

5.7 - Greenhouse Gases

5.7.1 - Introduction

This section contains the following components:

- **Environmental Setting:** Describes greenhouse gases and climate change.
- **Regulatory Setting:** Describes the federal, state, and local regulatory setting for greenhouse gases.
- **Impact Analysis, Mitigation Measures, and Level of Significance After Mitigation:** Assesses the significance of greenhouse gases that may be emitted as part of the project and applies mitigation measures, if necessary. Project emissions are estimated by FirstCarbon Solutions; spreadsheets are contained in Appendix F-1.

5.7.2 - Environmental Setting

Study Area for Project Impacts

The study area for project impacts regarding greenhouse gas is the City of Fresno Planning Area because potential development under the City of Fresno General Plan and Development Code Update is limited to areas within the Planning Area where the emissions are generated. It should be noted that greenhouse gas impacts are inherently cumulative impacts.

Study Area for Cumulative Impacts

The study area for the analysis of cumulative greenhouse gas impacts is the State of California. This analysis will be based on a summary of projections approach as provided in Section 15130(b)(1)(B) of the CEQA Guidelines. The applicable projections include those provided by the State pursuant to AB 32 and the ARB Scoping Plan prepared to address AB 32 requirements.

Regional Setting and Overview

The City of Fresno is located in the County of Fresno in the San Joaquin Valley Air Basin (Air Basin). The Air Basin consists of Kings, Madera, San Joaquin, Merced, Stanislaus, and Fresno counties; as well as a portion of Kern County. The local agency with jurisdiction over air quality in the Basin is the San Joaquin Valley Air Pollution Control District (the District or SJVAPCD).

Gases that trap heat in the atmosphere are referred to as greenhouse gases. The effect is analogous to the way a greenhouse retains heat. Common greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a greenhouse gas compared with the reference gas, carbon dioxide.

Individual greenhouse gas compounds have varying global warming potential and atmospheric lifetimes. Carbon dioxide, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a greenhouse gas is a measure of how much a given mass of a greenhouse gas is estimated to contribute to global warming. To describe how much global warming a given type and amount of greenhouse gas may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing greenhouse gas emissions, since it normalizes various greenhouse gas emissions to a consistent reference gas, carbon dioxide. For example, methane’s warming potential of 21 indicates that methane has 21 times greater warming effect than carbon dioxide on a molecule-per-molecule basis. A carbon dioxide equivalent is the mass emissions of an individual greenhouse gas multiplied by its global warming potential. Greenhouse gases defined by Assembly Bill (AB) 32 (see the Climate Change Regulatory Environment section for a description of AB 32) include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 5.7–1. A seventh greenhouse gas, nitrogen trifluoride (NF₃) was added to Health and Safety Code section 38505(g)(7) as a greenhouse gas of concern. California’s latest emission inventory does not include NF₃; however, future State inventories will likely include it. This chemical is used in electronics manufacture for semiconductors and liquid crystal displays and has a high global warming potential of 17,200. Little or no manufacturing using NF₃ is expected in Fresno,

Table 5.7–1: Description of Greenhouse Gases

| Greenhouse Gas | Description and Physical Properties | Sources |
|----------------|---|---|
| Nitrous oxide | Nitrous oxide (laughing gas) is a colorless greenhouse gas. It has a lifetime of 114 years. Its global warming potential is 310. | Microbial processes in soil and water, fuel combustion, and industrial processes. |
| Methane | Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21. | Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter. |
| Carbon dioxide | Carbon dioxide (CO ₂) is an odorless, colorless, natural greenhouse gas. Carbon dioxide’s global warming potential is 1. The concentration in | Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic |

| Greenhouse Gas | Description and Physical Properties | Sources |
|---|---|---|
| | 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960. | outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. |
| Chlorofluorocarbons | These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100. | Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987. |
| Hydrofluorocarbons | Hydrofluorocarbons are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700. | Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants. |
| Perfluorocarbons | Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200. | Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing. |
| Sulfur hexafluoride | Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900. | This gas is man-made and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas. |
| Sources: Compiled from a variety of sources, primarily Intergovernmental Panel on Climate Change 2007a and 2007b. | | |

Other greenhouse gases include water vapor, ozone, and aerosols. Water vapor is an important component of our climate system and is not regulated. Ozone and aerosols are short-lived greenhouse gases; global warming potentials for short-lived greenhouse gases are not defined by the Intergovernmental Panel on Climate Change (IPCC). Aerosols can remain suspended in the atmosphere for about a week and can warm the atmosphere by absorbing heat and cool the atmosphere by reflecting light.

Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating such as fireplaces, prescribed burning of agricultural residue, and natural and unnatural

wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, as opposed to other greenhouse gases that can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

Although there could be health effects resulting from changes in the climate and the consequences that climate change can bring about, inhalation of greenhouse gases at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses in the MEIR Air Quality Section. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation, as the gases can displace oxygen (Centers for Disease Control and Prevention 2010, Occupational Safety and Health Administration 2003).

Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from California Climate Change Center 2006 and Moser et al. 2009):

- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant “fuel” available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today’s conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California’s coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming

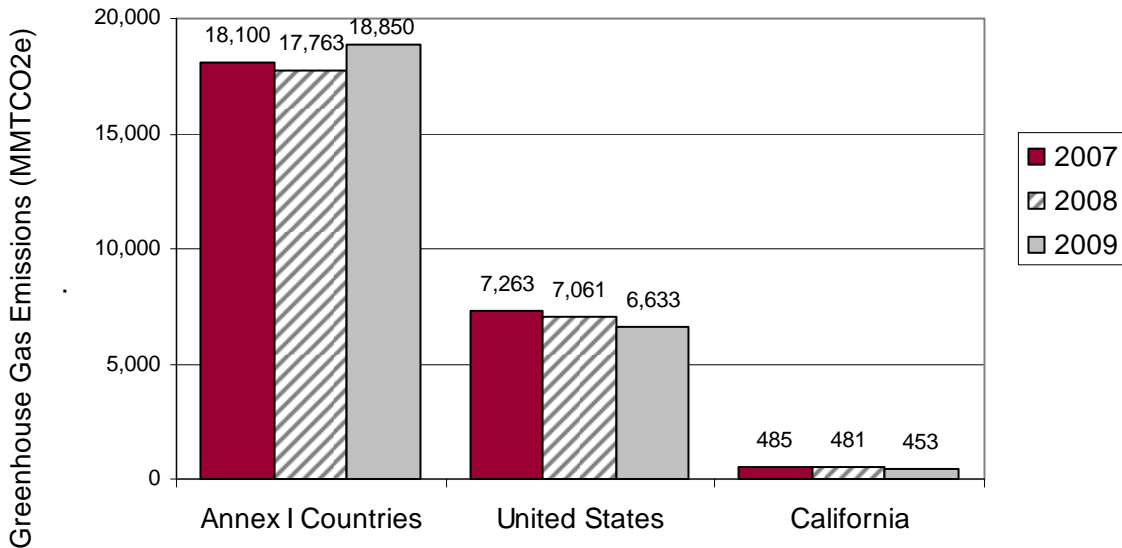
range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

- **An increase temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California’s forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Emissions Inventories

Emissions worldwide were approximately 49,000 million metric tons of carbon dioxide equivalents (MMT_{CO₂e}) in 2004 (Intergovernmental Panel on Climate Change 2007b). Greenhouse gas emissions in 2007, 2008, and 2009 are shown in Figure 5.7-1. Annex I parties refers to countries that joined the United Nations Framework Convention on Climate Change.

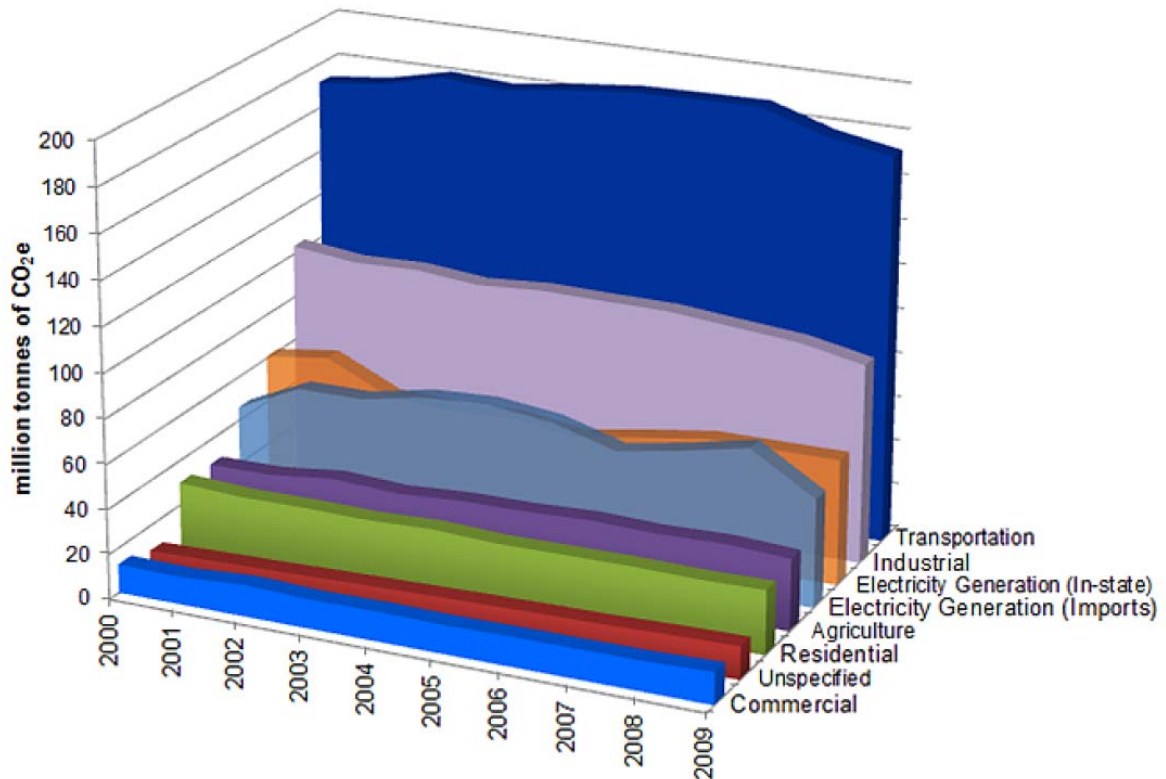
Figure 5.7-1: Greenhouse Gas Emissions Trends



Prepared by Michael Brandman Associates using the following data sources:
 California Air Resources Board 2011
 U.S. Environmental Protection Agency 2011
 United Nations Framework Convention on Climate Change 2010

As shown in Figure 5.7-2, the main contribution of greenhouse gas emissions in California from the year 2000 through 2009 was transportation (Source: California Air Resources Board 2011b). The second highest sector was industrial, which includes sources from refineries, general fuel use, oil and gas extraction, cement plants, and cogeneration heat output.

Figure 5.7-2: Greenhouse Gas Emission Trends by Sector in California



5.7.3 - Regulatory Setting

International

Climate change is a global issue involving greenhouse gas emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce greenhouse gases.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention). On March 21, 1994, the United States joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on greenhouse gas emissions, national policies, and best practices; launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas emissions at average of 5 percent against 1990 levels over the 5-year period 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.”

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

National

Prior to the last decade, there have been no concrete federal regulations of greenhouse gases or major planning for climate change adaptation. The following are actions regarding the federal government, greenhouse gases, and fuel efficiency.

Greenhouse Gas Endangerment. *Massachusetts v. EPA* (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that the EPA regulate four greenhouse gases, including carbon dioxide, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act. The Court held that the Administrator must determine whether emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- *Endangerment Finding:* The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- *Cause or Contribute Finding:* The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing greenhouse gas emissions standards for vehicles, as discussed in the section “Clean Vehicles” below.

The EPA denied 10 petitions for Reconsideration of the Endangerment and Cause or Contribute Findings in 2010. Some of the petitioners included the Ohio Coal Association, Peabody Energy Company, and the State of Texas.

In September 2011, the EPA Office of Inspector General evaluated the EPA’s compliance with established policy and procedures in the development of the endangerment finding, including processes for ensuring information quality. The evaluation concluded that the technical support document should have had more rigorous EPA peer review.

In June 2012, a federal appeals court rejected a lawsuit by 13 states against the EPA. The suit alleged that the EPA violated the law by relying almost exclusively on data from the United Nations Intergovernmental Panel on Climate Change rather than doing its own research or testing data according to federal standards. The states include Virginia, Texas, Alabama, Florida, Hawaii, Indiana, Kentucky, Louisiana, Mississippi, Nebraska, North Dakota, Oklahoma, South Carolina, South Dakota, and Utah. A petition for writ of certiorari to the United States Court of Appeals for the District of Columbia Circuit was denied by the Supreme Court on October 15, 2013.

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On May 7, 2010, the EPA and the Department of Transportation’s National Highway Safety Administration announced a joint final rule establishing a national program that would reduce greenhouse gas emissions and improve fuel economy for new cars and trucks sold in the United States. The final rule became effective July 6, 2010.

The first phase of the national program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration are working on a second-phase joint rulemaking to establish national standards for light-duty vehicles for model years 2017 and beyond.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce greenhouse gas emissions and improve fuel efficiency of *heavy-duty trucks and buses on September 15, 2011, effective November 14, 2011*. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20-percent reduction in carbon dioxide emissions and fuel consumption by the 2018 model year. For

heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the agencies are proposing engine and vehicle standards starting in the 2014 model year, which would achieve up to a 10-percent reduction in fuel consumption and carbon dioxide emissions by 2018 model year.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory greenhouse gas reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of greenhouse gas emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of greenhouse gas emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010 that establishes thresholds for greenhouse gases that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule “tailors” the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, the EPA states:

This rulemaking is necessary because without it the [Prevention of Significant Deterioration] and title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the [Clean Air Act], greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to [greenhouse gas] sources, starting with the largest [greenhouse gas] emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from [Prevention of Significant Deterioration] and title V permitting for [greenhouse gas] emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national greenhouse gas emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation’s largest greenhouse gas emitters—power plants, refineries, and cement production facilities.

Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new source

performance standards for emissions of carbon dioxide for new affected fossil fuel-fired electric utility generating units on March 27, 2012. The proposed rule was re-issued on January 8, 2014. New sources greater than 25 megawatt would be required to meet an output based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. EPA expects the final rule to be issued in 2015.

Cap and Trade. Cap and trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. Examples in the United States include the Acid Rain Program and the NO_x Budget Trading Program and Clean Air Interstate Rule in the northeast. The Clean Air Interstate Rule (CAIR) and the Acid Rain Program (ARP) are both cap and trade programs designed to reduce emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) from power plants. The ARP, established under Title IV of the 1990 Clean Air Act (CAA) Amendments, requires power plants to make major emission reductions of SO₂ and NO_x, the primary precursors of acid rain. CAIR addresses regional interstate transport of soot (fine particulate matter) and smog (ozone) pollution. CAIR requires certain eastern states to limit annual emissions of SO₂ and NO_x, which contribute to the formation of fine particulate matter. It also requires certain states to limit ozone season NO_x emissions, which contribute to the formation of ozone during the summer ozone season (May through September). There is no federal greenhouse gas cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap and trade.

The Regional Greenhouse Gas Initiative is an effort to reduce greenhouse gases among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in energy programs in an effort to further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional greenhouse gas emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Its cap-and-trade program is estimated to be fully implemented in 2015.

State

Legislative Actions to Reduce Greenhouse Gases.

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce greenhouse gases of any state in the nation. Some legislation such as the landmark AB 32 California Global Warming Solutions Act of 2006 was specifically enacted to address greenhouse gas emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide greenhouse gas reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. “Greenhouse gases” as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of greenhouse gases. ARB is the state agency charged with monitoring and regulating sources of greenhouse gases. AB 32 states the following:

Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB Board approved the 1990 greenhouse gas emissions level of 427 MMTCO₂e on December 6, 2007 (California Air Resources Board 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 MMTCO₂e. Emissions in 2020 in a “business as usual” scenario are estimated to be 596 MMTCO₂e, which do not account for reductions from AB 32 regulations (California Air Resources Board 2008). At that level, a 28 percent reduction was required to achieve the 427 million MTCO₂e 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the recession and slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 million MTCO₂e. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010). The ARB also prepared updated emission inventories for 2000 through 2011 to show progress achieved to date (ARB 2013). Executive Order S-3-05 includes a target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target. Also shown are the average reductions needed from all statewide sources (including all existing sources) to reduce GHG emissions back to 1990 levels.

- 1990: 427 million MTCO₂e
- 2000: 463 million MTCO₂e (an average 8-percent reduction needed to achieve 1990 base)
- 2010: 450 million MTCO₂e (an average 5-percent reduction needed to achieve 1990 base)
- 2020: 545 million MTCO₂e BAU (an average 21.7-percent reduction needed to achieve 1990 base)

Under AB 32, the ARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California. Discrete early action measures are currently underway or are enforceable by January 1, 2010. The ARB has 44 early action measures that apply to the transportation, commercial, forestry, agriculture, cement, oil and gas, fire suppression, fuels, education, energy efficiency, electricity, and waste sectors. ARB has completed regulations

implementing all Early Action Measures. The ARB estimated that the 44 recommendations are expected to result in reductions of at least 42 MMTCO₂e by 2020, representing approximately 25 percent of the 2020 target.

The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 (California Air Resources Board 2008). The Scoping Plan identifies recommended measures for multiple greenhouse gas emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 greenhouse gas target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. Capped strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the cap-and-trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. Uncapped strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional greenhouse gas emission reductions.¹

¹ On March 17, 2011, the San Francisco Superior Court issued a final decision in *Association of Irrigated Residents v. California Air Resources Board* (Case No. CPF-09-509562). While the Court upheld the validity of the ARB Scoping Plan for the implementation of AB 32, the Court enjoined ARB from further rulemaking under AB 32 until ARB amends its CEQA environmental review of the Scoping Plan to address the flaws identified by the Court. On May 23, 2011, ARB filed an appeal. On June 24, 2011, the Court of Appeal granted ARB's petition staying the trial court's order pending consideration of the appeal. In the interest of informed

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identifies the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 greenhouse gas limit, but also sets a path toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California's climate change priorities and activities Climate for the next several years. The Update does not set new targets for the State, but describes a path that would achieve the long term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050 (ARB 2014).

The ARB has no legislative mandate to set a target beyond the 2020 target from AB 32 or to adopt additional regulations to achieve a post-2020 target. The Update estimates that reductions averaging 5.2 percent per year would be required after 2020 to achieve the 2050 goal. With no estimate of future reduction commitments from the State, identifying a feasible strategy including plans and measures to be adopted by local agencies is not possible. Implementation of the City's General Plan Update will help support both the short term and long-term objectives of the Update. However, there is no way of determining whether the City would need to take additional actions beyond its existing programs and the land use and transportation strategies contained in the General Plan Update until such a time as new State targets and a new Scoping Plan is adopted.

SB 375. Passing the Senate on August 30, 2008, SB 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of greenhouse gas emissions, which emits over 40 percent of the total greenhouse gas emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: it (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing greenhouse gas emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies. The Fresno Council of Governments has adopted emissions reductions for per capita light duty vehicles from 2005 levels of 4.7 percent by 2020 and 7.6 percent by 2035.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28 states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets.

decision-making, on June 13, 2011, ARB released the expanded alternatives analysis in a draft Supplement to the AB 32 Scoping Plan Functional Equivalent Document. The ARB Board approved the Scoping Plan and the CEQA document on August 24, 2011.

2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

Fresno COG adopted the 2014 Regional Transportation Plan (RTP) on June 26, 2014, which contains the Sustainable Communities Strategy. The RTP describes the RTP/SCS as seeking to guide the Fresno region toward a more sustainable future by integrating land use, housing, and transportation planning to create communities that are more compact, walkable, and transit oriented. Sustainability is defined as simultaneously meeting current economic, environmental, and community needs, while ensuring that the ability of future generations to meet their needs is not jeopardized. A prosperous economy, a healthy environment, and social equity are described as the “Three Es” of sustainability. (Fresno COG, 2014)

AB 1493 Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA’s denial of an implementation waiver. On January 21, 2009, the ARB requested that the EPA reconsider its previous waiver denial. On January 26, 2009, President Obama directed that the EPA assess whether the denial of the waiver was appropriate. On June 30, 2009, the EPA granted the waiver request. On September 8, 2009, the U.S. Chamber of Commerce and the National Automobile Dealers Association sued the EPA to challenge its granting of the waiver to California for its standards. California assisted the EPA in defending the waiver decision. The U.S. District Court for the District of Columbia denied the Chamber’s petition on April 29, 2011. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22-percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30-percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce greenhouse gases from new cars by 34 percent from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is

available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

SB 1368. In 2006, the State Legislature adopted Senate Bill (SB) 1368, which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for greenhouse gas emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law will effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. Thus, SB 1368 will lead to dramatically lower greenhouse gas emissions associated with California's energy demand, as SB 1368 will effectively prohibit California utilities from purchasing power from out-of-state producers that cannot satisfy the performance standard for greenhouse gas emissions required by SB 1368. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007.

Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078 requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 1078 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33-percent renewable energy target by 2020. The ARB Board approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23.

Executive Orders Related to Greenhouse Gas Emissions

California's Executive Branch has taken several actions to reduce greenhouse gases through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the "... first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order S-3-05. Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for greenhouse gas emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Low Carbon Fuel Standard - Executive Order S-01-07. The Governor signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009. The Low Carbon Fuel Standard was challenged in the United States District Court in Fresno in 2011. The court's ruling issued on December 29, 2011 included a preliminary injunction against ARB's implementation of the rule. The Ninth Circuit Court of Appeals stayed the injunction on April 23, 2012 pending final ruling on appeal, allowing the ARB to continue to implement and enforce the regulation. The 9th Circuit's decision filed September 18, 2013, vacated the preliminary injunction. In essence, the court held that Low Carbon Fuel Standards adopted by ARB were not in conflict with federal law. On August 8, 2013, the Fifth District Court of Appeal (California) ruled ARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for Low Carbon Fuel Standards. In a partially-published opinion, the Court of Appeal reversed the trial court's judgment and directed issuance of a writ of mandate setting aside Resolution 09-31 and two executive orders of ARB approving Low Carbon Fuel Standards (LCFS) regulations promulgated to reduce greenhouse gas (GHG) emissions. However, the court tailored its remedy to protect the public interest by allow the LCFS regulations to remain operative while ARB complies with the procedural requirements it failed to satisfy."

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code originally stated "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)." Section 21097 was also added to the Public Resources Code.

The Office of Planning and Research prepared amendments to the CEQA Guidelines for addressing greenhouse gas emissions to comply with SB 97. The amendments became effective on March 18, 2010. The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of greenhouse gas emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. However, little guidance is offered on the crucial next step in this assessment process—how to determine whether the project’s estimated greenhouse gas emissions are significant or cumulatively considerable.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts respectively. Greenhouse gas mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze greenhouse gas emissions in an EIR when a project’s incremental contribution of emissions may be cumulatively considerable; however, it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic greenhouse gas analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support a determination that a project’s cumulative effect is not cumulatively considerable, according to proposed Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation. The sample environmental checklist in Appendix G was amended to include greenhouse gas questions.

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California’s energy consumption relatively flat even with rapid population growth.

Title 24. California Code of Regulations Title 24 Part 6: California’s Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted 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 efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions. The newest version of Title 24 was adopted by the California Energy Commission (CEC) on May 31, 2012 and was scheduled to become effective on January 1, 2014. On December 11, 2013, the CEC extended the compliance date to July 1, 2014 to allow more time for the building industry and local building departments to prepare.

Title 20. California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2012).

California Green Building Standards Code is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. It does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

The California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) requires:

- Short-term bicycle parking. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5 percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- Designated parking. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling. (5.410.1).
- Construction waste. A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and 80 percent for new homes and 80-percent for commercial projects. (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled. (5.408.3).

- Wastewater reduction. Each building shall reduce the generation of wastewater by one of the following methods:
 1. The installation of water-conserving fixtures or
 2. Using nonpotable water systems (5.303.4).
- Water use savings. 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35 and 40-percent reductions. (5.303.2, A5303.2.3 [nonresidential]).
- Water meters. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day. (5.303.1).
- Irrigation efficiency. Moisture-sensing irrigation systems for larger landscaped areas. (5.304.3).
- Materials pollution control. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring and particleboard. (5.404).

Building commissioning. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies. (5.410.2).

San Joaquin Valley Air Pollution Control District

The project is within the San Joaquin Valley Air Basin, which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (District). The District has authority to regulate stationary sources of emissions and prepares plans to attain air quality standards. The District does not have authority to regulate mobile and area wide sources of greenhouse gases; however, due to their expertise in air quality programs, the District offers technical assistance and guidance to local agencies in addressing greenhouse gas impacts.

Climate Change Action Plan

On August 21, 2008, the District Governing Board approved a proposal, called the Climate Change Action Plan, to begin a public process to bring together stakeholders, land use agencies, environmental groups, and business groups, and to conduct public workshops to develop comprehensive policies for CEQA guidelines, a carbon exchange bank, and voluntary greenhouse gas emissions mitigation agreements for the Governing Board's consideration. The Climate Change Action Plan contained the following goals and actions:

Goals

1. Assist local land-use agencies with California Environmental Quality Act (CEQA) issues relative to projects with greenhouse gas emissions increases.
2. Assist Valley businesses in complying with mandates of AB 32 (Global Warming Solutions Act of 2006).

3. Ensure that climate protection measures do not cause increases in toxic or criteria pollutants that adversely impact public health or environmental justice communities.

Actions

1. Authorize the Air Pollution Control Officer to develop greenhouse gas significance threshold(s) or other mechanisms to address CEQA projects with greenhouse gas emissions increases. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in the spring of 2009.
2. Authorize the Air Pollution Control Officer to develop necessary regulations and instruments for establishment and administration of the San Joaquin Valley Carbon Exchange Bank for voluntary greenhouse gas reductions created in the Valley. Begin the requisite public process, including public workshops, and develop recommendations for Governing Board consideration in spring 2009.
3. Authorize the Air Pollution Control Officer to enhance the District's existing criteria pollutant emissions inventory reporting system to allow businesses subject to AB 32 emission reporting requirements to submit simultaneous streamlined reports to the District and the state of California with minimal duplication.
4. Authorize the Air Pollution Control Officer to develop and administer voluntary greenhouse gas emission reduction agreements to mitigate proposed greenhouse gas increases from new projects.
5. Direct the Air Pollution Control Officer to support climate protection measures that reduce greenhouse gas emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted areas.

CEQA Greenhouse Gas Guidance

On December 17, 2009, the District Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" and the policy: "District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The District concluded that the existing science is inadequate to support quantification of the impacts that project-specific greenhouse gas emissions have on global climatic change. The District found that the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The District found that this cumulative impact is best addressed by requiring all projects to reduce their greenhouse gas emissions, whether through project design elements or mitigation.

The District's approach is intended to streamline the process of determining if project-specific greenhouse gas emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources and have a certified Final CEQA document.

For non-exempt projects, those projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency would evaluate the project against performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce greenhouse gas emissions. The Best Performance Standards have not yet fully been established, though they must be designed to effect a 29-percent reduction when compared with the "business-as-usual" projections identified in ARB's AB 32 Scoping Plan.

"Business-as-usual" is the emissions occurring in 2020 if the average baseline emissions during the 2002–2004 period were grown to 2020 levels, without control. These standards thus would carry with them pre-quantified emissions reductions, eliminating the need for project specific quantification. Therefore, projects incorporating Best Performance Standards would not require specific quantification of greenhouse gas emissions, and automatically would be determined to have a less than significant cumulative impact for greenhouse gas emissions.

For stationary source permitting projects, Best Performance Standards means, "The most stringent of the identified alternatives for control of greenhouse gas emissions, including type of equipment, design of equipment and operational and maintenance practices, which are achieved-in-practice for the identified service, operation, or emissions unit class." The District has identified Best Performance Standards for the following sources: boilers; dryers and dehydrators; oil and gas extraction, storage, transportation, and refining operations; cogeneration; gasoline dispensing facilities; volatile organic compound control technology; and steam generators.

