulations and other initiatives reducing GHGs by 2012.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, in light of the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB is currently working on a second update to the Scoping Plan to reflect

the 2030 target set by Executive Order B-30-15 and codified by SB 32. The 2017 Scoping Plan Update was published in November 2017 as directed by SB 32 companion legislation AB 197. The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The Scoping Plan outlines the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and obtain the statewide goals.

The proposed project would be constructed in conformance with CALGreen and the Title 24 Building Code, which requires high-efficiency water fixtures and water-efficient irrigation systems. However, as discussed above project GHG emissions would exceed the 2050 goal of 2 MT of CO_2e per capita per year and the interpolated 2040 substantial progress goal of 4 MT CO_2e per capita based on the 2017 CARB Scoping Plan update. Therefore, this impact would remain significant and unavoidable.

As the StanCOG RTP/SCS is in part a GHG emissions reduction plan, it is relevant to discuss vehicle miles traveled (VMT) here. The proposed General Plan amendment project would reduce total VMT as compared to the "no project" scenario. The proposed project would help reduce regional GHG emissions.

3. Significant Cumulative Impacts

General Plan emissions of criteria air pollutants or their precursors would not make a considerable contribution to cumulative air quality impacts. Air pollution, by nature, is mostly a cumulative impact. The significance thresholds applicable to construction and operational aspects of a project represent the levels at which a project's individual emissions of criteria pollutants and precursors would result in a cumulatively considerable contribution to the region's air quality conditions as determined by the SJVAPCD. Proposed projects as part of the General Plan buildout would subject to the project-level review using the screening criteria and significance thresholds published by SJVAPCD, and would be required to mitigate any significant impacts through compliance with Indirect Source Review Rule (ISR or Rule 9510) to reduce ozone precursor (i.e., ROG and NO_x) and PM_{10} emissions from new development.

Per CEQA Guidelines Section 15064(h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program. The proposed General Plan land use diagram and circulation element are consistent with StanCOG's 2014 Sustainable Communities Strategy, which reflects Modesto's General Plan. The number of daily vehicle miles traveled is lower with the proposed General Plan than it is with the existing General Plan (No Project), which is the scenario reflected in the 2014 Sustainable Communities Strategy. The Sustainable Communities Strategy was approved by CARB, who is responsible for determining consistency with California plans and regulations to reduce air pollutants and GHG emissions. In addition, as discussed above, the General Plan is generally consistent with the recommended goals and policies contained in the SJVAPCD *Air Quality Guidelines for General Plans*.

Pursuant to CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project would comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of GHGs) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the

geographic area in which the project is located. SJVAPCD considers GHG impacts to be exclusively cumulative impacts. This approach recognizes that GHG emissions worldwide are cumulatively significant. Therefore, this GHG analysis considers cumulative impacts as part of the analysis. Accordingly, no additional cumulative impacts have been identified, and no mitigation measures would be required.

C. POLICIES ADOPTED TO MINIMIZE SIGNIFICANT EFFECTS

The following information is provided in accordance with CEQA Guidelines Section 15126.4.

1. Policies That Reduce Direct Impacts

The applicable UAGP policies, listed above in section V.A.4.d, would assist in reducing fugitive dust emissions during construction of future individual projects. Specifically, the most relevant policies include those that result in reduced airborne particulate matter from construction sites (AQ-100 through AQ-117); AQ-86 requires that a health risk assessment be conducted when determined necessary by the San Joaquin Valley Air Pollution Control District; and, other policies limit the placement of sensitive receptors to protect against exposure to odors and pollution.

2. Policies That Reduce Cumulative Impacts

Activities within the City of Modesto are subject to regulation by the SJVAPCD. These regulations are intended to improve regional air quality over time so that the air basin will reach air quality attainment. However, in the near term, these measures alone would not avoid a potentially significant cumulative effect.

D. MONITORING POLICIES THAT REDUCE IMPACTS

The following information is provided in accordance with PRC Section 211081.6. The policies identified in this Master EIR have been drawn from the proposed UAGP amendment, and they are implemented by that plan. City staff provides the City Council with an annual report on UAGP implementation; therefore, no separate mitigation monitoring program is required for the UAGP Master EIR.