

## 5. Environmental Analysis

### 5.7 GREENHOUSE GAS EMISSIONS

This section of the Draft Program Environmental Impact Report (Draft PEIR) evaluates the potential for the land use changes in the City of Clovis General Plan Update (proposed project) to cumulatively contribute to greenhouse gas (GHG) emissions impacts. Because no single project is large enough to result in a measurable increase in global concentrations of GHG emissions, climate change impacts of a project are considered on a cumulative basis.

The analysis is based on the population and employment projections anticipated in the City of Clovis, its sphere of influence (SOI), and non-SOI Plan Area at full buildout of the proposed General Plan Update (post-2035) as well as the demographic changes anticipated in year 2035. The analysis is also based on buildout of the proposed Land Use Plan; vehicle miles traveled (VMT), provided by Fehr and Peers as modeled by the Fresno Council of Governments (COG) Travel Demand Forecast Model; electricity and natural gas use provided by Pacific Gas & Electric (PG&E); waste generation identified for the City of Clovis by the California Department of Resources, Recycling, and Recovery (CalRecycle); and water use for the City based on the City of Clovis's 2010 Urban Water Management Plan (UWMP). GHG emissions modeling is included in Appendix E of this PEIR.

#### 5.7.1 Environmental Setting

##### 5.7.1.1 GREENHOUSE GASES AND CLIMATE CHANGE

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. Climate change is the variation of earth's climate over time, whether due to natural variability or as a result of human activities. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor,<sup>1</sup> carbon (CO<sub>2</sub>), methane (CH<sub>4</sub>), and ozone (O<sub>3</sub>)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).<sup>2</sup> The major GHG are briefly described below.

**Carbon dioxide (CO<sub>2</sub>)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

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<sup>1</sup> Water vapor (H<sub>2</sub>O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant.

<sup>2</sup> Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by falling on snow and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (CARB 2014).

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**Methane (CH<sub>4</sub>)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

**Nitrous oxide (N<sub>2</sub>O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

**Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances.<sup>3</sup> These gases are typically emitted in smaller quantities, but they are potent GHGs, sometimes referred to as high global warming potential (GWP) gases.

- **Chlorofluorocarbons (CFCs)** are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol (USEPA 2013).
- **Perfluorocarbons (PFCs)** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF<sub>4</sub>] and perfluoroethane [C<sub>2</sub>F<sub>6</sub>]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential (USEPA 2013).
- **Sulfur Hexafluoride (SF<sub>6</sub>)** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF<sub>6</sub> is a strong GHG used primarily in electrical transmission and distribution systems as an insulator (USEPA 2013).
- **Hydrochlorofluorocarbons (HCFCs)** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs (USEPA 2013).
- **Hydrofluorocarbons (HFCs)** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs (USEPA 2012, 2013; IPCC 2001).

Table 5.7-1, *GHG and Their Relative Global Warming Potential Compared to CO<sub>2</sub>*, lists the GHG applicable to the proposed project and their relative GWPs compared to CO<sub>2</sub>.

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<sup>3</sup> Ozone in the upper atmosphere, or stratosphere, protects the planet from harmful ultraviolet rays. Ozone in the lower atmosphere, or troposphere, is called smog, is harmful to living things, and is itself a GHG. Ozone-depleting gases refer to gases that deplete the beneficial stratospheric ozone, not smog.

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**Table 5.7-1 GHG and Their Relative Global Warming Potential Compared to CO<sub>2</sub>**

GHG	Atmospheric Lifetime (years)	Global Warming Potential Relative to CO <sub>2</sub> <sup>1</sup>
Carbon Dioxide (CO <sub>2</sub> )	50 to 200	1
Methane (CH <sub>4</sub> ) <sup>2</sup>	12 (±3)	21
Nitrous Oxide (N <sub>2</sub> O)	120	310
Hydrofluorocarbons:		
HFC-23	264	11,700
HFC-32	5.6	650
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
Perfluoromethane: CF <sub>4</sub>	50,000	6,500
Perfluoroethane: C <sub>2</sub> F <sub>6</sub>	10,000	9,200
Perfluorobutane: C <sub>4</sub> F <sub>10</sub>	2,600	7,000
Perfluoro-2-methylpentane: C <sub>6</sub> F <sub>14</sub>	3,200	7,400
Sulfur Hexafluoride (SF <sub>6</sub> )	3,200	23,900

Source: IPCC 2001.

<sup>1</sup> Based on 100-Year Time Horizon of the GWP of the air pollutant relative to CO<sub>2</sub>.

<sup>2</sup> The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO<sub>2</sub> is not included.

### 5.7.1.2 CALIFORNIA'S GHG SOURCES AND RELATIVE CONTRIBUTION

California is the tenth largest GHG emitter in the world and the second largest emitter of GHG in the United States, only surpassed by Texas. However, California also has over 12 million more people than the state of Texas. Because of more stringent air emission regulations, in 2001 California ranked fourth lowest in carbon emissions per capita and fifth lowest among states in CO<sub>2</sub> emissions from fossil fuel consumption per unit of Gross State Product (total economic output of goods and services) (CEC 2006a).

The California Air Resources Board's (CARB's) latest update to the statewide GHG emissions inventory was conducted in 2012 for year 2009 emissions.<sup>4</sup> In 2009, California produced 457 million metric tons (MMT) of CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emissions.<sup>5</sup> California's transportation sector is the single largest generator of GHG emissions, producing 37.9 percent of the state's total emissions. Electricity consumption is the second largest source, comprising 22.7 percent. Industrial activities are California's third largest source of GHG emissions,

<sup>4</sup> Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (AB 32).

<sup>5</sup> CO<sub>2</sub>-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The GWP of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

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comprising 17.8 percent of the state's total emissions. Other major sources of GHG emissions include commercial and residential, recycling and waste, high GWP GHGs, agriculture, and forestry (CARB 2012a).

#### Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHG in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate and climate change pollutants that are attributable to human activities. The amount of CO<sub>2</sub> has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to combustion of fossil fuels and deforestation (IPCC 2007). These recent changes in climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006).

Climate change scenarios are affected by varying degrees of uncertainty. IPCC's 2007 Fourth Assessment Report projects that the global mean temperature increase from 1990 to 2100, under different climate-change scenarios, will range from 1.4 to 5.8°C (2.5 to 10.4°F). In the past, gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but within a human lifetime (CAT 2006).

#### Potential Climate Change Impacts for California

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are also difficult to predict. In California and western North America, observations of the climate have shown: 1) a trend toward warmer winter and spring temperatures, 2) a smaller fraction of precipitation falling as snow, 3) a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones, 4) an advance snowmelt of 5 to 30 days earlier in spring, and 5) a similar shift (5 to 30 days earlier) in the timing of spring flower blooms (CAT 2006). According to the California Climate Action Team (CAT), even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 5.7-1), and the inertia of the Earth's climate system could produce as much as 0.6°C (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable. Global climate change risks are shown in Table 5.7-2, *Summary of Global Climate Change Risks to California*, and include impacts to public health, water resources, agriculture, sea level, forest and biological resources, and electricity. Specific climate change impacts that could affect the Plan Area include health impacts from a reduction in air quality, water resources impacts from a reduction in water supply, and increased energy demand.

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**Table 5.7-2 Summary of Global Climate Change Risks to California**

Impact Category	Potential Risk
Public Health Impacts	<ul style="list-style-type: none"> <li>• Poor air quality made worse</li> <li>• More severe heat</li> </ul>
Water Resources Impacts	<ul style="list-style-type: none"> <li>• Decreasing Sierra Nevada snow pack</li> <li>• Challenges in securing adequate water supply</li> <li>• Potential reduction in hydropower</li> <li>• Loss of winter recreation</li> </ul>
Agricultural Impacts	<ul style="list-style-type: none"> <li>• Increasing temperature</li> <li>• Increasing threats from pests and pathogens</li> <li>• Expanded ranges of agricultural weeds</li> <li>• Declining productivity</li> <li>• Irregular blooms and harvests</li> </ul>
Coastal Sea Level Impacts	<ul style="list-style-type: none"> <li>• Accelerated sea level rise</li> <li>• Increasing coastal floods</li> <li>• Shrinking beaches</li> <li>• Worsened impacts on infrastructure</li> </ul>
Forest and Biological Resource Impacts	<ul style="list-style-type: none"> <li>• Increasing risk and severity of wildfires</li> <li>• Lengthening of the wildfire season</li> <li>• Movement of forest areas</li> <li>• Conversion of forest to grassland</li> <li>• Increasing threats from pest and pathogens</li> <li>• Declining forest productivity</li> <li>• Shifting vegetation and species distribution</li> <li>• Altered timing of migration and mating habits</li> <li>• Loss of sensitive or slow-moving species</li> </ul>
Electricity	<ul style="list-style-type: none"> <li>• Potential reduction in hydropower</li> <li>• Increased energy demand</li> </ul>

Sources: CEC 2006b; CEC 2008.