For development projects, Best Performance Standards means, "Any combination of identified greenhouse gas emission reduction measures, including project design elements and land use decisions that reduce project specific greenhouse gas emission reductions by at least 29 percent compared with business as usual."

Projects not incorporating Best Performance Standards would require quantification of greenhouse gas emissions and demonstration that business-as-usual greenhouse gas emissions have been reduced or mitigated by 29 percent. Quantification of greenhouse gas emissions would be required for all projects for which the lead agency has determined that an environmental impact report is required, regardless of whether the project incorporates Best Performance Standards.

San Joaquin Valley Carbon Exchange

The District initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The purpose of the carbon exchange is to quantify, verify, and track voluntary greenhouse gas emissions

reductions generated within the San Joaquin Valley. To investigate the various issues concerning the development of a mechanism to register greenhouse gas emission reductions, the District formed a technical workgroup consisting of District staff, land use agency representatives, industry representatives, agricultural representatives, environmental group representatives, and other interested parties. The workgroup met several times in public meetings during late 2008 and early 2009 to discuss several areas of concern regarding a greenhouse gas emission reduction registration program, including:

- The differences between the upcoming AB 32 cap-and-trade program and a greenhouse gas emission reduction registration program.
- Potential uses of registered greenhouse gas emission reductions. Registered greenhouse gas emission reductions could possibly be used to provide mitigation in the CEQA process, as a means to comply with a greenhouse gas cap-and-trade program, or other purposes.
- A review of other greenhouse gas emission reduction registration programs currently in existence, including the Chicago Climate Exchange, New York Climate Exchange, Northeast Climate Exchange, Climate Action Reserve, and South Coast Air Quality Management District's SoCal Climate Solutions Exchange.
- Required elements of a District-administered greenhouse gas emission reduction registration program, including the establishment of criteria for greenhouse gas emission reduction registration, the use of ARB protocols, and the requirement to quantify some emission reductions.
- The advantages and disadvantages of development of a greenhouse gas emission reduction registration program.
- Alternatives to the development of a District-administered greenhouse gas emission reduction registration program were discussed, including the District's possible role in California Climate Action Reserve as an emission reduction project verifier and/or providing technical assistance to project proponents to quantify and mitigate their projects greenhouse gas emissions as part of the CEQA process.

Rule 2301

While the Climate Change Action Plan indicated that the greenhouse gas emission reduction program would be called the San Joaquin Valley Carbon Exchange, the District incorporated a method to register voluntary greenhouse gas emission reductions into its existing Rule 2301 - Emission Reduction Credit Banking through amendments of the rule. Amendments to the rule were adopted on January 19, 2012. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary greenhouse gas emission reductions for later use.
- Provide an administrative mechanism for sources to transfer banked greenhouse gas emission reductions to others for any use.

- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked greenhouse gas emission reductions are real, permanent, quantifiable, surplus, and enforceable.

Local

City of Fresno

The City of Fresno has a long history of support for programs that improve air quality and sustainability. The current 2025 Fresno General Plan adopted in 2000 and Air Quality Element of the 2025 General Plan in 2009 provide a strong start in reducing the air quality and greenhouse gas impacts and improving the sustainability of development in the City. The proposed General Plan Update and Greenhouse Gas Reduction Plan provides additional support for greenhouse gas reductions and sustainability as described below.

The Greenhouse Gas Reduction Plan (GHG Plan) (Appendix F-2) provides a comprehensive assessment of the benefits of these General Plan and Development Code Update policies along with existing plans, programs, and initiatives that reduce greenhouse gas emissions. In addition, the GHG Plan includes an emission reduction target for demonstrating consistency with State GHG reduction targets. The analysis prepared to quantify greenhouse gas emissions and emission reductions provides the basis for the GHG Plan targets and for CEQA significance findings of implementing the General Plan and Development Code Update and the GHG Plan.

Proposed General Plan and Development Code Update

The proposed General Plan Update sets forth the following guiding and implementing policies that are relevant to greenhouse gases.

Policy ED-1-c: Promote, educate, and market the benefits of a “Buy Local” campaign. Explores a “Buy Local” target for Public Works and other City purchasing decisions.

Policy UF-1-c: Legible City Structure. Focus integrated and ongoing planning efforts to achieve an identifiable city structure, comprised of a concentration of buildings, people and pedestrian-oriented activity in Downtown; among a small number of prominent east-west and north-south transit-oriented, mixed-use corridors with distinctive and strategically located Activity Centers; and in existing and new neighborhoods augmented with parks and connected by multi-purpose trails and tree lined bike lands and streets.

Policy UF-12-a: BRT Corridors. Design land uses and integrate development site plans along BRT corridors, with transit-oriented development that supports transit ridership and convenient pedestrian access to bus stops and BRT station stops.

Policy UF-12-b: Activity Centers. Mixed-use designated areas along BRT and/or transit corridors are appropriate for more intensive concentrations of urban uses. Typical uses could include commercial areas; employment centers; schools; compact residential development; religious institutions; parks; and other gathering points where residents may interact, work, and obtain goods and services in the same place.

Policy UF-12-d: Appropriate Mixed-Use. Facilitate the development of vertical and horizontal mixed-uses to blend residential, commercial, and public land uses on one or adjacent sites. Ensure land use compatibility between mixed-use districts in Activity Centers and the surrounding residential neighborhoods.

Policy UF-12-e: Access to Activity Centers. Promote adoption and implementation of standards supporting pedestrian activities and bicycle linkages from surrounding land uses and neighborhoods into Activity Centers and to transit stops. Provide for priority transit routes and facilities to serve the Activity Centers.

Policy UF-12-f: Mixed-Use in Activity Centers. Update the Development Code to include use regulations and standards to allow for mixed uses and shared parking facilities, including multi-story and underground parking facilities, within Activity Centers.

Policy UF-12-g: Impacts on Surrounding Uses. Establish design standards and buffering requirements for high-intensity Activity Centers to protect surrounding residential uses from increased impacts from traffic noise and vehicle emissions, visual intrusion, interruption of view and air movement, and encroachment upon solar access.

Policy UF-13-a: Future Planning to Require Design Principles. Require future planning, such as Specific Plans, neighborhood plans or Concept Plans, for Development Areas and BRT Corridors designated by the General Plan to include urban design principles and standards consistent with the Urban Form, Land Use, and Design Element.

Objective UF-14: Create an urban form that facilitates multi-modal connectivity.

Policy UF-14-a: Design Guidelines for Walkability. Develop and use design guidelines and standards for a walkable and pedestrian-scaled environment with a network of streets and connections for pedestrians and bicyclists, as well as transit and autos.

Policy UF-14-b: Local Street Connectivity. Design local roadways to connect throughout neighborhoods and large private developments with adjacent major roadways and pathways of existing adjacent development. Create access for pedestrians and bicycles where a local street must dead end or be designed as a cul-de-sac to adjoining uses that provide services, shopping, and connecting pathways for access to the greater community area.

Policy UF-4-c: Block Length. Create development standards that provide desired and maximum block lengths in residential, retail, and mixed-use districts order to enhance walkability.

Objective LU-2: Plan for infill development that includes a range of housing types, building forms, and land uses to meet the needs of both current and future residences.

Policy LU-2-a: Infill Development and Redevelopment. Promote development of vacant, underdeveloped, and redevelopable land within the City Limits where urban services are available by considering the establishment and implementation of supportive regulations and programs.

Policy LU-2-b: Infill Development for Affordable Housing. Consider a priority infill incentive program for residential infill development of existing vacant lots and underutilized sites within the City limits as a strategy to help to meet the affordable housing needs of the community.

Policy LU-2-c: Infill Design Toolkit. Develop and distribute an infill design toolkit, consistent with the City's Infill Development Act to support and encourage infill development.

Policy LU-2-d: Infrastructure Upgrades. Facilitate urban infill by building and upgrading community and neighborhood public infrastructure and services in order to enhance public health and convenience, and the overall experience and quality of city living.

Policy LU-3-b: Mixed-Use Urban Corridors that Connect the Downtown Planning Area. Support the development of mixed-use urban corridors that connect the Downtown Planning Area with the greater Fresno-Clovis Metropolitan Area with functional, enduring, and desirable urban qualities along the Blackstone Avenue, Shaw Avenue, California Avenue, and Ventura Avenue/Kings Canyon Road corridors, as shown on Figure LU-1: General Plan Land Use Diagram.

LU-3-c: Zoning for High Density on Major BRT Corridors. Encourage adoption of supportive zoning regulations for compact development along BRT corridors leading to the Downtown Core that will not diminish the long-term growth and development potential for Downtown.

Policy LU-5-f: High Density Residential Uses. Promote high-density residential uses to support Activity Centers and BRT Corridors, affordable housing, and walkable access to transit stops.

Policy LU-6-b: Commercial Development Guidelines. Consider adopting commercial development guidelines to assure high quality design and site planning for large commercial developments, consistent with the Urban Form policies of this Plan.

Policy LU-6-g: Lodging Facilities Location. Site lodging facilities and related accommodations near major transportation facilities.

Policy LU-8-b: Access to Public Facilities. Ensure that major public facilities and institutions have adequate multi-modal access and can be easily reached by public transit.

Policy D-1-g: Reducing Surface Parking. Consider adopting and implementing incentives to replace existing large surface parking lots in centers with parking structures, and incorporated them into high-density mixed-use developments.

Objective D-3: Create unified plans for Green Streets, using distinctive features reflecting Fresno's landscape heritage.

Policy D-3-a: Green Street Tree Planting. Create a Green Street Tree Planting Program, with a well-balanced variety and spacing of trees to establish continuous shading and visual continuity for each streetscape. Strive to achieve coherent linkages between public and private spaces, prioritizing tree

planting along tree-deficient Arterial and Collector Roadways in neighborhoods characterized by lower per capita rates of vehicle ownership.

Policy D-3-b: Funding for Green Street Tree Planting Program. Pursue funding for the Green Street Tree Planting Program, including landscaping of median islands.

Policy D-3-c: Local Streets as Urban Parkway. Develop local streets as "urban parkways," where appropriate, with landscaping and pedestrian spaces.

Policy D-4-b: Incentives for Pedestrian-Oriented Anchor Retail. Consider adopting and implementing incentives for new pedestrian-friendly anchor retail at intersections within Activity Centers and along corridors to attract retail clientele and maximize foot traffic.

Policy D-4-f: Development Code Update for Design Concepts. Ensure that standards in the Development Code implement General Plan design concepts for each land use type.

Objective MT-1: Create and maintain a transportation system that is safe, efficient provides access in an equitable manner, and optimizes travel by all modes.

Policy MT-1-g: Complete Streets Concept Implementation. Provide transportation facilities based upon a Complete Streets concept that facilitates the balanced use of all viable travel modes (pedestrians, bicyclists, motorists, and transit users), meeting the transportation needs of all ages and abilities and providing mobility for a variety of trip purposes, while also supporting other City goals. Implementation actions will include:

- Meeting the needs of all users within the street system as a whole; each individual street does not need to provide all modes of travel, but travel by all modes must be accommodated throughout the Planning Area;
- Continuing to adopt refined street cross-section standards as appropriate in response to needs identified;
- Encourage conversion of one-way streets to two-way streets to improve location circulation, access, and safety;
- Considering the impact of streets on public health by addressing storm water runoff quality, air quality, and water conservation among other factors; and
- Adhering to the water efficient landscape standards adopted by the City for median and streetscape plantings and irrigation methods.

Policy MT-1-j: Transportation Improvements Consistent with Community Character. Prioritize transportation improvements that are consistent with the character of surrounding neighborhoods and supportive of safe, functional and Complete Neighborhoods; minimize negative impacts upon sensitive land uses such as residences, hospitals, schools, natural habitats, open space areas and historic and cultural resources. In implementing this policy, the City will design improvements to:

- Facilitate provision of multi-modal transportation opportunities;
- Provide added safety, including appropriate traffic calming measures;
- Promote achievement of air quality standards;
- Provide capacity in a cost effective manner; and
- Create improved and equitable access with increased efficiency and connectivity.

Policy MT-1-e: Ensure Interconnectivity Across Land Uses. Update development standards and design guidelines applicable to public and private property to achieve Activity Centers, neighborhoods and communities which are well connected by pedestrian, bicycle, appropriate public transportation and automobile travel facilities.

Policy MT-2-c: Reduce VMT through Infill Development. Provide incentives for infill development that would provide jobs and services closer to housing and multi-modal transportation corridors, and vice versa, in order to reduce citywide vehicle miles travelled.

Policy MT-2-d: Street Redesign where Excess Capacity Exists. Evaluate opportunities to reduce right of way and/or redesign streets to support non-automobile travel modes along streets with excess roadway capacity where adjacent land use is not expected to change over the planning period.

Policy MT-2-f: Optimization of Roadway Operations. Optimize roadway operations by continuing to expand the use of techniques such as the City's intelligent transportation system (ITS) to manage traffic signal timing coordination in order to improve traffic operations and increase traffic-carrying capacity, while reducing unnecessary congestion and decreasing air pollution emissions. In order to facilitate roadway optimization and as a potential revenue source for the optimization, the following strategies need to be implemented:

- Dig Once Policy. Install conduit for telecommunications use when trenching or construction occurs.
- Telecommunications Strategy. Develop a costing mechanism for allowing the use of excess conduit within the City for use by communication carriers. The Policy shall follow regulations of the California Public Utilities Commission.
- Grant Funding. Pursue grant funding to assist in construction and/or implementation of fiber-optic or other telecommunication infrastructure for additional public services such as education, economic development, reaching underserved populations, and public safety communications.

Policy MT-2-g: Transportation Demand Management and Transportation System Management. Pursue the implementation of Transportation Demand Management and Transportation System Management strategies to reduce peak hour vehicle traffic demands and supplement the capacity of the transportation system.

Policy MT-2-b: Reduce Vehicle Miles Traveled and Trips. Partner with major employers and other responsible agencies, such as the San Joaquin Valley Air Pollution Control District and the Fresno Council of Governments, to implement trip reduction strategies, such as eTRIP, to reduce total vehicle miles traveled and the total number of daily and peak hour vehicle trips, thereby making better use of the existing transportation system.

Objective MT-2: Make efficient use of the City's existing and proposed transportation system and strive to ensure the planning and provision of adequate resources to operate and maintain it.

Policy MT-1-k: Multi-Modal Level of Service Standards. Develop and use a tiered system of flexible, multi-modal Level of Service standards for streets designated by the Circulation Diagram (Figure MT-1). Strive to accommodate a peak hour vehicle LOS of D or better on street segments and at intersections, except where Policies MT-1-m through MT-1-p provide greater specificity. Establish minimum acceptable service levels for other modes and use them in the development and environmental review process.

Policy MT-1-l: Level of Service in the Downtown Area. Within the Downtown Planning Area accept vehicle LOS F conditions during peak hours for street segments and intersections specified in community and Specific plans as may be adopted by the City. Where there is an overlap in policies regarding LOS in the Downtown Planning Area, this policy shall supersede.

Policy MT-1-m: Standards for Planned Bus Rapid Transit Corridors and Activity Centers. Strive to maintain the following vehicle LOS standards on major roadway segments and intersections along Bus Rapid Transit Corridors and in Activity Centers:

- LOS E or better at all times, including peak travel times, unless the City Traffic Engineer determines that mitigation to maintain this LOS would be infeasible and/or conflict with the achievement of other General Plan policies.
- Accept LOS F conditions in Activity Centers and High Intensity Transit Corridors only if provisions are made to improve the overall system and/or promote non-vehicular transportation and transit as part of a development project or a City-initiated project. In accepting LOS F conditions, the City Traffic Engineer may request limited analyses of operational issues at locations near Activity Centers and along Bus Rapid Transit Corridors, such as queuing or left-turn movements.
- Give priority to maintaining pedestrian service first, followed by transit service and then by vehicle LOS, where conflicts between objectives for service capacity between different transportation modes occur.
- Identify pedestrian-priority and transit-priority streets where these modes would have priority in order to apply a multi-modal priority system, as part of the General Plan implementation

Policy MT-2-n. Peak Hour Vehicle LOS. Maintain a peak-hour vehicle LOS standard of D or better for all roadway areas outside of identified Activity Center and Bus Rapid Transit Corridor districts, unless

the City Traffic Engineer determines that mitigation to maintain this LOS would be infeasible and/or conflict with the achievement of other General Plan policies.

Policy MT-2-o: LOS Deviations Outside of Activity Centers and Areas Designated for Mixed-Use. Accept vehicle LOS E or F conditions outside of identified multi-modal districts only if provisions commensurate with the level of impact and approved by the City Traffic Engineer are made to sufficiently improve the overall transportation system and/or promote non-vehicular transportation as part of a development project or City-initiated project.

Policy MT-2-i: Local Street Standards. Establish and implement local roadway standards addressing characteristics such as alignment, width, continuity and traffic calming to provide efficient neighborhood circulation; to allow convenient access by residents, visitors and public service and safety providers; and to promote neighborhood integrity and desired quality of life by limiting intrusive pass-through traffic.

Policy MT-3-b: Preserve street trees lining designated scenic corridors or boulevards. Replace trees of the predominant type and in a comparable pattern to existing plantings if there is no detriment to public safety.

Objective MT-4: To establish and maintain a continuous, safe, and easily accessible bikeways system throughout the metropolitan area to reduce vehicle use, improve air quality and the quality of life, and provide public health benefits.

Policy MT-4-a: Bicycle, Pedestrian, and Trails Master Plan. To the extent consistent with this General Plan, continue to implement and periodically update the Bicycle, Pedestrian, and Trails Master Plan to meet State standards and requirements for recommended improvements and funding proposals as determined appropriate and feasible.

Policy MT-4-d: Prioritization of Bikeway Improvements. Prioritize bikeway components that link existing separated sections of the system, or that are likely to serve the highest concentration of existing or potential cyclists, particularly in those neighborhoods with low vehicle ownership rates, or that are likely to serve destination areas with the highest demand such as schools, shopping areas, recreational trail heads, and employment centers.

Policy MT-4-h: Bicycle Parking Facilities. Promote the installation of bicycle locking racks and bicycle parking facilities at public buildings, transit facilities, public and private parking lots, and recreational facilities. Establish and adopt standards for bicycle parking in the Development Code.

Policy MT-4-i: Bicycling and Public Transportation. Promote the integration of bicycling with other forms of transportation, including public transit. Continue to provide bike racks or space for bicycles on FAX buses.

Policy MT-4-j: Street Maintenance for Bicycle Safety. Provide regular sweeping and other necessary maintenance to clear bikeways of dirt, glass, gravel, and other debris and maintain the integrity of the bicycling network.

Policy MT-4-k: Bicycle Safety, Awareness, and Education. Promote bicycle ridership by providing secure bicycle facilities, promoting traffic safety awareness for both bicyclists and motorists, promoting the air quality benefits, promoting non-renewable energy savings, and promoting the public health benefits of physical activity.

Policy MT-6-l: Environmentally Sensitive Path and Trail Design. Develop paths and trails with minimum environmental impact by taking the following actions.

- Surface paths and trails with materials that are conducive to maintenance and safe travel, choosing materials which blend in with the surrounding area whenever possible;
- Design paths and trails to follow contour lines where the least amount of grading (fewest cuts and fills) and least disturbance of the surrounding habitat would occur;
- Beautify trail rights-of-way in a manner consistent with intended use, safety, and maintenance;
- Use landscaping to stabilize slopes, create physical or visual barriers, and provide shaded areas.
- Preserve and incorporate native plant species into the landscaping.

Objective MT-8: Provide public transit options that serve existing and future concentrations of residences, employment, recreation and civic uses and are feasible, efficient, safe, and minimize adverse environmental impacts.

Policy MT-9-e: Area Specific Transit Improvements. Continue to evaluate and pursue where appropriate the planning and implementation of special area specific transit improvements, such as street car facilities.

Policy MT-8-g: High Speed Train. If the State moves forward with HST, ensure it is constructed through Fresno in a manner that minimizes impacts to surrounding property owners and creates the most opportunity for redevelopment around the HST Station.

Policy MT-8-h: Move Forward with High Speed Train Station Area Planning. Work with local residents, property and business owners, and other stakeholders to develop a station area plan to provide the most opportunity for growth and prosperity in concert with the development of the Fresno HST station.

Objective MT-9: Provide public transit opportunities to the maximum number and diversity of people practicable in balance with providing service that is high in quality, convenient, reliable, cost-effective service and financially feasible.

Policy MT-8-a: Street Design Coordinated with Transit. Coordinate the planning, design and construction of the major roadway network with transit operators to facilitate efficient direct transit routing throughout the Planning Area.

Policy MT-9-a: Equitable Transit Provision. Provide transit that can serve all residents, including older residents and persons with disabilities.

Policy MT-9-b: Transit Service Productivity Evaluation. Continue to evaluate transit service productivity and cost efficiency indicators in the City's Short-Range Transit Plan, and make necessary and appropriate service adjustments when operationally and financially feasible.

Policy MT-9-c: Addressing Unmet Transit Needs. Continue to participate in the Council of Fresno County Governments' annual unmet transit needs evaluation process, particularly with respect to identifying need for access to medical and educational services; perform market analysis to identify potential transit choice riders; and pursue public education and information programs to identify changes in demand characteristics and opportunities to increase ridership.

Policy MT-8-d: Coordination of Transportation Modes. Plan, design and implement transportation system improvements promoting coordination and continuity of transportation modes and facilities, such as shared parking or park and ride facilities at Activity Centers.

Policy MT-8-b: Transit Serving Residential and Employment Nodes. Identify the location of current and future residential and employment concentrations and Activity Centers throughout the transit service area in order to facilitate planning and implementation of optimal transit services for these uses. Work with California State University, Fresno to determine locations within the campus core for bus stops.

Policy MT-8-e: Regional Coordination. Continue to work with local and regional governmental institutions to promote efficient transportation policies and coordinated programs.

Policy MT-8-i: Legislative Support. Monitor State and federal legislation that creates incentives to reduce auto dependency and support the use of alternatives to the single occupant vehicle that is consistent with the City's General Plan.

Policy MT-9-f: Encourage Telecommuting. Support measures that will facilitate the expanded use of telecommunications technologies to reduce congestion, expansion of regional transportation facilities consistent with this General Plan, energy use, and air emissions (i.e., work at home, dispersed telecommute work centers, teleconferencing).

Policy MT-11-b: Railroad Improvements. Continue to participate in and advocate for collaborative efforts to improve railroad transportation facilities and reduce conflicts with the street system, including relocation and/or consolidation of the BNSF and UP mainline railroad track facilities.

Policy POSS-3-c: Link Parks with Walkways. Link public open space to adjacent schools and Activity Centers through a series of landscaped linear walkways and bikeways that enhance and encourage pedestrian use.

Policy POSS-3-f: Park Design Guidelines. Create, maintain, and enforce park design guidelines, including provisions for:

- Minimum and maximum shade.
- Protections from shading by adjacent buildings.
- Accessibility to persons with disabilities.
- Street trees and landscaped median strips in adjacent arterial roads.
- Art and points of attraction.
- Landscape and hardscape features.
- Street furniture, signage, and lighting.
- Food sales and entertainment.
- Restroom facilities, play structures, and picnic shelters.
- Landscape design synthesis with input from civil engineers and hydrologists, educators and daycare providers, fitness trainers and coaches, police officers and experts in crime prevention through environmental design, as appropriate.
- Sports field areas designed to allow periodic changes in field locations to minimize wear areas and provide sufficient fields to host regional, state, or national tournaments.
- Using topography to create interesting and visually appealing spaces and forms.
- Use of waterways as a key design influence, a focus of restoration, and an opportunity to provide for public enjoyment of views.
- Reflecting the agricultural and horticultural heritage of the site or area.
- Connecting with surrounding areas in a way that encourages expanded pedestrian activity.
- Creating individual places within a park that respond to the needs of a broad range of park users, from youth to the elderly.
- Creating places of delight that engage the senses, such as water features or moving installations.
- Creating places that engage the mind, by treating park features as opportunities for interpretation and questioning.
- Using sustainable design practices, and highlighting these as opportunities for learning.

Objective POSS-5: Provide for long-term preservation, enhancement, and enjoyment of plant, wildlife, and aquatic habitat.

Policy POSS-5-a: Habitat Area Acquisition. Support federal, State, and local programs to acquire significant habitat areas for permanent protection and/or conjunctive educational and recreational use.

Policy POSS-5-c: Buffers for Natural Areas. Require development projects, where appropriate and warranted, to incorporate natural features (such as ponds hedgerows and wooded strips) to serve as buffers for adjacent natural areas with high ecological value.

Policy POSS-5-d: Guidelines for Habitat Conservation. Establish guidelines for habitat conservation and mitigation programs including:

- Protocols for the evaluation of the site's environmental setting and proposed design and operating parameters of proposed mitigation measures.
- Methodology for the analysis depiction of land to be acquired or set aside for mitigation activities.
- Parameters for specification of the types and sources of plant material used for any revegetation, irrigation requirements, and post-planting maintenance and other operational measures to ensure successful mitigation.
- Monitoring at an appropriate frequency by qualified personnel and reporting of data collected to permitting agencies.

Objective PU-7: Promote reduction in wastewater flows and develop facilities for beneficial reuse of reclaimed water and biosolids for management and distribution of treated wastewater.

Policy PU-7-a: Reduce Wastewater. Identify and consider implementing water conservation standards and other programs and policies, as determined appropriate, to reduce wastewater flows.

Policy PU-7-b: Reduce Stormwater Leakage. Reduce storm water infiltration into the sewer collection system, where feasible, through a program of replacing old and deteriorated sewer collection pipeline; eliminating existing stormwater sewer cut-ins to the sanitary sewer system; and avoiding any new sewer cut-ins except when required to protect health and safety.

Policy PU-7-c: Biosolid Disposal. Investigate and consider implementing economically effective and environmentally beneficial methods of biosolids handling and disposal.

Policy PU-7-d: Pursue the development of a recycled water system and the expansion of beneficial wastewater recycling opportunities, including a timely technical, practicable, and institutional evaluation of treatment, facility siting and water exchange elements.

Policy PU-8-e: Repairs. Continue to evaluate existing water production and distribution systems and facilitate necessary repair or enhancement of damaged or antiquated facilities.

Policy PU-8-g: Review Project Impact on Supply. Mitigate the effects of development and capital improvement projects on the long-range water budget to ensure an adequate water supply for current and future uses.

Objective PU-9: Provide adequate solid waste facilities and services for the collection, transfer, recycling, and disposal of refuse.

Policy PU-9-a: New Techniques. Continue to collaborate with affected stakeholders and partners to identify and support programs and new techniques of solid waste disposal such as recycling, composting, and waste separation, to reduce the volume and toxicity of solid wastes that must be sent to landfill facilities.

Policy PU-9-b: Compliance with State Law. Continue to pursue programs to maintain conformance with the Solid Waste Management Act of 1989 or as otherwise required by law and mandated diversion goals.

Objective RC-2: Promote land uses that conserve resources.

Policy RC-2-a: Link Land Use to Transportation. Promote mixed-use, higher density infill development in multi-modal corridors. Support land use patterns that make more efficient use of the transportation system and plan future transportation investments in areas of higher-intensity development. Discourage investment in infrastructure that would not meet these criteria.

Policy RC-4-a: Support Regional Efforts. Support and lead, where appropriate, regional, State and federal programs and actions for the improvement of air quality, especially the SJVAPCD's efforts to monitor and control air pollutants from both stationary and mobile sources and implement Reasonably Available Control Measures in the Ozone Attainment Plan.

Policy RC-4-c: Evaluate Impacts with Models. Continue to require the use of computer models used by SJVAPCD to evaluate the air quality impacts of plans and projects that require such environmental review by the City.

Policy RC-4-d: Forward Information. Forward information regarding proposed General Plan amendments, community plans, Specific Plans, neighborhood plans, Concept Plans, and development proposals that require air quality evaluation, and amendments to development regulations to the SJVAPCD for their review of potential air quality and health impacts. .