**5.7.1.3 REGULATORY SETTING**

**National Regulation**

The United States Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements, but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (EPA 2009).

The EPA's endangerment finding covers emissions of six key GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons, perfluorocarbons, and SF<sub>6</sub>—which have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world (the first three are applicable to the proposed project).

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In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 metric tons (MTCO<sub>2e</sub>) or more per year are required to submit an annual report.

#### State Regulation

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-03-05, Assembly Bill 32, and Senate Bill 375.

##### *Executive Order S-03-05*

Executive Order S-3-05, signed June 1, 2005, set the following GHG reduction targets for the state:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

##### *Assembly Bill 32, the Global Warming Solutions Act (2006)*

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Assembly Bill 32 (AB 32), the Global Warming Solutions Act. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-3-05.

AB 32 directed CARB to adopt discrete early action measures to reduce GHG emissions and outline additional reduction measures to meet the 2020 target. Based on the GHG emissions inventory conducted for the Scoping Plan by CARB, GHG emissions in California by 2020 are anticipated to be approximately 596 MMTCO<sub>2e</sub>. In December 2007, CARB approved a 2020 emissions limit of 427 MMTCO<sub>2e</sub> (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 MMTCO<sub>2e</sub>, 28.5 percent from the projected emissions of the business-as-usual (BAU) scenario for the year 2020 (i.e., 28.5 percent of 596 MMTCO<sub>2e</sub>) (CARB 2008).<sup>6</sup>

In order to effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 MT of CO<sub>2e</sub> per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012.

##### ***CARB 2008 Scoping Plan***

The final Scoping Plan was adopted by CARB on December 11, 2008. Key elements of CARB's GHG reduction plan that may be applicable to the proposed project include:

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<sup>6</sup> CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensity as was typical from 2002 through 2004.

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- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards (adopted and cycle updates in progress).
- Achieving a mix of 33 percent for energy generation from renewable sources (anticipated by 2020).
- A California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system for large stationary sources (adopted 2011).
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets (several Sustainable Communities Strategies have been adopted).
- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards (amendments to the Pavley Standards adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (LCFS) (adopted 2009).<sup>7</sup>
- Creating target 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 progress).

Table 5.7-3, *Scoping Plan GHG Reduction Measures and Reductions toward 2020 Target*, shows the proposed reductions from regulations and programs outlined in the Scoping Plan. Though local government operations were not accounted for in achieving the 2020 emissions reduction, CARB estimates that land use changes implemented by local governments that integrate jobs, housing, and services result in a reduction of 5 MMTCO<sub>2e</sub>, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments play in successful implementation of AB 32, in 2008 CARB recommended GHG reduction goals of 15 percent of today's levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target.<sup>8</sup> Pursuant to the Scoping Plan Appendix C, "The Role of Local Government," and Table C, local governments are encouraged to take a number of potential actions to reduce local GHG emissions, which include shifts in land use patterns to emphasize compact, low-impact growth over development in greenfields, resulting in fewer VMT (CARB 2008).

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<sup>7</sup> On December 29, 2011, the U.S. District Court for the Eastern District of California issued several rulings in the federal lawsuits challenging the LCFS. One of the court's rulings preliminarily enjoined the CARB from enforcing the regulation during the pendency of the litigation. In January 2012, CARB appealed the decision and on April 23, 2012, the Ninth Circuit Court granted CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision. In a separate case, on July 15, 2013, the State of California Court of Appeal, Fifth Appellate District, issued its opinion in *POET, LLC v. California Air Resources Board*. The Court held that the LCFS would remain in effect and that the CARB can continue to implement and enforce the 2013 regulatory standards while it corrects certain aspects of the procedures by which the LCFS was originally adopted.

<sup>8</sup> Although the Scoping Plan references a goal for local governments to reduce community GHG emissions by 15 percent from current (interpreted as 2008) levels by 2020, it does not rely on local GHG reduction targets established by local governments to meet the state's GHG reduction target of AB 32. Table 5.6-3 lists the recommended reduction measures, which do not include additional reductions from local measures.

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**Table 5.7-3 Scoping Plan GHG Reduction Measures and Reductions toward 2020 Target**

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO <sub>2</sub> e	Percentage of Statewide 2020 Target
<b>Cap and Trade Program and Associated Measures</b>		
California Light-Duty Vehicle GHG Standards	31.7	19%
Energy Efficiency	26.3	16%
Renewable Portfolio Standard (33 percent by 2020)	21.3	13%
Low Carbon Fuel Standard	15	9%
Regional Transportation-Related GHG Targets <sup>1</sup>	5	3%
Vehicle Efficiency Measures	4.5	3%
Goods Movement	3.7	2%
Million Solar Roofs	2.1	1%
Medium/Heavy Duty Vehicles	1.4	1%
High Speed Rail	1.0	1%
Industrial Measures	0.3	0%
Additional Reduction Necessary to Achieve Cap	34.4	20%
<b>Total Cap and Trade Program Reductions</b>	<b>146.7</b>	<b>87%</b>
<b>Uncapped Sources/Sectors Measures</b>		
High Global Warming Potential Gas Measures	20.2	12%
Sustainable Forests	5	3%
Industrial Measures (for sources not covered under cap and trade program)	1.1	1%
Recycling and Waste (landfill methane capture)	1	1%
<b>Total Uncapped Sources/Sectors Reductions</b>	<b>27.3</b>	<b>16%</b>
<b>Total Reductions Counted toward 2020 Target</b>	<b>174</b>	<b>100%</b>
<b>Other Recommended Measures – Not Counted toward 2020 Target</b>		
State Government Operations	1.0 to 2.0	1%
Local Government Operations	To Be Determined	NA
Green Buildings	26	15%
Recycling and Waste	9	5%
Water Sector Measures	4.8	3%
Methane Capture at Large Dairies	1	1%
<b>Total Other Recommended Measures – Not Counted toward 2020 Target</b>	<b>42.8</b>	<b>NA</b>

Source: CARB 2008.

Notes: The percentages in the right-hand column add up to more than 100 percent because the emissions reduction goal is 169 MMTCO<sub>2</sub>e and the Scoping Plan identifies 174 MTCO<sub>2</sub>e of emissions reductions strategies.

MMTCO<sub>2</sub>e: million metric tons of CO<sub>2</sub>e

<sup>1</sup> Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target.

<sup>2</sup> According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 MMTCO<sub>2</sub>e (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 target.

### *Update to the CARB 2008 Scoping Plan*

Since release of the 2008 Scoping Plan, CARB has updated the statewide GHG emissions inventory to reflect GHG emissions in light of the economic downturn and of measures not previously considered. The updated forecast predicts emissions to be 507 MMTCO<sub>2</sub>e by 2020. The new inventory identifies that an estimated 80 MMTCO<sub>2</sub>e of reductions are necessary to achieve the statewide emissions reduction of AB 32 by 2020, 15.7

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percent of the projected emissions compared to BAU in year 2020 (i.e., 15.7 percent of 507 MMTCO<sub>2e</sub>) (CARB 2012b).

CARB is in the process of completing a five-year update to the 2008 Scoping Plan, as required by AB 32. A discussion draft of the 2013 Scoping Plan was released on October 1, 2013. The 2013 Scoping Plan update defines CARB's climate change priorities for the next five years and lays the groundwork to reach post-2020 goals in Executive Orders S-3-05 and B-16-2012. The update includes the latest scientific findings related to climate change and its impacts, including short-lived climate pollutants. The GHG target identified in the 2008 Scoping Plan is based on GWPs IPCC identified in the Second and Third Assessment Reports. IPCC's Fourth Assessment Report identified more recent GWP values based on the latest available science. As a result, CARB recalculated the 1990 GHG emission levels. Using the new GWPs, the 427 MMTCO<sub>2e</sub> 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, would be slightly higher at 431 MMTCO<sub>2e</sub> (CARB 2014).