Policy RC-4-e: Support Employer-Based Efforts. Support and encourage employer implementation of staggered work hours and employee incentives to use carpools, public transit and other measures to reduce vehicular use and traffic congestion.

Policy RC-4-f: Continue to control and reduce air pollution emissions from vehicles owned by the City and municipal operations and facilities by undertaking the following:

- Expand the use of alternative fueled and electric vehicles in City fleets.
- Create preventive maintenance schedules that will ensure efficient engine operation.

- Include air conditioning recycling and charging stations in the City vehicle maintenance facilities, to reduce freon gases being released into the atmosphere and electrostatic filtering systems in City maintenance shops, when feasible or when required by health regulations.
- Use satellite corporation yards for decentralized storage and vehicle maintenance.
- Convert City-owned emergency backup generators to natural gas fuels whenever possible, and create an advanced energy storage system.

Policy RC-4-g: FAX Actions. Continue to improve Fresno Area Express (FAX) bus transit system technical performance, reduce emission levels, streamline system operations, and implement BRT where supportive land uses are proposed by Figure LU-1: Land Use Diagram .

Policy RC-4-i: Methane Capture. Continue to pursue opportunities to reduce air pollution by using methane gas from the old City landfill and the City’s wastewater treatment process.

Policy RC-4-j: All Departments. Continue to develop and implement in all City departments operational policies to reduce air pollution.

Objective RC-5: In cooperation with other jurisdictions and agencies in the San Joaquin Valley Air Basin, take timely, necessary, and the most cost-effective actions to achieve and maintain reductions in greenhouse gas emissions and all strategies that reduce the causes of climate change in order to limit and prevent the related potential detrimental effects upon public health and welfare of present and future residents of the Fresno community.

Policy RC-5-b: Greenhouse Gas Reduction Plan. As is consistent with State law, prepare and adopt a Greenhouse Gas Reduction Plan as part of the Master Environmental Impact Report to be concurrently approved with the Fresno General Plan in order to achieve compliance with State mandates, assist development by streamlining the approval process, and focus on feasible actions the City can take to minimize the adverse impacts of growth and development on global climate change. The Greenhouse Gas Reduction Plan shall include, but not be limited to:

- A baseline inventory of all known or reasonably discoverable sources of GHGs that currently exist in the city and sources that existed in 1990.
- A projected inventory of the GHGs that can reasonably be expected to be emitted from those sources in the year 2035 with the implementation of this General Plan and foreseeable communitywide and municipal operations.
- A target for the reduction of emissions from those identified sources.
- A list of feasible GHG reduction measures to meet the education target, including energy conservation and “green building” requirements in municipal buildings and private development.

- Periodically update municipal and community-wide GHG emissions inventories to determine the efficacy of adopted measures and to guide future policy formulation needed to achieve and maintain GHG emissions reduction targets.

Policy RC-5-c: Increase efforts to incorporate requirements for GHG emission reductions in land use entitlement decisions, facility design, and operational measures subject to City regulation through the following measures and strategies:

- Promote the expansion of incentive-based programs that involve certification of projects for energy and water efficiency and resiliency. These certification programs and scoring systems may include public agency “Green” and conservation criteria, Energy Star™ certification, CALGreen Tier 1 or Tier 2, Leadership in Energy Efficient Design (LEED™) certification, etc.
- Promote appropriate energy and water conservation standards and facilitate mixed-use projects, new incentives for infill development, and the incorporation of mass transit, bicycle and pedestrian amenities into public and private projects.
- Require energy and water audits and upgrades for water conservation, energy efficiency, and mass transit, pedestrian, and bicycle amenities at the time of renovation, change in use, change in occupancy, and change in ownership for major projects meeting review thresholds specified in an implementing ordinance.
- Incorporate the City’s “Guidelines for Ponding Basin/Pond Construction and Management to Control Mosquito Breeding” as conditions of approval for any project using an on-site stormwater basin to prevent possible increases in vector-borne illnesses associated with global climate change.
- Periodically evaluate the City’s facility maintenance practices to determine whether there are additional opportunities to reduce GHGs through facility cleaning and painting, parks maintenance, road maintenance, and utility system maintenance.
- Periodically evaluate standards and mitigation strategies for highly vehicle-dependent land uses and facilities, such as drive-through facilities and auto-oriented development.

Policy RC-5-d: SCS and CAP Conformity Analysis. Ensure that the City includes analysis of a project’s conformity to an adopted regional Sustainable Community Strategy or Alternative Planning Strategy (APS), an adopted Climate Action Plan (CAP), and any other applicable City and regional greenhouse gas reduction strategies in affect at the time of project review.

Policy RC-5-e: Ensure Compliance. Ensure ongoing compliance with GHG emissions reduction plans and programs by requiring that air quality measures are incorporated into projects’ design, conditions of approval, and mitigation measures.

Policy RC-4-g: Toolkit. Provide residents and project applicants with a “toolkit” of feasible measures that can be used to reduce GHG emissions, including educational materials on energy-efficient and “climate-friendly” products.

Policy RC-6-b: Water Plans. Adopt and implement ordinances, standards, and policies to achieve the intent of the City of Fresno Urban Water Management Plan, Fresno-Area Regional Groundwater Management Plan, and City of Fresno Metropolitan Water Resources Management Plan to ensure a sustainable supply of water.

Policy RC-6-d: Prepare, adopt, and implement the City of Fresno Recycled Water Master Plan.

Policy RC-6-h: Conditions of Approval. Include in the Development Code standards for imposing conditions of approval for development projects to ensure long-term maintenance of adequate clean water resources. Require findings that adequate water supply must exist prior to any discretionary project approval for residential and commercial development requiring annexation (excluding County Islands), as required by law.

Objective RC-7: Promote water conservation through standards, incentives and capital investments.

Policy RC-7-a: Water Conservation Program Target. Maintain a comprehensive conservation program to help reduce per capita water usage in the city's water service area to 243 gallons per capita per day (gpcd) by 2020 and 190 gpcd by 2035, by adopting conservation standards and implementing a program of incentives, design and operation standards, and user fees:

- Support programs that result in decreased water demand, such as landscaping standards that require drought-tolerant plants, rebates for water conserving devices and systems, turf replacement, xeriscape landscape for new homes, irrigation controllers, commercial/industrial/institutional water conserving programs, prioritized leak detection program, complete water system audit, landscape water audit and budget program, and retrofit upon resale ordinance.
- Implement the U.S. Bureau of Reclamation Best Management Practices for water conservation as necessary to maintain the City's surface water entitlements.
- Adopt and implement policies in the event that an artificial lake is proposed for development.
- Work cooperatively toward effective uniform water conservation measures that would apply throughout the Planning Area.
- Expand efforts to educate the public about water supply issues and water conservation techniques.

Policy RC-7-b: Water Pricing and Metering. Develop a tiered water cost structure for both residential and commercial users that will properly price water based on its true cost; require all new development to be metered for water use; and charge all customers the true, full cost of their water supply, including costs of acquisition, initial treatment, conveyance, and wastewater treatment, operations, and maintenance, and remediation.

Policy RC-7-c: Best Practices for Conservation. Require all City facilities and all new private development to follow U.S. Bureau of Reclamation Best Management Practices for water conservation as warranted and appropriate.

Policy RC-7-h: Landscape Water Conservation Standards. Refine landscape water conservation standards that will apply to new development installed landscapes, building on the State Model Water Efficient Landscape Ordinance and other State regulations.

- Evaluate and apply, as appropriate, augmented xeriscape, “water-wise,” and “green gardening” practices to be implemented in public and private landscaping design and maintenance.
- Facilitate implementation of the State’s Water Efficient Landscape Ordinance by developing alternative compliance measures that are easy to understand and observe.

Policy RC-7-e: Retrofit City Facilities, and Consider Incentives Programs to Encourage Retrofitting of Other Existing Public and Private Residential and Non-Residential Facilities and Sites. Reduce water use in municipal buildings and City operations by developing a schedule and budget for the retrofit of existing municipal buildings with water conservation features, such as auto shut-off faucets and water saving irrigation systems. Prepare a comprehensive incentive program for other existing public and private residential and non-residential buildings and irrigation systems.

Policy RC-7-h: Landscape Water Conservation Standards. Refine landscape water conservation standards that will apply to new development installed landscapes, building on the State Model Water Efficient Landscape Ordinance and other state regulations.

- Evaluate and apply, as appropriate, augmented xeriscape, “water-wise,” and “green gardening” practices to be implemented in public and private landscaping design and maintenance.
- Facilitate implementation of the State’s Water Efficient Landscape Ordinance by developing alternative compliance measures that are easy to understand and observe.

Objective RC-8: Reduce the consumption of non-renewable energy resources by requiring and encouraging conservation measures and the use of alternative energy sources.

Policy RC-8-a: Existing Standards and Programs. Continue existing beneficial energy conservation programs, including adhering to the California Energy Code in new construction and major renovations.

Policy RC-8-b: Energy Reduction Targets. Strive to reduce per capita residential electricity use to 1,800 kWh per year and non-residential electricity use to 2,700 kWh per year per capita by developing and implementing incentives, design and operation standards, promoting alternative energy sources, and cost-effective savings.

Policy RC-8-d: Incentives. Consider providing an incentive program for residential developers who commit to building all of their homes to ENERGY STAR performance guidelines.

Policy RC-7-i: PACE Financing. Develop a residential Property Assessed Clean Energy (PACE) program, if it is determined to be a feasible option, to help finance water efficiency and energy efficiency upgrades for property owners.

Policy RC-8-e: Energy Use Disclosure. Promote compliance with State law mandating disclosure of a building's energy data and rating of the previous year to prospective buyers and lessees of the entire building or lenders financing the entire building.

Policy RC-8-f: City Heating and Cooling. Reduce energy use at City facilities by updating heating and cooling equipment and installing "smart lighting" where feasible and economically viable.

Policy RC-8-g: Revolving Energy Fund. Create a City Energy Fund, which uses first year savings and rebates from completed City-owned energy efficiency projects to provide resources for additional energy projects. Dedicate this revolving fund to the sole use of energy efficiency projects that will pay back into the fund.

Policy RC-8-h: Solar Assistance. Identify and publicize information about financial mechanisms for private solar installations and provide over-the-counter permitting for solar installations meeting specified standards, which may include maximum size (in kW) of units that can be so approved.

Policy RC-8-i: Renewable Target. Adopt and implement a program to increase the use of renewable energy to meet a given percentage of the city's peak electrical load within a given time frame.

Policy RC-8-j: Alternative Fuel Network. Create a network of integrated charging and alternate fuel station for both public and private vehicles, and if feasible, open up municipal stations to the public as part of network development.

Objective RC-11: Strive to reduce the solid waste going to landfills to zero by 2035

Policy RC-11-a: Waste Reduction Strategies. Maintain current targets for recycling and re-use of all types of waste material in the city, and enhance waste and wastewater management practices to reduce natural resource consumption through the following measures:

- Continue to require recyclable material collection and storage areas in all residential development.
- Establish recycling collection and storage area standard for commercial and industrial facilities to the recycling areas according to the anticipated types and amounts of recyclable material generated.
- Provide educational materials to residents on how and what to recycle and how to dispose of hazardous waste.
- Provide recycling canisters and collection in public areas where trashcans are also provided.
- Institute a program to evaluate major waste generators and identify recycling opportunities for their facilities and operations.

- Continue to partner with the California Integrated Waste Management Board on waste diversion and recycling programs and the CalMax (California Materials Exchange) program.
- Evaluate the feasibility of a residential, restaurant, and institutional food waste segregation and recycling program, to reduce the amount of organic material sent to landfill and minimize the emissions generated by decomposing organic material.
- Evaluate the feasibility of “carbon footprinting” for the City’s wastewater treatment facilities, biomass and composting operations, solid waste collection and recycling programs.
- Expand yard waste collection to divert compostable waste from landfills.
- Study the feasibility and cost-benefit analysis of a municipal composting program to collect and compost food and yard waste, including institutional food and yard waste, using the resulting compost matter for City park and median maintenance.

Policy RC-11-b: Zero Waste Strategy. Create a strategic and operations plan for fulfilling the City Council resolution committing the City to a Zero Waste goal.

Policy HCR-2-j: Window Replacement. Evaluate window replacements in federally funded housing projects on a project-by-project basis with consideration for health, safety, historic values, sustainability, and financial feasibility.

Policy HCR-3-a: Adaptive Reuse. Promote the adaptive reuse and integration of older buildings into new projects as part of the City’s dedication to nurturing a sustainable Fresno.

Policy HC-3-f: New Drive-Through Facilities. Include in the Development Code design review to reduce vehicle emissions resulting from queued idling vehicles at drive-through facilities in proximity to residential neighborhoods.

Policy HC-3-d: Green Standards for Affordable Housing. Provide appropriate incentives for affordable housing providers, agencies, non-profit, and market rate developers to use LEED and CALGreen Tier 1 or Tier 2 standards or third-party equivalents.

Policy HC-5-f: Urban Agriculture. Promote a full range of urban agriculture activities, including farmers’ markets, farm stands, community gardens, on-site garden produce market stands, and urban farms. Support associations involved in these activities, and undertake the following:

- Amend the zoning ordinance and streamline permitting procedures to include provisions for Community Gardens, On-site Garden Produce Market Stands and Urban Farms that allow sale of foods grown locally.
- Permit community gardens as land uses allowable by right under the following conditions:
 - On vacant residentially zoned lots under two acres in size through the filing of an agreement with the City between a community group, or other persons(s), and the land owner; or
 - On developed land operated and owned or leased by a community institution; or

- On City-owned or other public land, subject to City or agency approval
- Create a policy of reduced planning application and plan check fees for urban agriculture projects.
- Make publically available an inventory of City-owned surplus land that could be used for urban agriculture.
- Continue to allow and promote community gardens in City-owned parks.
- Support the planning of community gardens within walking distance of high-density residential areas to compensate for the reduced amount of open space in these areas.
- Emphasize opportunities for urban agriculture in all areas of the city, schools, parks, residential food deserts, and especially in areas of the city with a relatively high proportion of 'food insecure' individuals.