The 2013 update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goal defined in the original 2008 Scoping Plan. The 2013 Scoping Plan update shows that California is on track to meeting the goals of AB 32. However, the 2013 Scoping Plan also addresses the state's longer-term GHG goals. The post-2020 element provides an overview of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for the state to adopt a midterm target. According to the 2013 Scoping Plan, reducing emissions to 80 percent below 1990 levels will require significant acceleration of GHG reduction rates and a fundamental shift to efficient, clean energy in every sector of the economy (CARB 2014).

#### *Senate Bill 375*

In 2008, SB 375 was adopted to achieve the GHG reduction targets in the Scoping Plan for the transportation sector through local land use decisions that affect travel behavior. Implementation is intended to reduce VMT and GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations with local land use planning. Specifically, SB 375 requires CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPO). Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

The Fresno Council of Governments (Fresno COG) is the MPO for the County of Fresno and the City of Clovis. In September 2010, CARB set per capita GHG emissions reduction targets for 2020 and 2035 for the MPOs, except the MPOs in the San Joaquin Valley region (which includes Fresno COG). CARB identified a provisional target for the entire San Joaquin Valley region because the eight MPOs in the San Joaquin Valley region are anticipated to absorb 22 percent of California's population growth. On December 14, 2012, CARB adopted a target recommendation for the eight MPOs in the San Joaquin Valley on an aggregate, valleywide basis—5 percent per capita GHG reduction in 2020 from 2005 levels and a 10 percent per capita GHG reduction in 2035 from 2005 levels. Therefore, an individual target is not proposed for Fresno COG (CARB 2013).

The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the 2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are

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anticipated to come from improving the efficiency of the region's existing transportation network. The targets would result in 3 MMT<sub>CO<sub>2</sub>e</sub> of GHG reductions statewide by 2020 and 15 MMT<sub>CO<sub>2</sub>e</sub> of GHG reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met (CARB 2010a).

#### *Fresno COG 2014–2040 Regional Transportation Plan/Sustainable Community Strategy*

SB 375 requires the MPOs to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan. The SCS establishes a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement). The SCS provides growth strategies to achieve the regional GHG emissions reduction targets. It does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives for consistency. The eight counties of the San Joaquin Valley are coordinating on development of their SCS to maximize resources through the Valley Vision SCS process. However each MPO is developing a separate SCS. The Fresno COG released the draft version of its 2014-2040 Regional Transportation Plan/Sustainable Community Strategy in March of 2014. It is based on the current planning assumption in the county. The first SCS for the Fresno COG region is anticipated to be adopted mid-2014, prior to the adoption of the Clovis General Plan Update and certification of the Final EIR. Assuming this schedule, updates relevant to the adoption of the SCS will be included in the Final EIR.

#### *Assembly Bill 1493*

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles.

#### *Executive Order S-01-07*

On January 18, 2007, the state set a new Low Carbon Fuel Standard for transportation fuels sold in the state. Executive Order S-1-07 sets a declining standard for GHG emissions measured in CO<sub>2</sub>e gram per unit of fuel energy sold in California. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The LCFS applies to refiners, blenders, producers, and importers of transportation fuels and would use market-based mechanisms to allow these providers to choose the most economically feasible methods to reduce emissions during the fuel cycle.

#### *Senate Bills 1078 and 107 and Executive Order S-14-08*

A major component of California's Renewable Energy Program is the renewable portfolio standard (RPS) established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent and to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008 and expands the state's renewable energy standard to 33 percent renewable power by 2020. In 2011, the state legislature adopted this

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higher standard in SBX1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects, because electricity production from renewable sources is generally considered carbon neutral.

### *Executive Order B-16-2012*

On March 23, 2012, the state directed that CARB, the California Energy Commission (CEC), the California Public Utilities Commission, and other relevant agencies work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directed the number of zero-emission vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are zero emission by 2015, and at least 25 percent of fleet purchases of light-duty vehicles are zero emission by 2020. The executive order also establishes a target for reducing GHG emissions from the transportation sector to 80 percent below 1990 levels.

### *California Building Code*

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and updated triannually (Title 24, Part 6, California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The CEC adopted the 2013 Building and Energy Efficiency Standards, which went into effect on January 1, 2014. Buildings that are constructed in accordance with the 2013 Building and Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (CALGreen) was adopted as part of the California Building Standards Code (24CCR11). CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.<sup>9</sup> The mandatory provisions of CALGreen became effective January 1, 2011.

### *2006 Appliance Efficiency Regulations*

The 2006 Appliance Efficiency Regulations (20 CCR, Sections 1601 through 1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and nonfederally regulated appliances.

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<sup>9</sup> The green building standards became mandatory in the 2010 edition of the code.

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#### 5.7.1.4 EXISTING SETTING

##### 2012 Greenhouse Gas Emissions Inventory

An existing emissions inventory of the Plan Area (i.e., the City of Clovis, SOI, and non-SOI Plan Area) was conducted based on the existing land uses and is shown in Table 5.7-4, *Existing City of Clovis, SOI, and Non-SOI Plan Area Greenhouse Gas Emissions Inventory*. The inventory is based on existing land uses. The existing land uses include residential, institutional, commercial, office, and industrial uses identified in Table 3-1. GHG emissions generated in the Plan Area were estimated using EMFAC2011, OFFROAD2007, and data provided by Pacific Gas and Electric (PG&E) for electricity and natural gas use. In addition, the City of Clovis includes permitted sources of air pollution that are regulated by the San Joaquin Valley Air Pollution Control District (SJVAPCD) and are not under the jurisdictional authority of the City, but are included for informational purposes. Emissions in the Plan Area are composed of the following sources:<sup>10, 11</sup>

- **Transportation:** Emissions from vehicle trips beginning and ending in the Plan Area and from external/internal vehicle trips (i.e., trips that either begin or end in the Plan Area).
- **Area Sources:** Emissions generated from lawn and garden, commercial, agricultural, and construction equipment use in the Plan Area.
- **Energy:** Emissions generated from natural gas consumption used for cooking and heating in the Plan Area.
- **Solid Waste Disposal:** Indirect emissions from waste generated in the Plan Area.
- **Water/Wastewater:** Emissions from electricity used to supply, treat, and distribute water based on the overall water demand and wastewater generation of and within the Plan Area.
- **Permitted Sources:** Emissions generated by permitted facilities in the Plan Area.

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<sup>10</sup> See Appendix E for descriptions of the methodology used to calculate emissions for each source.

<sup>11</sup> Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions, found that life-cycle analysis was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources and the possibility of double-counting emissions (see Final Statement of Reasons for Regulatory Action, December 2009). Because the amount of materials consumed during the operation or construction of the Proposed Project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (OPR 2008).

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**Table 5.7-4 Existing City of Clovis, SOI, and Non-SOI Plan Area Greenhouse Gas Emissions Inventory**

Sector	Existing (CEQA Baseline) 2012 GHG Emissions	
	MTCO <sub>2</sub> e/year	Percent of Total
Transportation <sup>1</sup>	370,517	63%
Energy – Residential <sup>2</sup>	81,758	14%
Energy – Nonresidential <sup>2</sup>	45,685	8%
Waste <sup>3</sup>	22,910	4%
Water/Wastewater <sup>4</sup>	23,649	4%
Other – Off-Road Equipment <sup>5</sup>	46,415	8%
<b>Existing Community-Wide Emissions Total</b>	<b>590,935</b>	<b>100%</b>
Permitted Sources (Natural Gas) <sup>6</sup>	265,643	NA
<b>Emissions with Permitted Sources Total</b>	<b>856,578</b>	<b>NA</b>
Service Population (SP) <sup>7</sup>	146,500	NA
MTCO <sub>2</sub> e/Year/SP	4.0 MTCO <sub>2</sub> e/Year/SP	NA

Notes: Emissions may not total 100% due to rounding.

<sup>1</sup> EMFAC2011. Model runs were based on daily per capita VMT data provided by Fehr and Peers.

<sup>2</sup> Electricity and natural gas usage data provided by PG&E. The carbon intensity of PG&E's purchased electricity and natural gas is based on the CO<sub>2</sub> intensity factors reported in PG&E's "Community Wide GHG Inventory Report" for City of Clovis. The intensity factors for CH<sub>4</sub> and N<sub>2</sub>O are provided by the EPA's e-GRID data for year 2009.