5.7.4 - Thresholds of Significance

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in significant adverse impact on the environment. The Environmental Checklist in Appendix G of the State CEQA Guidelines is used as a framework for determining whether greenhouse gas emissions impacts are significant. Accordingly, greenhouse gas emissions resulting from the proposed project are considered significant if the project would:

- a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (See Greenhouse Gas Emissions Impact GHG-1.)
- b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases? (See Conflict with Plan, Policy, or Regulation that Reduces Emissions Impact GHG-2.)

Section 15064.4(b) of the CEQA Guideline amendments for greenhouse gas emissions states that a lead agency may take into account the following three considerations in assessing the significance of impacts from greenhouse gas emissions.

- **Consideration #1:** The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
- **Consideration #2:** Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3:** The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding

compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The following excerpt is from the July 2014 draft version of the District's Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI). The excerpt restates information from the guidance document: Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA adopted by the SJVAPCD Governing Board on December 17, 2009.

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement Best Performance Standards (BPS).
- Projects implementing BPS would not require quantification of project specific GHG emissions. Consistent with CEQA Guideline, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing BPS would require quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29 percent, compared to Business as Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan. Projects achieving at least a 29 percent GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

Threshold Based on ARB Updated Inventory and Projections

The ARB prepared an update to the state GHG inventory and 2020 projections accounting for revised growth projections and progress achieved to date. The 2020 BAU inventory was revised from 596 MMTCO_{2e} to 545 MMTCO_{2e}. Based on this revised projection, a 21.7 percent decrease in emissions from BAU statewide from all sources will be required to achieve 1990 emission levels (427 MMTCO_{2e}). The SJVAPCD threshold of 29 percent is no longer required to show consistency with AB 32 targets. Therefore, this analysis is based on whether the growth projected for the City of Fresno General Plan is consistent with the State's updated 21.7 percent reduction target.

Progress Beyond 2020

The AB 32 targets and Scoping Plan focus on achieving reductions that are adequate to reduce business as usual emissions in 2020 to 1990 levels. The 2020 planning horizon was viewed as a near term target for which specific strategies and measures could be implemented to achieve the target. There are no legislated targets for years beyond 2020. However, Executive Order S-3-05 includes a goal of reducing emissions to 80 percent below 1990 levels by 2050. With General Plan buildout

predicted for 2056, a post-2020 framework for determining impacts is necessary. SB 375 includes targets for 2035; however, they only apply to passenger car and light truck emissions and include no mandates that apply directly to the City.

The ARB Scoping Plan did not set targets for the state beyond 2020; however, as 2020 approaches, the state has begun the process to adopt targets for a later year or years. The ARB adopted the First Update to the Climate Change Scoping Plan (Update) in May 2014 (ARB 2014). The Update provides a discussion of what types of actions would be required to achieve the 2050 goal. Without a new legislative mandate, it is unclear if the ARB will be able to pursue a new round of regulatory reductions to achieve a target for 2030 or 2050. The Legislature has a bill in process that would provide authority for affected state agencies to pursue the next round of regulations to reduce greenhouse gases, but the final provisions and outcome of the bill are uncertain.

The ARB has assessed several studies to identify the types of strategies that could be implemented to achieve the 2050 target (ARB 2012). The ARB found that studies generally show that 80 percent reductions are technically achievable, mostly with technologies that are commercially available today, but that rapid market penetration will be required to significantly accelerate emission reductions through the following:

- Energy demand reduction via efficiency and activity changes.
- Large-scale electrification of on-road vehicles and building and industrial appliances.
- Decarbonization of electricity and fuel supplies through renewable or other near zero carbon technologies.

Each study explores varying combinations of strategies within these three categories, with some common trends:

- Large, ongoing efficiency improvements in transportation, buildings, and industry can be readily achieved.
- A large amount of electrification for light-duty vehicles, rail, buses, and a few heavy-duty categories is necessary.
- A large amount of electrification of space and water heating in buildings and machinery in industrial operations is also necessary.
- Near-zero carbon electricity supply is essential, particularly as the electricity grid supplies energy for transportation and traditional residential, commercial, and industrial activities.
- Advanced, low carbon liquid fuels and reduced vehicle travel are important and highly influential in reducing transportation sector emissions.
- While energy and transportation represent the largest emission sources that will need to be addressed, better use of natural carbon sinks and pursuing reductions within many other GHG-emitting sectors is also needed.

- Aggressive strategies in all areas need to be coordinated and initiated immediately to enable sufficient market uptake by 2050.

Development anticipated during the buildout of the General Plan can support the implementation of the above listed strategies with its land use and transportation policies that reduce mobile source emissions and resource conservation policies that reduce energy use and encourage alternative energy sources. The Greenhouse Gas Reduction Plan will provide details regarding local actions that implement the policies. Although the Greenhouse Gas Reduction Plan focuses on the near term 2020 target, it also accounts for post-2020 reductions from existing regulations and local measures to the extent possible.

Continued improvements in energy efficiency will primarily be achieved through periodic tightening of energy efficiency standards, but also through local programs and voluntary measures. The California Public Utilities Commission adopted the Long Term Energy Efficiency Strategic Plan that aims to achieve wide spread implementation of zero-net energy buildings by 2020 for new residential construction and by 2030 for new commercial construction, among other goals. Net zero energy consumption is achieved through a combination of increased energy efficiency and onsite power production using clean distributed generation (primarily solar panels and solar water heating) (CPUC 2011).

After building regulations are in place that require net-zero energy consumption, there will still be a need to improve energy efficiency so that excess building energy production will be available to accommodate increased demand throughout the grid. As technology advances, the state can be expected to continue tightening energy efficiency regulations. The state encourages but does not require local government to exceed energy efficiency requirements. The rapid pace of regulatory energy efficiency standards with updates proceeding about every three years makes it very difficult for local agencies and developers to adapt to the changes. For example, the latest changes to Title 24 going into effect in 2014 is expected to provide a 25 percent reduction in energy consumption by residential development and 30 percent by commercial development compared to the previous 2008 Title 24 standards (CEC 2012). The feasibility for developers to exceed these standards on a consistent basis remains to be determined. In the interim, voluntary incentive and recognition programs such as Energy Star and LEED certification encouraged by the General Plan can be used to demonstrate that exceeding the new standards is technically and economically feasible.

A GHG threshold approach based on CEQA Guidelines Section 15064.4(b) consideration #3 requires projects comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions”. Until such a time as the applicable regulations or requirements are adopted by the relevant public agency through a public review process that include specific requirements that reduce or mitigate the project’s incremental contribution of greenhouse gas emissions, no post-2020 reduction thresholds should be applied per this CEQA provision.

Under GHG threshold approach Consideration #2, the Lead Agency can determine whether the project emissions exceed a threshold of significance that the lead agency determines applies to the

project. For a General Plan Update, such a threshold based on absolute project emissions is not a suitable measure. However, the City could identify a quantitative threshold applicable to individual projects implementing the General Plan that would provide an amount of emissions that would not result in a significant impact. This is sometimes referred to as a small project exemption where the cumulative effect of the predicted number of small projects would not interfere with achieving a larger plan goal or target. A threshold that results in 90 percent of emissions being subject to additional mitigation has been used in other locales.

5.7.5 - Impact Analysis, Mitigation Measures, and Level of Significance After Mitigation

Greenhouse Gas Emissions

Impact GHG-1 **The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.**

Project Specific Impact Analysis

The proposed project includes the creation of a greenhouse gas reduction plan for the City. That plan includes strategies to reduce per capita greenhouse gas emissions to 1990 levels by 2020. The plan demonstrates that even though there is increased growth, the City would still be reducing greenhouse gas emissions through 2020 and per capita emission rates drop substantially. The benefits of adopted regulations become flat in later years and growth starts to exceed the reductions from all regulations and measures. Although it is highly likely that regulations will be updated to provide additional reductions, none are reflected in the analysis since only the effect of adopted regulations is included.

City of Fresno Planning Area Greenhouse Gas Emissions

The amendments associated with the General Plan Update allow for increased land for residential, commercial, mixed use, and public facilities, which may increase greenhouse gas emissions in the City. The update also decreases the acreage in the industrial and “other” land use designation. The “other” category includes land designated Buffer Area and includes roads, canals, and railroads.

Greenhouse gas emissions in the City of Fresno for 2010 and 2020 are shown in Table 5.7–2. The emissions were estimated using ARB and EPA emission factors and the General Plan Update growth projections. The modeling assumptions and results are provided in Appendix F-1. Construction related GHG emissions are included in this table in the offroad equipment category.

Table 5.7–2: City of Fresno Planning Area 2010 Baseline and 2020 Business as Usual Greenhouse Gas Emissions

| Source | 2010 (MTCO ₂ e) | 2020 (MTCO ₂ e) |
|---------------------------|----------------------------|----------------------------|
| Motor vehicles | 1,795,666 | 2,337,015 |
| Electricity - residential | 289,745 | 345,142 |

| Source | 2010 (MTCO ₂ e) | 2020 (MTCO ₂ e) |
|--|-------------------------------|-------------------------------|
| Electricity - commercial | 319,817 | 366,817 |
| Natural gas - residential | 400,169 | 476,679 |
| Natural gas - commercial | 448,706 | 514,647 |
| Waste | 123,945 | 147,628 |
| Offroad equipment | 1,051 | 1,138 |
| ODS substitutes (refrigerants) | 273,422 | 576,784 |
| Total | 3,652,521 | 4,765,850 |
| Source: Michael Brandman Associates, Appendix F-1. | | |

Emission Reductions from State of California Regulations

The following discussion describes the state regulations that result in emission reductions within the City of Fresno. For details regarding the reduction estimates, see the calculations in Appendix F-1.

Motor Vehicles

Pavley I and LEV III. Regulations reducing motor vehicle emissions include Pavley I and LEV III, which reduce emissions from light duty cars and trucks. Pavley I applies to vehicles sold between 2009 and 2016. LEV III, also known as the Advanced Clean Cars Program, applies to vehicles sold between 2017 and 2025. Reductions from Pavley I are incorporated into the mobile source modeling assumptions in ARB’s EMFAC 2011. LEV III reductions have not been incorporated into the EMFAC model and are estimated based on ARB analysis accomplished to support adoption of the regulation. These regulations provide an incremental improvement as old less efficient vehicles are retired and new more efficient vehicles meeting the new standards are purchased. For this reason, reductions will continue to accrue well after 2025 even if new regulations are not adopted in the future. EMFAC only includes modeling years through 2040, so later years assume the 2040 rate will remain flat pending adoption of the next round of vehicle standards.

Low Carbon Fuel Standard (LCFS). The LCFS mandates a statewide goal shall be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020. The LCFS is incorporated into EMFAC 2011 and is reflected in the modeling results. The LCFS provides reductions for all vehicle classifications.

Tire Pressure Regulation. A properly inflated tire helps to reduce fuel GHG emissions by reducing tire-rolling resistance. Low rolling resistance tires for passenger and light duty vehicles can result in a 1 to 2 percent reduction in GHGs.

Low Friction Oil Regulation. Engine oil formulations can also affect a vehicle’s GHG emissions, because the more easily the internal parts of the engine move, the more efficiently the engine will run. This, in turn, reduces the engine load and fuel used. Requiring passenger cars to use low friction engine oils can result in a 2 percent GHG reduction.

Heavy Duty Vehicle Aerodynamic Efficiency. This measure would require existing trucks/trailers to be retrofitted with the best available technology and/or ARB approved technology. Technologies that reduce GHG emissions and improve the fuel efficiency of trucks may include devices that reduce aerodynamic drag and rolling resistance. The 2020 estimated GHG reductions could be up to 6.4 MMTCO₂E nationwide, of which about 0.93 MMTCO₂E or about 15 percent would occur within California.

Medium and Heavy Duty Vehicle Hybridization. Hybrid technology provides the greatest benefit when used in vocational applications that have significant urban, stop-and-go driving, idling, and power take-off operations in their duty cycle. Such applications include parcel delivery trucks and vans, utility trucks, garbage trucks, transit buses, and other vocational work trucks. The ARB Scoping Plan estimates that hybridization provides an estimated reduction of 0.5 MMTCO₂e per year in 2020.

Energy Generation and Efficiency Regulations.

The state has adopted regulations that result in greenhouse gas reductions from the utilities on the production side and from consumers on the demand side. The following regulations are included in the assessment.

Renewable Portfolio Standard (RPS). The RPS requires utilities to increase the amount of power generated from renewable sources to 33 percent by 2020. Reductions are estimated by taking PG&E's 2010 emission rate and comparing it to their rate predicted for 2020. The differential is applied as an emission reduction compared to business as usual. PG&E reported its renewable power sales at 23.8 percent in 2013.

Title 24 Energy Efficiency Regulation. Title 24 reduces emissions through energy conservation in new and remodeled buildings. The latest version of Title 24 scheduled to go into effect in 2014 provides a 25 percent reduction in residential energy consumption and a 30 percent reduction in non-residential energy consumption.

California Green Building Code Standards. The Green Building Code Standards include measures requiring mandatory water conservation measures and other measures not addressed under Title 24. No additional reductions are included below.

Title 20 Appliance Efficiency Standards. Title 24 requires certain appliances to meet energy efficiency standards. No reductions are included below because a methodology to capture the reductions has not been identified.

High Global Warming Potential Gas Regulations. The state has adopted refrigerant management regulations that apply to commercial air conditioning and refrigeration systems. The regulations require increased leak detection and related repairs and maintenance. ARB estimated that the regulation would reduce emissions from regulated sources by 50 percent.

The emission reductions from each measure and total reductions achieved by all measures by the year 2020 are provided in Table 5.7–3. Details regarding the estimates are provided in Appendix F-1.