<sup>3</sup> Landfill Emissions Tool Version 1.3 and CalRecycle. Waste generation based on three year average (2010–2012) waste commitment for the City of Clovis obtained from CalRecycle. Assumes 75 percent of fugitive GHG emissions are captured within the landfill's Landfill Gas Capture System. The landfill gas capture efficiency is based on CARB's Local Government Operations Protocol (LGOP), Version 1.1. Significant CH<sub>4</sub> production typically begins one or two years after waste disposal in a landfill and continues for 10 to 60 years or longer. Therefore, the highest CH<sub>4</sub> emissions from waste disposal in a given year are reported.

<sup>4</sup> LGOP, version 1.1, based on the City's 2010 UWMP for water demand and City-provided wastewater generation rates.

<sup>5</sup> OFFROAD2007. Consists of landscaping, light commercial, construction, and agricultural equipment. Landscaping and light commercial equipment emissions based on population and employment for Clovis as a percentage of Fresno County. Construction and agricultural equipment emissions based on housing permit data and amount of farmland for Fresno County and Clovis from the US Census and CA Division of Land Resource Protection. Area sources exclude emissions from fireplaces and consumer products.

<sup>6</sup> Based on natural gas use data provided by SJVAPCD.

<sup>7</sup> Consists of approximately 113,738 residents and 30,487 employees.

## 5.7.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

### 5.7.2.1 SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT SIGNIFICANCE CRITERIA

The issue of global climate change is, by definition, a cumulative environmental impact. The SJVAPCD adopted guidance methodology for addressing GHG emissions under CEQA on December 17, 2009 (SJVAPCD 2009a). In addition, SJVAPCD adopted a Climate Change Action Plan (CCAP) to identify strategies to reduce GHG

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emissions in the San Joaquin Valley Air Basin (SJVAPCD 2009b). SJVAPCD's methodology includes a tiered approach:

- If a project is exempt from CEQA, individual-level and cumulative GHG emissions are treated as less than significant.
- If the project complies with a GHG emissions reduction plan or mitigation programs that avoid or substantially reduce GHG emissions in the geographic area where the project is located (i.e., city or county), individual-level and cumulative GHG emissions are treated as less than significant.

For projects that are not exempt or where no qualifying applicable GHG reduction plans are in place, SJVAPCD requires that a project's GHG emissions be quantified and feasible means of reductions be implemented to reduce a project's emissions. SJVAPCD's methodology calculates the amount of GHG emissions from the construction and operation of a project and identifies feasible measures—also known as best performance standards (BPS). BPS are defined as the most effective, achieved-in-practice means of reducing or limiting GHG emissions, and they focus on measures that improve energy efficiency, increase water efficiency, and reduce vehicle miles traveled (VMT), as well as promote pedestrian access and public transportation and improve the jobs-housing ratio.

- Projects that can reduce their GHG emissions by 29 percent compared to BAU through the implementation of BPS would be determined to have less than significant impacts on both an individual and cumulative level.<sup>12</sup>
- Projects that cannot feasibly reduce their GHG emissions by 29 percent through implementation of BPS or other measures would be considered to have significant impacts on both an individual and cumulative level.

### 5.7.3 Environmental Impacts

This GHG evaluation was prepared in accordance with the requirements of CEQA to determine if significant GHG impacts are likely to occur in conjunction with future development that would be accommodated by the proposed General Plan Update. The analysis includes the projected emissions inventory for the following scenarios:

- **Proposed General Plan Update Business-as-Usual (BAU) – Year 2035:** CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions, but did not adopt any measures to reduce emissions. The Plan Area emissions inventory for this scenario is based on the proposed land use plan and year 2035 conditions and does not include any reductions from federal and state measures identified in the CARB Scoping Plan (e.g., Pavley<sup>1</sup>, LCFS, etc.).

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<sup>12</sup> The 29 percent reduction target is based on CARB's determination of the amount of reduction needed statewide in order to meet 1990 levels by year 2020.

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- **Proposed General Plan Update Business-as-Usual (BAU) – Full Buildout:** The Plan Area emissions inventory for this scenario is based on the proposed land use plan at full buildout conditions. It does not include any reductions from federal and state measures in the CARB Scoping Plan.
- **Proposed General Plan Update Adjusted Business-as-Usual (ABAU) – Year 2035:** The Plan Area emissions inventory for this scenario is based on the proposed land use plan at year 2035 conditions and accounts for reductions from federal and state measures in the CARB Scoping Plan.
- **Proposed General Plan Update Adjusted Business-as-Usual (ABAU) – Full Buildout:** The Plan Area emissions inventory for this scenario is based on the proposed land use plan at full buildout conditions and accounts for reductions from federal and state measures in the CARB Scoping Plan.

Similar to Table 5.7-4, the emissions inventory for these scenarios includes the GHG emissions from the following sectors:

- Transportation
- Area Sources
- Energy
- Solid Waste Disposal
- Water/Wastewater
- Permitted Sources

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

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**Impact 5.7-1:** Implementation of the proposed General Plan Update would result in a substantial increase in GHG emissions for year 2035 and full buildout compared to existing conditions. Additionally, although community-wide GHG emissions of the proposed General Plan Update at year 2035 and full buildout would be less under adjusted BAU conditions than under BAU conditions, the proposed General Plan Update would not meet the San Joaquin Valley Air Pollution Control District's threshold of 29 percent below BAU and would not meet the long-term reduction target of Executive Order S-03-05. [Threshold GHG-1]

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**Impact Analysis:** Buildout of the City of Clovis would contribute to GHG emissions impacts through direct and indirect GHG emissions from mobile sources, energy usage (electricity and natural gas), water and wastewater generation, solid waste generation, and equipment use. GHG emissions inventories are provided for horizon year 2035 and full buildout of the proposed General Plan Update in post-2035.

### 2035 Scenario

Table 5.7-5, *Year 2035 City of Clovis, SOI, and Non-SOI Plan Area Greenhouse Gas Emissions Inventory*, shows the BAU and adjusted BAU (ABAU) emissions inventories for the City of Clovis, SOI, and non-SOI Plan Area. The BAU

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inventory does not include reductions from federal and state measures identified in the CARB Scoping Plan, which are included in the ABAU inventory. These measures include the Pavley fuel efficiency standards, LCFS for fuel use (transportation and off-road), and reduction in carbon intensity from electricity use.

As shown in the table, implementation of the proposed General Plan Update under Year 2035 ABAU conditions would result in an increase of 271,448 MTCO<sub>2e</sub> (or 46 percent) over existing conditions, a substantial increase in emissions. Compared to Year 2035 BAU conditions, the proposed General Plan Update under Year 2035 ABAU conditions would result in a reduction of 304,769 MTCO<sub>2e</sub> of emissions, a 26 percent reduction from Year 2035 BAU. Additionally, implementation of the proposed General Plan Update would improve the job-to-housing ratio to 0.93 in year 2035 compared to the current 0.74 ratio (see Table 5.13-9). This improved ratio would contribute to shortening the average trip distance between residents and their place of employment, and therefore would reduce total VMT in the Plan Area, resulting in a reduction in GHG emissions per capita. However, even though 2035 ABAU conditions would result in overall lower emissions than under 2035 BAU conditions, it would not meet the SJVAPCD threshold of 29 percent below BAU. Therefore, overall, the project would cumulatively contribute to the long-term GHG emissions in the state.

#### Full Buildout

Table 5.7-6, *Full Buildout City of Clovis, SOI, and Non-SOI Plan Area Greenhouse Gas Emissions Inventory*, shows the BAU and ABAU emissions inventory for the City of Clovis, its SOI, and Plan Area. As shown in the table, full buildout of the proposed General Plan Update under ABAU conditions would result in a reduction of 535,375 MTCO<sub>2e</sub> of emissions, or 27 percent, compared to full buildout BAU conditions. Similar to the 2035 Scenario, the jobs-housing ratio would improve to 1.0 job per household in full buildout compared to the current 0.74 ratio. However, although full buildout of the proposed General Plan Update under ABAU conditions would result in overall lower emissions compared to full buildout BAU conditions, it would not meet the SJVAPCD threshold of 29 percent below BAU. In addition, full buildout of the proposed General Plan Update would generate 871,126 MTCO<sub>2e</sub> of emissions, or 148 percent more than existing conditions, a substantial increase in emissions. Therefore, the project would cumulatively contribute to the long-term GHG emissions in the state.

#### Long-Term Goal of Executive Order S-03-05

Executive Order S-03-05 identified a long goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. CARB is currently updating the Scoping Plan to identify additional measures to achieve the long-term GHG reduction targets. At this time, there is no plan past 2020 that achieves the long-term GHG reduction goal under S-03-05. As identified by the California Council on Science and Technology, the state cannot meet the 2050 goal without major advancements in technology (CCST 2012). As shown, the community-wide ABAU GHG emissions for the City for year 2035 and full buildout would not meet SJVAPCD's threshold, which is an indicator of progress toward meeting the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. Therefore, GHG impacts for the City of Clovis from full buildout of the proposed General Plan Update would not achieve the long-term GHG reductions goals under Executive Order S-03-05.

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Table 5.7-5 Year 2035 City of Clovis, SOI, and Non-SOI Plan Area Greenhouse Gas Emissions Inventory

Pollutant	2012	2035 GHG Emissions (MTCO <sub>2</sub> e/Year)			
		General Plan Update under 2035 BAU Conditions	General Plan Update under 2035 ABAU Conditions	2035 ABAU Change from 2012	2035 ABAU Change from 2035 BAU
Transportation <sup>1</sup>	370,517	817,121	572,759	202,242	(244,363)
Energy – Residential <sup>2</sup>	81,758	138,027	106,469	24,711	(31,558)
Energy – Nonresidential <sup>2</sup>	45,685	95,735	72,609	26,923	(23,126)
Waste <sup>3</sup>	22,910	39,527	39,527	16,617	0
Water/Wastewater <sup>4</sup>	23,649	40,194	30,191	6,542	(10,003)
Other – Off-road Equipment <sup>5</sup>	46,415	38,645	43,040	(3,376)	4,394
<b>Total Community Emissions</b>	<b>590,935</b>	<b>1,169,250</b>	<b>864,594</b>	<b>273,659</b>	<b>(304,655)</b>
Permitted Sources <sup>6</sup>	265,643	265,643	265,643	0	0
<b>Total Community Emissions with Permitted Sources</b>	<b>856,578</b>	<b>1,434,893</b>	<b>1,130,237</b>	<b>273,659</b>	<b>(304,655)</b>
<b>Net Change in Percentage</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>46%</b>	<b>-26%</b>
<b>Meet SJVAPCD 29 Percent Reduction from BAU Threshold?</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>No</b>
Service Population (SP) <sup>7</sup>	146,500	246,500	246,500	N/A	N/A
<b>Emissions per Service Population (SP)</b>	<b>4.0 MTCO<sub>2</sub>e/Year/SP</b>	<b>4.7 MTCO<sub>2</sub>e/Year/SP</b>	<b>3.5 MTCO<sub>2</sub>e/Year/SP</b>	<b>N/A</b>	<b>N/A</b>

Notes: Emissions forecast based on changes in population (residential energy), employment (nonresidential energy), or service population (City energy, waste, water/wastewater, transportation).

The inventory with reduction measures incorporated includes reductions identified in the Scoping Plan associated with transportation (Pavley+LCFS), energy and water/wastewater (33% RPS), and other (LCFS). The current inventory does not account for reductions in building energy use from Title 24 cycle updates.

Emissions may not total to 100% due to rounding.

<sup>1</sup> EMFAC2011. Model runs were based on daily per capita VMT data provided by Fehr and Peers.

<sup>2</sup> Electricity and natural gas usage data provided by PG&E. The carbon intensity of PG&E's purchased electricity and natural gas is based on the CO<sub>2</sub> intensity factors reported in PG&E's "Community Wide GHG Inventory Report" for City of Clovis. The intensity factors for CH<sub>4</sub> and N<sub>2</sub>O are provided by the EPA's e-GRID data for year 2009.

<sup>3</sup> Landfill Emissions Tool Version 1.3 and CalRecycle. Waste generation based on three-year average (2010–2012) waste commitment for the City of Clovis obtained from CalRecycle. Assumes 75 percent of fugitive GHG emissions are captured in the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The landfill gas capture efficiency is based on CARB's Local Government Operations Protocol (LGOP), Version 1.1. Significant CH<sub>4</sub> production typically begins one or two years after waste disposal in a landfill and continues for 10 to 60 years or longer. Therefore, the highest CH<sub>4</sub> emissions from waste disposal in a given year are reported.

<sup>4</sup> LGOP, version 1.1, based on the City's 2010 UWMP for water demand and City-provided wastewater generation rates. A 10 and 20 percent reduction is applied to the commercial and residential wastewater generation rates, respectively, per the 20x2020 Water Conservation Plan.

<sup>5</sup> OFFROAD2007. Consists of landscaping, light commercial, construction, and agricultural equipment. Landscaping and light commercial equipment emissions based on population and employment for Clovis as a percent of Fresno County. Construction and agricultural equipment emissions based on housing permit data and amount of farmland for Fresno County and Clovis from the US Census and CA Division of Land Resource Protection. Area sources exclude emissions from fireplaces and consumer products.

<sup>6</sup> Based on natural gas use data provided SJVAPCD. Permitted sources of GHG emissions are under the jurisdiction of SJVAPCD and not the City of Clovis and are shown for informational purposes only.

<sup>7</sup> Year 2035 service population consists of approximately 184,100 residents and 62,400 employees.

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**Table 5.7-6 Full Buildout City of Clovis, SOI, and Non-SOI Plan Areas Greenhouse Gas Emissions Inventory**

Pollutant	2012	Full Buildout GHG Emissions (MTCO <sub>2</sub> e/Year)			
		General Plan Update under Full Buildout BAU Conditions	General Plan Update under Full Buildout ABAU Conditions	Full Buildout ABAU Change from 2012	Full Buildout ABAU Change from 2035 BAU
Transportation <sup>1</sup>	370,517	1,451,405	1,020,041	649,524	(431,364)
Energy – Residential <sup>2</sup>	81,758	220,648	170,200	88,442	(50,448)
Energy – Nonresidential <sup>2</sup>	45,685	164,007	124,389	78,704	(39,618)
Waste <sup>3</sup>	22,910	60,902	60,902	37,992	0
Water/Wastewater <sup>4</sup>	23,649	59,949	45,041	21,393	(14,908)
Other – Off-road Equipment <sup>5</sup>	46,415	43,462	44,325	(2,091)	863
<b>Total Community Emissions</b>	<b>590,935</b>	<b>2,000,374</b>	<b>1,464,899</b>	<b>873,964</b>	<b>(535,476)</b>
Permitted Sources <sup>6</sup>	265,643	265,643	265,643	0	0
<b>Total Community Emissions with Permitted Sources</b>	<b>856,578</b>	<b>2,266,017</b>	<b>1,730,542</b>	<b>873,964</b>	<b>(535,476)</b>
<b>Net Change in Percentage</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>148%</b>	<b>-27%</b>
<b>Meet SJVAPCD 29 Percent Reduction from BAU Threshold?</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>No</b>
<b>Service Population (SP)<sup>7</sup></b>	<b>146,500</b>	<b>401,200</b>	<b>401,200</b>	<b>N/A</b>	<b>N/A</b>
<b>Emissions Per Service Population (SP)</b>	<b>4.0 MTCO<sub>2</sub>e/Year/SP</b>	<b>5.0 MTCO<sub>2</sub>e/Year/SP</b>	<b>3.7 MTCO<sub>2</sub>e/Year/SP</b>	<b>N/A</b>	<b>N/A</b>

Notes: Emissions forecast based on changes in population (residential energy), employment (nonresidential energy), or service population (City energy, waste, water/wastewater, transportation).

The inventory with reduction measures incorporated includes reductions identified in the Scoping Plan associated with transportation (Pavley+LCFS), energy and water/wastewater (33% RPS), and other (LCFS). The current inventory does not account for reductions in building energy use from Title 24 cycle updates.

Emissions may not total to 100% due to rounding.

<sup>1</sup> EMFAC2011. Model runs were based on daily per capita VMT data provided by Fehr and Peers.

<sup>2</sup> Electricity and natural gas usage data provided by PG&E. The carbon intensity of PG&E's purchased electricity and natural gas is based on the CO<sub>2</sub> intensity factors reported in PG&E's "Community Wide GHG Inventory Report" for City of Clovis. The intensity factors for CH<sub>4</sub> and N<sub>2</sub>O are provided by the EPA's e-GRID data for year 2009.