Table 5.7–3: Emission Reductions from State of California Regulations for Fresno Business as Usual Inventory

| Source Group | State Measures | 2020 Emissions (MTCO ₂ e/year) |
|---------------------------------------|---|---|
| Motor Vehicles | Pavley and Low Carbon Fuel Standard | 508,766 |
| | Low Emission Vehicle Program III | 32,253 |
| | Tire Pressure Program and Tread Standard | 8,817 |
| | Low Friction Oil | 22,820 |
| | Aerodynamic Efficiency/Hybridization | 14,833 |
| | Subtotal | 587,489 |
| Electricity - residential | Renewable Portfolio Standards | 119,131 |
| | Title 24 Energy Efficiency Standards | 17,520 |
| Electricity – commercial | Renewable Portfolio Standards | 126,612 |
| | Title 24 Energy Efficiency Standards | 2,970 |
| | Subtotal | 266,233 |
| Natural Gas – Residential | Title 24 Energy Standards | 11,037 |
| Natural Gas – Commercial | Title 24 Energy Standards | 7,399 |
| | Subtotal | 18,435 |
| Ozone depleting substance substitutes | Limit High GWP Use in Consumer Products; Motor Vehicle Air Conditioning; High GWP Refrigerant Management Program for Stationary Sources | 288,392 |
| | Total | 1,160,550 |

Source: First Carbon Solutions – Appendix F-1

The emission reductions described above were used to adjust the business as usual inventory. The results of the analysis show that compliance with regulations applicable to development projects in the City of Fresno will achieve a reduction of 24.4 percent compared to the business as usual scenario. The reduction exceeds the 21.7 percent reduction required to show consistency with AB 32 targets and would be considered less than significant for growth occurring through 2020 (see Table 5.7–4).

Table 5.7–4: City of Fresno Planning Area 2020 Emissions Reductions Compared to Business as Usual

| Source | 2020 BAU (MTCO ₂ e/year) | 2020 with Existing Regulations (MTCO ₂ e/year) | Percent Reduction |
|--|-------------------------------------|---|-------------------|
| Motor vehicles | 2,337,015 | 1,749,526 | 25.14% |
| Electricity - residential | 345,142 | 208,492 | 39.59% |
| Electricity - commercial | 366,817 | 237,234 | 35.33 |
| Natural gas - residential | 476,679 | 465,642 | 2.32% |
| Natural gas - commercial | 514,647 | 507,249 | 1.44% |
| Waste | 147,628 | 147,628 | 0.00% |
| Offroad equipment | 1,138 | 1,138 | 0.00% |
| ODS substitutes (refrigerants) | 576,784 | 288,392 | 50.00% |
| Total | 4,765,850 | 3,605,301 | 24.35% |
| Threshold for Consistency with AB 32 Targets | | | 21.65% |
| Significance in 2020? | | | LTS |
| Source: Michael Brandman Associates, Appendix F-1. LTS = Less than significant impact | | | |

Emissions Resulting from General Plan Update Buildout

Emissions were assessed for years beyond 2020 to ensure that the full impact of the project was disclosed. Buildout of the General Plan is expected to occur by 2056. The General Plan buildout projections and population projections used in the assessment are consistent with rates used by Fresno COG for the regional transportation model. Emission estimates prepared for 2035, 2050, and 2056 are provided in this section.

Many of the regulations provide cumulative reductions that accrue each year. For example, new vehicles compliant with LEV III standards replace older higher emitting vehicles each year until most old vehicles are no longer in service. Once most or all older vehicles have been retired, reductions become flat and growth begins to offset the reductions achieved.

The year 2035 was selected for analysis to coincide with one of the regional target years from SB 375. SB 375 only applies to emissions from light duty cars and trucks. No comprehensive regulatory milestones exist that would define a reduction equivalent to the 2020 target which is based on consistency with the state’s plan to reduce emissions to 1990 levels by 2020. Without a similar legislated goal for later years, the amount of emission reductions needed from the City would be speculative. The General Plan’s policies are supportive of achieving the VMT reductions expected for SB 375.

The City's projected emissions and reductions accounting for state regulations are presented in Table 5.7–5. The results show a 32.6 percent reduction compared to 2035 BAU emissions and a per capita emission rate of 3.56 MTCO₂e per person after regulations are applied. The reductions accrue primarily from full implementation of the LEV III motor vehicle regulation, Low Carbon Fuel Standard, Renewable Portfolio Standard, Title 24 Energy Efficiency Regulation, and the Refrigeration Management Regulations.

Table 5.7–5: City of Fresno Planning Area 2035 Greenhouse Gas Emissions

| Source | 2035 BAU (MTCO ₂ e/year) | 2035 with Existing Regulations (MTCO ₂ e/year) | Percent Reduction |
|--------------------------------|--|---|----------------------|
| Motor vehicles | 3,036,848 | 1,764,456 | 41.9 |
| Electricity - residential | 414,999 | 247,572 | 37.2 |
| Electricity - commercial | 450,581 | 287,828 | 40.3 |
| Natural gas - residential | 573,160 | 548,579 | 4.3 |
| Natural gas - commercial | 632,169 | 610,726 | 3.4 |
| Waste | 177,508 | 177,508 | 0% |
| Offroad equipment | 1,314 | 1,314 | 0% |
| ODS substitutes (refrigerants) | 694,734 | 347,367 | 50% |
| Total | 5,981,313 | 3,985,350 | 33.37 |
| Per Capita Emissions | 7.66 | 4.48 | |

Source: Michael Brandman Associates, Appendix F-1.

Since no comprehensive state target has been adopted for 2035, it is not known if additional reductions would be required by state regulations or local measures. If the State ultimately sets targets based on achieving 80 percent reduction below 1990 levels by 2050, additional reductions beyond currently adopted regulations will almost certainly be needed by 2035. Therefore, impacts in 2035 are potentially significant. The emission estimates for 2050 and project buildout in 2056 are presented in Table 5.7–6.

Executive Order S-03-05 includes a goal of reducing emissions to 80 percent below 1990 levels by 2050. This level of reduction is the amount estimated by climate scientists to be necessary to reach levels that will stabilize the climate. This reduction applies to global emissions, so reductions in California or the United States would need to be matched by reductions throughout the world to reach the required levels.

Table 5.7–6: Emissions in 2050 and at Project Buildout in 2056

| Source | 2050 (MTCO _{2e} /year) | 2056 (MTCO _{2e} /year) |
|---|------------------------------------|------------------------------------|
| Motor vehicles | 2,711,894 | 2,914,488 |
| Electricity - residential | 317,710 | 337,694 |
| Electricity - commercial | 362,433 | 393,513 |
| Natural gas - residential | 670,082 | 712,228 |
| Natural gas - commercial | 776,525 | 843,115 |
| Waste | 207,525 | 220,578 |
| Offroad equipment | 1,314 | 1,314 |
| ODS substitutes (refrigerants) | 812,214 | 863,300 |
| Total | 5,859,698 | 6,286,229 |
| No target set past 2020 | | |
| Significance in 2050 and 2056? | SU | SU |
| Notes: SU = Significant Unavoidable Impact Motor vehicle emissions include reductions included in EMFAC for Pavley I. Electricity emissions include compliance with RPS. | | |

The State has not adopted comprehensive targets for any year past 2020. As was described above, State Executive Order S-03-05 identified a goal of reducing emissions to 80 percent below 1990 levels by 2050. As a local entity, this executive order does not require the City to comply with the goal of reducing emissions to 80 percent below 1990 levels by 2050. Determining consistency with a goal where a local role is not defined would be speculative. However, actions taken by the City that result in continued greenhouse gas reductions would support the State’s goal.

A measure of progress toward a 2050 target could be determined on a per capita basis for Fresno by identifying a per capita emission reduction of 80 percent below 2020 levels. Levels from 2020 can be used as a substitute for 1990 levels because under AB 32, 2020 emissions must be reduced to 1990 levels. The per capita emissions rate in 2020 is 3.2 MTCO_{2e} per person. Achieving an 80 percent reduction below 2020 levels would result in a per capita emission rate of 0.637 MTCO_{2e} per person by 2050. The actions needed to achieve reductions of this magnitude are described in the Progress Beyond 2020 discussion in Section 5.7.4, above. The City of Fresno does not have regulatory authority that would allow this level to be achieved with its own actions. The State is likely to pursue reductions that make continued progress toward the goal over the next several decades, but the outcome is uncertain due to economic and technological considerations. Therefore, impacts after 2020 are considered significant and unavoidable.

Policies or Ordinances Related to Greenhouse Gas Emissions

The General Plan Update sets the City of Fresno on a course of action that will provide substantial decreases in greenhouse gas emissions through project buildout and will serve to reduce the

significant greenhouse gas impacts. In addition, the City has a number of programs and ordinances that provide reductions in greenhouse gases. Although these actions provide an important contribution from all development that will occur by 2056, it remains uncertain whether they are adequate to reduce impacts to less than significant. The GHG Plan (Appendix F-2) provides a comprehensive analysis of the benefits of the General Plan Update policies, programs, and ordinances in relation to an emission reduction target for the City to demonstrate consistency with AB 32 greenhouse gas reduction targets.

The General Plan contains the following objectives and policies that would reduce emissions in the following categories:

- Motor vehicle emissions, through encouraging infill development and increasing pedestrian, transit, and bicycle usage: ED-1-c, UF-1-c, UF-12-a, UF-12-b, UF-12-d, UF-12-e, UF-12-f, UF-12-g, UF-13-a, UF-14, UF-14-a, UF-14-b, UF-14-c, LU-2, LU-2-a, LU-2-b, LU-2-c, LU-2-d, LU-3-b, LU-5-f, LU-6-b, LU-6-g, LU-8-b, D-1-g, D-4-b, D-4-f, MT-1, MT-1-g, MT-1-j, MT-1-c, MT-1-l, MT-1-m, MT-2-n, MT-2-o, MT-2-c, MT-2-d, MT-2-f, MT-2-g, MT-2-b, MT-2, MT-1-k, MT-2-i, MT-4, MT-4-a, MT-4-d, MT-4-h, MT-4-i, MT-4-j, MT-4-k, MT-6-l, MT-9-e, MT-8-g, MT-8-h, MT-9, MT-8-a, MT-9-a, MT-9-b, MT-9-c, MT-8-d, MT-8-b, MT-8-e, MT-8-i, MT-9-f, MT-11-b, POSS-3-c, POSS-3-f, RC-2-a, RC-4-e, RC-4-g, RC-5-c, RC-8-j, HCR-3-f, and HC-5-f.
- Electricity and natural gas emissions through energy efficiency and green building: RC-5-c, RC-4-g, RC-8-a, RC-8-b, RC-8-d, RC-7-i, RC-8-e, RC-8-g, HCR-2-j, and HC-3-f. Policies RC-8-h and RC-8-i encourage solar and renewable energy use.
- Policies to reduce water usage, thereby reducing energy required to transport and treat water: PU-8-e, PU-8-b, RC-6-b, RC-6-d, RC-6-h, RC-7, RC-7-a, RC-7-b, RC-7-c, RC-7-h, RC-7-e, and RC-7-h.
- Waste: PU-9, PU-9-a, PU-9-b, RC-4-i, RC-11, RC-11-a, RC-11-b, and HCR-3-a.

Specific City Policies and Programs that Will Achieve Emission Reductions

In addition to the General Plan Update policies listed above, the City has already taken actions and is planning for new actions that will provide additional reductions. The City's specific plans, community plans, and programs are intended to stand on their own merit, but support the General Plan Update with their greater level of detail for transportation infrastructure, specific areas, communities, and neighborhoods. Brief descriptions of these programs and actions are provided below.

Development Code Update. The Development Code establishes a basis for determining whether specific development proposals are in harmony with the Vision of the General Plan Update. It is a regulatory tool that provides direction on how development or redevelopment will occur in the Planning Area. The Development Code will provide guidelines and design criteria that support the increased density envisioned in the General Plan Update.

Bus Rapid Transit. The overall vision of the BRT Master Plan is to demonstrate how improved efficiency, speed, and service can attract new transit ridership, improve customer satisfaction, and benefit the broader community by providing a quality of service similar to light rail systems through the use of bus technology. “Bus Rapid Transit” (BRT) is an integrated system of facilities, equipment, services, and amenities that improve the speed, reliability, and identity of bus transit. BRT is, in many respects, rubber-tired light rail transit (LRT) with greater operating flexibility and potentially lower costs. The BRT mode is quickly becoming an effective way to move people efficiently and in a cost effective manner—in terms of both capital and operating costs. Full implementation of the BRT system is estimated to increase daily ridership along the corridor served by 14,000 to 28,000 riders per day depending on the level of service ultimately provided.

Fresno Area Express (FAX) Transit Plan. The Fresno Area Express (FAX) a department of the City operates both fixed bus routes and paratransit service seven days a week. The system consists of 20 bus routes carrying over 12 million passenger per year. Many routes currently operate on 30-minute headways in the peak hour; however, recently several routes have been increased to 15-minute headways due to passenger demand. Three of FAX’s routes currently serve more than 4,500 passengers each on a daily basis. Passenger demand on Route 28 is approaching 8,000 passengers per day and is quickly filling buses now operating every 15 minutes during the peak hour.

2010 City of Fresno Bicycle, Pedestrian and Trails Master Plan. The Bicycle, Pedestrian, and Trails Master Plan (BMP) is intended to guide and influence bikeway policies, programs, and development standards to make bicycling in the City of Fresno more safe, comfortable, convenient, and enjoyable for all bicyclists. In 2010, the City of Fresno had 137 miles of bikeways: 14 miles of Class I Bike Paths, 116 miles of Class II Bike Lanes, and 7 miles of Class III Bike Routes. Fresno Area Express (FAX) is currently equipped to accommodate bicyclists through their provision of bike racks on every bus, although they have identified that additional bicycle capacity is needed. Short term and long-term bicycle parking is provided at certain locations throughout the City, although bicyclists are not guaranteed bike parking at a majority of destinations. According to Census 2000 Journey to Work data, 0.9 percent of Fresno residents currently use the bicycle as their primary means of commuting to work. Although the BMP is a separate document not part of this Plan, the General Plan recognizes the BMP identifies more detailed implementation strategies with cost estimates and prospective funding sources, evaluates priorities of prospective improvements, and identifies a complete inventory of both short and long-range bicycle improvements

Fresno Green. The City is committed to building “green,” thus constructing buildings and communities that are “sustainable” and environmentally responsible. The benefits are not easily quantified: cleaner air, pedestrian friendly neighborhoods, support for local businesses and agriculture, more green spaces, preservation of natural resources and our local architectural heritage, and healthier indoor environments. The City prepared the document, Creating a Sustainable Community, Handbook for Fresno Green Residential and Non-Residential Checklists. There are three routes that one can take to become a branded Fresno Green project:

1. Satisfy the requirements of one of the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) Programs;

2. Qualify for Build It Green's GreenPoint rating system for residential building; or
3. Follow the Fresno Green checklists. Fresno Green has in fact borrowed from these national and state programs but was specifically developed to be more holistic in approach to the "greening of communities." Thus, credits exist for historic preservation, historic landscapes and public art. Many credits are also specifically tied to the City's 2025 General Plan and similar policies in the General Plan Update.