<sup>3</sup> Landfill Emissions Tool Version 1.3 and CalRecycle. Waste generation based on three-year average (2010–2012) waste commitment for the City of Clovis obtained from CalRecycle. Assumes 75 percent of fugitive GHG emissions are captured in the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The landfill gas capture efficiency is based on CARB's Local Government Operations Protocol (LGOP), Version 1.1. Significant CH<sub>4</sub> production typically begins one or two years after waste disposal in a landfill and continues for 10 to 60 years or longer. Therefore, the highest CH<sub>4</sub> emissions from waste disposal in a given year are reported.

<sup>4</sup> LGOP, version 1.1, based on the City's 2010 UWMP for water demand and City-provided wastewater generation rates. A 10 and 20 percent reduction is applied to the commercial and residential wastewater generation rates, respectively, per the 20x2020 Water Conservation Plan.

<sup>5</sup> OFFROAD2007. Consists of landscaping, light commercial, construction, and agricultural equipment. Landscaping and light commercial equipment emissions based on population and employment for Clovis as a percent of Fresno County. Construction and agricultural equipment emissions based on housing permit data and amount of farmland for Fresno County and Clovis from the US Census and CA Division of Land Resource Protection. Area sources exclude emissions from fireplaces and consumer products.

<sup>6</sup> Based on natural gas use data provided SJVAPCD. Permitted sources of GHG emissions are under the jurisdiction of SJVAPCD and not the City of Clovis and are shown for informational purposes only.

<sup>7</sup> Year 2035 service population consists of approximately 294,300 residents and 106,900 employees.

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**Impact 5.7-2: The proposed General Plan Update would not conflict with the CARB Scoping Plan or Fresno COG's proposed 2014–2040 RTP/SCS. [Threshold GHG-2]**

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**Impact Analysis:** The City of Clovis has not adopted a qualified GHG reduction plan. However, CARB adopted the 2008 Scoping Plan to identify statewide strategies to achieve the GHG reduction targets of AB 32 and the Fresno COG is anticipating adoption of the 2014–2040 RTP/SCS mid-2014 to achieve the regional per capita passenger vehicle GHG reduction targets of SB 375.

### 2035 Scenario

#### *CARB Scoping Plan*

In accordance with AB 32, CARB developed the Scoping Plan to outline the state's strategy to achieve 1990-level emissions by year 2020. To estimate the reductions necessary, CARB projected statewide 2020 BAU GHG emissions and identified that the state as a whole would be required to reduce GHG emissions by 28.5 percent from year 2020 BAU to achieve the targets of AB 32 (CARB 2008). Since release of the 2008 Scoping Plan, CARB has updated the 2020 GHG BAU forecast to reflect GHG emissions in light of the economic downturn and measures not previously considered in the 2008 Scoping Plan baseline inventory. The revised BAU 2020 forecast shows that the state would have to reduce GHG emissions by 21.6 percent from BAU or 15.7 percent from the adjusted baseline (i.e., with Pavley and 33 percent RPS) (CARB 2012b).

Since adoption of the 2008 Scoping Plan, state agencies have adopted programs identified in the Scoping Plan, and the legislature has passed additional legislation to achieve the GHG reduction targets. Statewide strategies to reduce GHG emissions include the LCFS and changes in the corporate average fuel economy standards (e.g., Pavley I and 2017–2025 CAFE standards). The GHG emissions in Table 5.7-5 and Table 5.7-6 include reductions from the Pavley fuel efficiency improvements (adopted in 2009). These statewide measures are applicable uniformly throughout the state, and all future developments under the proposed land use plan would be in compliance. Table 5.7-7, *Statewide GHG Emissions Reduction Strategies*, provides a summary of the statewide strategies and the associated GHG emissions reductions when integrated into the proposed General Plan Update. In addition to these statewide strategies, the proposed General Plan Update policies listed in Section 5.7.4 would also contribute to reducing GHG emissions. Therefore, the proposed General Plan Update would be consistent with the Scoping Plan, and impacts are considered less than significant.

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**Table 5.7-7 Statewide GHG Emissions Reduction Strategies**

Policy/Action	Policy/Implementation Action Description	Reduction in MTCO <sub>2e</sub>	
		2035	Full Buildout
<b>Circulation/Land Use</b>		<b>-244,363 MTCO<sub>2e</sub></b>	<b>-431,364 MTCO<sub>2e</sub></b>
Pavley I	Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA.		
Advanced Clean Car (Pavley II)	The Advanced Clean Car program is a multifaceted approach focused on controlling smog, soot, and reducing GHG emissions from passenger vehicles for model years 2015 to 2025. It is designed to extend beyond Pavley I (i.e., 2016). The program is anticipated to reduce GHG emissions by 12 percent in year 2025.		
LCFS	The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The LCFS applies to refiners, blenders, producers, and importers of transportation fuels and uses market-based mechanisms to allow providers to use the most economically feasible methods to reduce emissions during the fuel cycle.		
<b>Energy Efficiency and Use</b>		<b>-64,687 MTCO<sub>2e</sub></b>	<b>-104,974 MTCO<sub>2e</sub></b>
Title 24 Energy Standards	Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977 and updated triannually to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2013 Building and Energy Efficiency Standards went into effect on January 1, 2014. Buildings that are constructed in accordance with the 2013 Building and Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.		
Title 24 CALGreen	In 2008, the California Green Building Standards Code (CALGreen) was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency, water conservation, material conservation, and internal air contaminants.		
33% RPS	Executive Order S-14-08 was signed in November 2008 and expands the state's renewable energy standard to 33 percent renewable power by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable electricity production will decrease indirect GHG emissions from development projects, because electricity production from renewable sources is generally considered carbon neutral.		
Title 25	The 2006 Appliance Efficiency Regulations were adopted by the California Energy Commission and approved by the California Office of Administrative Law in 2006. The regulations include standards for both federally regulated appliances and nonfederally regulated appliances.		
<b>Total GHG Reductions</b>		<b>-309,049 MTCO<sub>2e</sub></b>	<b>-536,338 MTCO<sub>2e</sub></b>

### *Fresno COG Regional Transportation Plan/Sustainable Communities Strategy*

The proposed Fresno COG 2014–2040 RPT/SCS is a regional growth management strategy that targets per capita GHG reduction from passenger vehicles and light duty trucks in the Fresno COG region. The 2014–2040 RTP/SCS incorporates local land use projections and circulation networks from the local general plans. The projected regional development pattern—including location of land uses and residential densities in local general plans—when integrated with the proposed regional transportation network in the 2014–2040 RTP/SCS, would reduce per capita vehicular travel-related GHG emissions and achieve the regional GHG reduction per capita targets for the Fresno COG region. The per capita targets for the region are 5 percent below the 2005 baseline by year 2020 and 10 percent by year 2035. The proposed 2014–2040 RTP/SCS identifies that the Fresno COG region will meet its per capita targets for both 2020 and 2035 at 9 percent and 11 percent, respectively. Strategies identified in the 2014–2040 RTP/SCS are listed in Table 5.7-8, *Fresno Council of Governments RTP/SCS Consistency*

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*Analysis.* As shown in the table, the proposed General Plan Update would be consistent with strategies in Fresno COG’s proposed 2014–2040 RTP/SCS.

**Table 5.7-8 Fresno Council of Governments 2014-2040 RTP/SCS Consistency Analysis**

Sustainability Strategies	Compliance with Principle	Related General Plan Update Policies
Transportation Demand Management	<p><b>Consistent:</b> Transportation Demand Management (TDM) programs are designed to reduce automobile usage by changing traveling behavior and encouraging the use of transportation modes other than single occupant vehicles. TDM strategies in Fresno County include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Measure C Carpool Incentive program, which provides incentives to commuters who share a ride to work or school with at least one other person.</li> <li>• Measure C Commuter and Farmworker Vanpool Subsidy programs, which provide subsidies and reimbursements to new and existing commuter vanpools.</li> <li>• CalVans is a Joint Powers Public Transportation Agency comprised of a number of Local Transportation Planning Agencies. They run a multicounty vanpool program for commuters and agricultural workers.</li> <li>• Fresno COG’s Valleyrides.com website and Carpool App offer commuters free ride matching, and houses the information needed to participate in the Measure C Carpool and Vanpool Programs.</li> <li>• Flex-time work schedules with employers to reduce congestion at peak times.</li> <li>• Other trip reduction programs</li> </ul> <p>Policies in the Air Quality Element of the proposed General Plan Update would encourage inclusion of vehicle charging stations at nonresidential land uses and the creation of employer-based programs to reduce vehicle miles traveled by employees.</p>	AQ Policies 1.6 and 1.7
Transportation Systems Management:	<p><b>Consistent:</b> The Transportation Systems Management (TSM) approach to congestion mitigation and GHG emission reduction seeks to identify improvements to enhance and optimize the existing transportation systems. Through better management and operation of existing transportation facilities, these techniques are designed to improve traffic flow, air quality, and movement of vehicles and goods, as well as enhance safety. TSM measures include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Intersection operational improvements, including traffic signal synchronization</li> <li>• Geometric changes and bottleneck alleviation</li> <li>• Arterial access management</li> <li>• Traffic/Freeway management system.</li> <li>• Special events management strategies.</li> <li>• Incident Management/emergency services</li> </ul>	Circulation Policies 2.1 through 2.4, 6.1, and 7.1 through 7.3.

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**Table 5.7-8 Fresno Council of Governments 2014-2040 RTP/SCS Consistency Analysis**

Sustainability Strategies	Compliance with Principle	Related General Plan Update Policies
	The Circulation Element contains policies that support improvements to the existing transportation network of the City.	
Public Transit:	<p><b>Consistent:</b> The 2014–2040 RTP/SCS calls for an expansion and improvement of the public transit network and transit service on new and existing routes, resulting in greater transit accessibility and connectivity throughout the region. Transit expansion and improvement include the addition of new corridors and improving the service of existing ones, first bus rapid transit (BRT) system, and implementation of the California High-Speed Train (HST) project. The BRT corridors are planned for Shaw Avenue from Highway City on the west to Fowler Avenue in the City of Clovis on the east.</p> <p>The proposed General Plan Update contains policies that directly and indirectly support increased public transportation options for the City.</p>	Circulation Policies 1.1 through 1.3 and 4.4 through 4.7.
Bike and Pedestrian Facilities	<p><b>Consistent:</b> The 2014–2040 RTP/SCS also includes a notable increase in the regional active transportation network for walking and bicycling. Active transportation is an essential part of the Fresno COG transportation system, is low cost, does not emit GHGs, can help reduce roadway congestion, and increases health and the quality of life of residents. This emphasis signifies an important opportunity to advance the goals of SB 375 by increasing nonmotorized modes of transportation, thereby expanding access to a variety of land uses and transit and improving public health and air quality. A total of \$94 million is proposed in the 2014–2040 RTP/SCS to fund bike and pedestrian projects.</p> <p>The Circulation Element of the proposed General Plan Update contains policies that support improvements to pedestrian and bike facilities.</p>	Circulation Policies 1.1 through 1.3, 1.7, 4.1 through 4.4, and 5.1 through 5.5.

Source: Fresno COG 2014–2040 RTP/SCS.

### Full Buildout

The analysis above for the 2035 Scenario also applies to full buildout of the General Plan Update.

### 5.7.4 Relevant General Plan Policies and Development Code Sections

The following are relevant policies of the proposed Clovis General Plan and Development Code Update that would reduce potential greenhouse gas impacts of future development under the proposed land use plan.

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### Air Quality Element

**Goal 1:** A local environment that is protected from air pollution and emissions.

- **Policy 1.1 Land use and transportation** - Reduce greenhouse gas and other local pollutant emissions through mixed use and transit-oriented development and well-designed transit, pedestrian, and bicycle systems.
- **Policy 1.4 City buildings** - Require that municipal buildings be designed to exceed energy and water conservation and reduction standards set in the California Building Code.
- **Policy 1.5 Fleet operations** - Purchase low- or zero-emission vehicles for the City's fleet. Use clean fuel sources for city-owned mass transit vehicles, trucks and heavy equipment where feasible.
- **Policy 1.6 Employment measures** - Encourage employers to provide programs, scheduling options, incentives, and information to reduce vehicle miles traveled by employees.

**Goal 2:** A region with healthy air quality and lower greenhouse gas emissions.

- **Policy 2.1 Regional coordination** - Support regional efforts to reduce air pollution (criteria air pollutants and greenhouse gas emissions) and collaborate with other agencies to improve air quality at the emission source and reduce vehicle miles traveled.
- **Policy 2.2 Cross-jurisdictional issues** - Collaborate with regional agencies and surrounding jurisdictions to address cross-jurisdictional transportation and air quality issues.
- **Policy 2.3 Valley wide programs** - Establish parallel air quality programs and implementation measures across the San Joaquin Valley.
- **Policy 2.4 Public participation** - Encourage participation of local citizens, the business community, and interested groups and individuals in air quality planning and implementation.
- **Policy 2.5 Public education** - Promote programs that educate the public about regional air quality issues and solutions.
- **Policy 2.6 Innovative mitigation** - Encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties.

### Circulation Element

**Goal 1:** A context-sensitive and “complete streets” transportation network that prioritizes effective connectivity and accommodates a comprehensive range of mobility needs.

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- **Policy 1.1 Multimodal network** - The City shall plan, design, operate, and maintain the transportation network to promote safe and convenient travel for all users: pedestrian, bicyclists, transit riders, freight, and motorists.
- **Policy 1.2 Transportation decisions** - Decisions should balance the comfort, convenience, and safety of pedestrians, bicyclists, and motorists.
- **Policy 1.4 Jobs and housing** - Encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles traveled and effectively utilize the existing transportation infrastructure.
- **Policy 1.5 Neighborhood connectivity** - The transportation network shall provide multimodal access between neighborhoods and neighborhood-serving uses (educational, recreational, or neighborhood commercial uses).
- **Policy 1.7 Narrow Streets** - The City may permit curb-to-curb dimensions that are narrower than current standards on local streets to promote pedestrian and bicycle connectivity and enhance safety.

**Goal 3:** A multimodal transportation network that is safe and comfortable in the context of adjacent neighborhoods.

- **Policy 3.3 Old Town and Mixed Use Village Centers** - Transportation decisions on local streets in Old Town and mixed-use village centers shall prioritize pedestrians, then bicyclists, then mass transit, then motorists.
- **Policy 3.11 Right-of-way design** - Design landscaped parkways, medians, and right-of-ways as aesthetic buffers to improve the community's appearance and encourage non-motorized transportation.

**Goal 4:** A bicycle and transit system that services as a functional alternative to commuting by car.

- **Policy 4.1 Bike and transit backbone** - The bicycle and transit system should connect Shaw Avenue, Old Town, the Medical Center./R&T Park, and the three Urban Centers.
- **Policy 4.2 Priority for new bicycle facilities** - Prioritize investments in the backbone system over other bicycle improvements.
- **Policy 4.3 Freeway crossings** - Require separate bicycle and pedestrian crossings for new freeway extensions and encourage separate crossings where Class I facilities are planned to cross existing freeways.
- **Policy 4.4 Bicycles and transit** - Coordinate with transit agencies to integrate bicycle access and storage into transit vehicles, bus stops, and activity centers.

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- **Policy 4.5 Transit stops** - Improve and maintain safe, clean, comfortable, well-lit, and rider-friendly transit stops that are well marked and visible to motorists.
- **Policy 4.6 Transit priority corridors** - Prioritize investments for, and transit services and facilities along the transit priority corridors.
- **Policy 4.7 Bus rapid transit** - Plan for bus rapid transit and transit-only lanes on transit priority corridors as future ridership levels increase.

**Goal 5:** A complete system of trails and pathways accessible to all residents.

- **Policy 5.1 Complete street amenities** - Upgrade existing streets and design new streets to include complete street amenities, prioritizing improvements to bicycle and pedestrian connectivity or safety (consistent with the Bicycle Transportation Master Plan and other master plans).
- **Policy 5.2 Development-funded facilities** - Require development to fund and construct facilities as shown in the Bicycle Transportation Plan when facilities are in or adjacent to the development.
- **Policy 5.3 Pathways** - Encourage pathways and other pedestrian amenities in Urban Centers and new development 10 acres or larger.
- **Policy 5.4 Homeowner associations** - The city may require homeowner associations to maintain pathways and other bicycle and pedestrian facilities within the homeowner association area.
- **Policy 5.5 Pedestrian access** - Require sidewalks, paths, and crosswalks to provide access to schools, parks, and other activity centers and to provide general pedestrian connectivity throughout the city..

### Land Use Element

**Goal 5:** A city with housing, employment, and lifestyle opportunities for all ages and incomes of residents.

- **Policy 5.4 Transit oriented development** - Encourage the provision of retail and employment opportunities in areas served by transit-dependent population.