Fresno Green includes a Tree Program that requires development to achieve 50% shade coverage in 5 years to qualify for credits under the program. Shade programs can reduce the urban heat island effect and reduce energy consumption from building cooling.

Downtown Neighborhoods Community Plan (DNCP). The City is going through the approval process for the DNCP, which seeks to revitalize the entire area surrounding Downtown Fresno. The project coincides with the planning for a High Speed Rail (HSR) station in Downtown Fresno. The project includes the preparation of a Downtown Development Code and also provides adaptive reuse guidelines to help catalyze the revitalization of the entire Fulton Corridor Specific Plan (FCSP) area and the DNCP area by facilitating the conversion of older, economically distressed, or historically significant buildings to residential, mixed-use, commercial, civic, and/or entertainment uses.

Fulton Corridor Specific Plan (FCSP). The FCSP provides detailed planning for the Fulton Mall. Downtown Fresno contains a number of thoroughfares that have been vacated to create pedestrian-only streets, most notably the Fulton Mall. Fulton Mall is a stand-alone project approved by the City Council in spring 2014. Other closures include Mariposa Street between M and N Streets, and between O and P Streets. The malls were originally installed to concentrate pedestrian activity and bolster the retail performance of Downtown, but over time have failed at generating a vibrant street life and commercial success. The FCSP is intended to provide a blueprint for addressing this issue.

SB 375 Sustainable Communities Strategy. The ARB set passenger vehicle greenhouse gas (GHG) emission reduction targets for 2020 and 2035 for each of the 18 Metropolitan Planning Organization (MPO) regions in California under the Sustainable Communities and Climate Protection Act of 2008 (SB 375). The City participated with Fresno COG in developing a Sustainable Community Strategy (SCS) to help meet the targets and to qualify for the CEQA streamlining provisions contained in SB 375. The SCS is included in the 2014 Regional Transportation Plan and Sustainable Communities Strategy adopted by the Fresno COG Board on June 26, 2014. The targets for Fresno County are a percent reduction passenger vehicle CO₂ per capita from 2005 of 4.7 percent in 2020 and 7.6 percent in 2035. Modeling was conducted by Fresno COG using land use scenarios consistent with the proposed General Plan Update and Policies to determine that the reductions were feasible. New travel models were developed to estimate the changes in travel. The new models are designed to better evaluate the types of land use and transportation policies likely to be considered in the RTP/SCSs. The models provide sensitivity to changes in land use and travel estimates.

San Joaquin Valley Blueprint. The San Joaquin Valley COGs conducted the Blueprint planning process in an effort to develop and help implement a vision for growth in the Valley to the year 2050. On April 1, 2009, the San Joaquin Valley (SJV) Regional Policy Council adopted Scenario B+ as the

Preferred Blueprint Growth Scenario for the San Joaquin Valley to the year 2050. This scenario identifies an average development density of 6.8 dwelling units per acre for new residential to the year 2050. The Fresno General Plan Update includes full development through the year 2056 and provides an average density for new single family and multiple family residential development of 9.13 units per acre (145,374 units/15,923 acres). This average density will support the focused growth envisioned in the Blueprint.

Greenhouse Gas Reduction Plan. The City has conducted the necessary work to set development on the path toward achieving the 2020 targets and future targets to be set by the State. The Greenhouse Gas Reduction Plan will include quantification of policies and programs that will show the local contribution beyond regulations that can be achieved with the implementation of the General Plan and other programs and actions in the City.

Cumulative Impact Analysis

Greenhouse gas impacts are by their nature cumulative impacts. Localized impacts of climate change are the result of the cumulative impact of global emissions. The combined benefits of reductions achieved by all levels of government help to slow or reverse the growth in greenhouse gas emissions. In the absence of comprehensive international agreements on appropriate levels of reductions achieved by each country, another measure of cumulative contribution is required. California has defined reductions required by the state in AB 32 (1990 emission levels by 2020). This serves to define California's share of the reductions regardless of the activities or lack of activities of other areas of the U.S. or the world. Therefore, a cumulative threshold based on consistency with state targets and actions to reduce greenhouse gases is an appropriate standard of comparison for significance determinations at the General Plan level.

The cumulative impacts of General Plan implementation after 2020 has no comprehensive state target or action plan that provides a similar basis of comparison. The regional targets adopted to comply with SB 375 only apply to a fraction the mobile source inventory in 2020 and 2035. As described earlier, the state is in the process of identifying a reduction target for 2030, but the actual strategy required to reach a target has not been determined. Finally, in preliminary assessments of options to achieve the 2050 goal, the state concluded that reliance on technical advancements and accelerated market penetration of new technologies would be required. Developing a community 2050 target without an adopted state strategy would be highly speculative. The General Plan will likely be updated several times before 2050. Each update will provide an opportunity to identify community targets to coincide with state targets and to adjust the strategy to ensure that the City of Fresno does its part in achieving greenhouse gas reductions.

The General Plan policies will continue to provide greenhouse gas reductions beyond 2020 since they apply to all development that will occur between adoption and buildout unless superseded by new policies. The amount of local reductions needed beyond 2020 is uncertain pending adoption of state targets for later years. In addition, the long-term effectiveness of the General Plan policies and programs that avoid, reduce, or minimize greenhouse gas emissions is not known. Therefore, cumulative impacts related to the growth under the General Plan and Development Code Update are significant and unavoidable. The City will track the effectiveness of implementation of the General

Plan and the Greenhouse Gas Reduction Plan on an annual basis to identify progress in meeting emission reduction targets. The Greenhouse Gas Reduction Plan will require update when and if later targets are adopted by the ARB.

Mitigation Measures

Project Specific

No mitigation measures beyond implementation of General Plan policies is feasible.

Cumulative

No mitigation measures beyond implementation of General Plan policies is feasible

Level of Significance After Mitigation

Project Specific

Significant impact.

Cumulative

Significant impact.

Conflict with Plan, Policy, or Regulation that Reduces Emissions

| | |
|---------------------|--|
| Impact GHG-2 | The project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. |
|---------------------|--|

Project Specific Impact Analysis

Currently, the only applicable plan, policy or regulation for the City of Fresno is the Air Resources Board's Scoping Plan implementing AB 32. The Greenhouse Gas Reduction Plan will serve as the applicable plan once adopted. The Greenhouse Gas Reduction Plan is designed to provide a comprehensive strategy that demonstrates consistency with AB 32 and the Scoping Plan.

Scoping Plan

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. In addition to the greenhouse gases listed in AB 32, a seventh greenhouse gas, nitrogen trifluoride (NF3) was added to Health and Safety Code section 38505(g)(7) as a greenhouse gas of concern. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an "ambitious but achievable" reduction in California's greenhouse gas emissions, cutting approximately 29 percent from business-as-usual emission levels projected for 2020, or about 10 percent from today's levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman and child in California down to about 10 tons per person by 2020.

The ARB's First Update to the Scoping Plan (ARB 2014) does not include any new reduction measures; therefore, the 2008 Scoping Plan will be used in this analysis.

The Scoping Plan contains a variety of strategies to reduce the State’s emissions. As shown in Table 5.7–7, the strategies are generally not applicable to the project, but reduce emissions from development that will occur within the Plan Area.

Table 5.7–7: Scoping Plan Reduction Measures

| Scoping Plan Reduction Measure | City Applicability |
|---|---|
| <p>1. California Cap-and-Trade Program Linked to Western Climate Initiative. Implement a broad-based California Cap-and-Trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic benefits for California. Ensure California’s program meets all applicable AB 32 requirements for market-based mechanisms.</p> | <p>When this cap-and-trade system begins, products or services (such as electricity) would be covered and the cost of the cap-and-trade system would be transferred to the consumers.</p> |
| <p>2. California Light-Duty Vehicle Greenhouse Gas Standards. Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.</p> | <p>This is a statewide measure that cannot be implemented by a project applicant or lead agency. When this measure is initiated, the standards would be applicable to the light-duty vehicles in the City.</p> |
| <p>3. Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.</p> | <p>This is a measure for the state to increase its energy efficiency standards. However, the General Plan contains policies to increase energy efficiency, such as: RC-5-c, RC-4-g, RC-8-a, RC-8-b, RC-8-d, RC-7-i, RC-8-e, RC-8-g, HCR-2-j, and HC-3-f.</p> |
| <p>4. Renewable Portfolio Standard. Achieve 33 percent renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.</p> | <p>The Pacific Gas and Electric Company, which would provide power to the project, is in the process of increasing the percent of renewable energy in its portfolio. It is required to increase this percentage by the year 2020 pursuant to various regulations.</p> |
| <p>5. Low Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard.</p> | <p>This is a statewide measure that cannot be implemented by a project applicant or lead agency. When this measure is initiated, the standard would be applicable to the fuel used by vehicles in the City.</p> |
| <p>6. Regional Transportation-Related Greenhouse Gas Targets. Develop regional greenhouse gas emissions reduction targets for passenger vehicles. This measure refers to SB 375.</p> | <p>The General Plan contains the following objectives and policies that would reduce motor vehicle use, encourage infill development, increase pedestrian, transit, and bicycle usage: ED-1-c, UF-1-c, UF-12-a, UF-12-b, UF-12-d, UF-12-e, UF-12-f, UF-12-g, UF-13-a, UF-14, UF-14-a, UF-14-b, UF-14-c, LU-2, LU-2-a, LU-2-b,</p> |

| Scoping Plan Reduction Measure | City Applicability |
|--|--|
| | LU-2-c, LU-2-d, LU-3-b, LU-5-f, LU-6-b, LU-6-g, LU-8-b, D-1-g, D-4-b, D-4-f, MT-1, MT-1-g, MT-1-j, MT-1-c, MT-1-l, MT-1-m, MT-2-n, MT-2-o, MT-2-c, MT-2-d, MT-2-f, MT-2-g, MT-2-b, MT-2, MT-1-k, MT-2-i, MT-4, MT-4-a, MT-4-d, MT-4-h, MT-4-i, MT-4-j, MT-4-k, MT-6-l, MT-9-e, MT-8-g, MT-8-h, MT-9, MT-8-a, MT-9-a, MT-9-b, MT-9-c, MT-8-d, MT-8-b, MT-8-e, MT-8-i, MT-9-f, MT-11-b, POSS-3-c, POSS-3-f, RC-2-a, RC-4-e, RC-4-g, RC-5-c, RC-8-j, HCR-3-f, and HC-5-f. |
| 7. Vehicle Efficiency Measures. Implement light-duty vehicle efficiency measures. | When this measure is initiated, the standards would be applicable to the light-duty vehicles in the City. |
| 8. Goods Movement. Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities. | The project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation. |
| 9. Million Solar Roofs Program. Install 3,000 MW of solar-electric capacity under California's existing solar programs. | This measure is to increase solar throughout California, which is being done by various electricity providers and existing solar programs. In addition, General Plan Policies RC-7-h and RC-7-i encourage solar and renewable energy use. |
| 10. Medium/Heavy-Duty Vehicles. Adopt medium and heavy-duty vehicle efficiency measures. | This is a statewide measure that cannot be implemented by a project applicant or lead agency. When this measure is initiated, the standards would be applicable to the vehicles that access the project site. |
| 11. Industrial Emissions. Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries. | Industrial sources achieve consistency with the Scoping Plan through compliance with SJVAPCD permitting, Cap and Trade, and RPS regulations. The SJVAPCD requires industrial projects subject to Air Permits to include best practice standards (BPS) to reduce emissions by amounts consistent with Scoping Plan targets. |
| 12. High Speed Rail. Support implementation of a high-speed rail system. | This is a statewide measure that cannot be implemented by a project applicant or lead agency. |
| 13. Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings. | The General Plan contains policies to increase green building, such as RC-5-c, RC-4-g, RC-8-a, RC-8-b, RC-8-d, RC-7-i, RC-8-e, RC-8-g, HCR-2-j, and HC-3-f. |

| Scoping Plan Reduction Measure | City Applicability |
|---|--|
| 14. High Global Warming Potential Gases. Adopt measures to reduce high global warming potential gases. | When this measure is initiated, it would be applicable to the high global warming potential gases that would be used in the City (such as in air conditioning and refrigerators). |
| 15. Recycling and Waste. Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste. | The General Plan contains policies to help to decrease waste, including: PU-9, PU-9-a, PU-9-b, RC-4-j, RC-11, RC-11-a, RC-11-b, and HCR-3-a. The General Plan also contains the following policies to reduce wastewater: PU-7, PU-7-a, PU-7-b, PU-7-c, PU-7-d, and RC-4-i. |
| 16. Sustainable Forests. Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation. | The following General Plan policies encourage urban forests: D-3, D-3-a, D-3-b, D-3-c, POSS-3-f, POSS-5, POSS-5-a, POSS-5-c, POSS-5-d, and MT-3-b. |
| 17. Water. Continue efficiency programs and use cleaner energy sources to move and treat water. | The General Plan contains water conservation policies such as the following: PU-8-e, PU-8-b, RC-6-b, RC-6-d, RC-6-h, RC-7, RC-7-a, RC-7-b, RC-7-c, RC-7-h, RC-7-e, and RC-7-h. |
| 18. Agriculture. In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020. | Limited agricultural lands exist within the City of Fresno Planning Area. No dairies are located near the City, so no digester projects are anticipated. |
| Source of ARB Scoping Plan Reduction Measure: Air Resources Board 2008. Source of Project Consistency or Applicability: Michael Brandman Associates. | |

The General Plan Update includes numerous policies listed in Table xx that support state efforts to reduce greenhouse gases as detailed in the Scoping Plan. No General Plan policies were identified that conflict with or obstruct Scoping Plan strategies. The Scoping Plan future year inventories include growth projected for development throughout the State, including Fresno. This impact is considered less than significant.

Cumulative Impact Analysis

The analysis provided above is applicable to project level and cumulative impacts.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.