### Economic Development Element

**Goal 1:** Regionally and globally competitive office and industrial employment centers that deliver desirable career opportunities for residents, create wealth-building opportunities for entrepreneurs, and attract private investment.

- **Policy 1.2 Jobs-housing ratio** - Improve the city's job-housing ratio by promoting growth in jobs suited to the skills and education of current and future residents with the objective of an equal number of jobs and employed residents.

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#### Open Space and Conservation Element

**Goal 2:** Natural, agricultural, and historic resources that are preserved and promoted as key features for civic pride and identity.

- **Policy 2.2 New development** - Encourage new development to incorporate on-site natural resources and low impact development techniques.

**Goal 3:** A built environment that conserves and protects the use and quality of water and energy resources.

- **Policy 3.4 Drought-tolerant landscaping** - Promote water conservation through use of drought-tolerant landscaping on existing and new residential properties. Require drought-tolerant landscaping for all new commercial and industrial development and city-maintained landscaping, unless used for recreation purposes.
- **Policy 3.5 Energy and water conservation** - Encourage new development and substantial rehabilitation projects to exceed energy and water conservation and reduction standards set in the California Building Code.
- **Policy 3.6 Renewable Energy** - Promote the use of renewable and sustainable energy sources to serve public and private sector development.
- **Policy 3.7 Construction and design** - Encourage new construction to incorporate energy efficient building and site design strategies.

#### Development Code

- Article 3 (Development and Operational Standards), Division 9.22 (Performance Standards), Section 9.22.030 (Air Quality)

### 5.7.5 Existing Plans, Policies, and Programs

- **Executive Order S-3-05:** Greenhouse Gas Emission Reduction Targets
- **AB 32:** California Global Warming Solutions Act
- **SB 375:** Sustainable Communities Strategies
- **AB 1493:** Pavley Fuel Efficiency Standards
- **Title 20 California Code of Regulations:** Appliance Energy Efficiency Standards
- **Title 17 California Code of Regulations:** Low Carbon Fuel Standard
- **AB 1881:** California Water Conservation in Landscaping Act of 2006
- **SB 1368:** Statewide Retail Provider Emissions Performance Standards
- **SB 1078:** Renewable Portfolio Standards
- **Title 24, Part 6, California Code of Regulations:** Building and Energy Efficiency Standards
- **Title 24, Part 11, California Code of Regulations:** Green Building Standards Code

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### 5.7.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impact would be less than significant for the 2035 Scenario and Full Buildout: 5.7-2.

Without mitigation, the following impact would be **potentially significant** for the 2035 Scenario and Full Buildout:

- **Impact 5.7-1** Implementation of the proposed General Plan Update would result in a substantial increase in GHG emissions for year 2035 and full buildout compared to existing conditions. Additionally, although community-wide GHG emissions of the proposed General Plan Update at year 2035 and full buildout would be less under adjusted BAU conditions compared to BAU conditions, the proposed General Plan Update would not meet the SJVAPD threshold of 29 percent below BAU and would also not meet the long-term reduction target of Executive Order S-03-05.

### 5.7.7 Mitigation Measures

#### Impact 5.7-1

##### *2035 Scenario and Full Buildout*

Apply SC-1 and Mitigation Measures 3-3 and 3-4, identified in Section, 5.3, *Air Quality*. Compliance with statewide measures would reduce GHG emissions associated with implementation of the proposed General Plan Update.

7-1 Prior to issuance of construction permits, the City of Clovis Planning Division shall require that applicants for new development projects submit documentation showing that greenhouse gas (GHG) emissions meet a 29 percent reduction from business-as-usual (BAU) in accordance with the methodology identified by the San Joaquin Valley Air Pollution Control District (SJVAPCD). The documentation shall identify measures to be incorporated into the considered project that would reduce GHG emissions from BAU. Such measures include, but are not limited to the following:

- Provide a pedestrian access network that internally links all uses and connects to existing external streets and pedestrian facilities.
- Provide the minimum number of parking spaces required.
- Create a shared parking program, as feasible.
- Provide bicycle end-of-trip facilities (e.g., bike parking, showers, and lockers).
- Develop rideshare and ride-matching assistance programs.
- For planned residential development, design and incorporate a neighborhood electric vehicle system.

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- Design buildings to be electric vehicle charging-station-ready.
- Coordinate with the City of Clovis and/or the Fresno Area Express to install bus stops at or near the project site.
- Design buildings to be energy efficient beyond the requirements of Title 24.
- Design and orient structures to maximize shade in the summer and sun exposure in the winter.
- Install vegetative roofs that cover at least 50 percent of the roof area.
- Design buildings to incorporate passive solar design and solar heaters.
- Install solar panels on carports and parking areas.
- Limit nonessential idling of commercial vehicles beyond Air Toxic Control Measures idling restrictions.

#### 5.7.8 Level of Significance After Mitigation

##### Impact 5.7-1

###### *2035 Scenario and Full Buildout*

Compliance with statewide measures would reduce GHG emissions associated with implementation of the proposed General Plan Update. Implementation of the proposed General Plan Update would also improve the job-to-housing ratio (see Table 5.13-9), which would contribute to the reduction of total vehicle miles traveled in the Plan Area and reduce GHG emissions per capita. Furthermore, the policies in the proposed General Plan Update and the addition of Mitigation Measures 3-3, 3-4, (see Section, 5.3, *Air Quality*), and 7-1 would ensure that GHG emissions from buildout of the proposed General Plan Update would be minimized to the extent feasible.

However, due to the magnitude of the proposed General Plan Update's development, its implementation would result in a substantial increase in GHG emissions over existing conditions in year 2035 and full buildout and would not meet the SJVAPCD threshold of 29 percent below BAU. Additional statewide measures would be necessary to reduce GHG emissions under the proposed General Plan Update to meet the SJVAPCD threshold and the reduction target of Executive Order S-03-05. As identified by the California Council on Science and Technology, the state cannot meet the 2050 goal without major advancements in technology (CCST 2012). Since no additional statewide measures to reduce emissions beyond year 2020 are available, Impact 5.7-1 would be significant and unavoidable.

#### 5.7.9 References

Climate Action Team (CAT). 2006, March. Climate Action Team Report to Governor Schwarzenegger and the Legislature.

## 5. Environmental Analysis GREENHOUSE GAS EMISSIONS

- California Air Resources Board. 2014, February 10. Proposed First Update to the Climate Change Scoping: Building on the Framework.  
[http://www.arb.ca.gov/cc/scopingplan/2013\\_update/draft\\_proposed\\_first\\_update.pdf](http://www.arb.ca.gov/cc/scopingplan/2013_update/draft_proposed_first_update.pdf).
- . 2013, January 15. Staff Report Update on Senate Bill 375 Implementation in the San Joaquin Valley.  
[http://www.arb.ca.gov/cc/sb375/finalstaffreport\\_011513.pdf](http://www.arb.ca.gov/cc/sb375/finalstaffreport_011513.pdf).
- . 2012a, April. California Greenhouse Gas Inventory for 2000–2009. By Category as Defined by the Scoping Plan.
- . 2012b. Status of Scoping Plan Recommended Measures.  
[http://www.arb.ca.gov/cc/scopingplan/status\\_of\\_scoping\\_plan\\_measures.pdf](http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf).
- . 2011. EMFAC2011.
- . 2011, November 14. Landfill Emissions Tool Model, Version 1.3.
- . 2010a, August. Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375. Staff Report.
- . 2010, May. Local Government Operations Protocol (LGOP), Version 1.1.
- . 2008, October. Climate Change Proposed Scoping Plan: A Framework for Change.
- California Council on Science and Technology (CCST). 2012, September. California’s Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets.  
<http://www.ccst.us/publications/2012/2012ghg.pdf>.
- California's Department of Resources Recycling and Recovery (CalRecycle). 2014, Disposal Reporting System, Jurisdiction Reporting by Facility,  
<http://www.calrecycle.ca.gov/LGCentral/Reports/DRS/Destination/JurDspFa.aspx>.
- California Energy Commission (CEC). 2012, May. Renewables Portfolio Standard Eligibility, Fifth Edition Commission Guidebook. <http://www.energy.ca.gov/2012publications/CEC-300-2012-002/CEC-300-2012-002-CMF.pdf>.
- . 2008. The Future Is Now: An Update on Climate Change Science, Impacts, and Response Options for California. CEC-500-2008-0077.
- . 2006a, December. Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004. Report CEC-600-2006-013-SF.
- . 2006b. Our Changing Climate: Assessing the Risks to California. 2006 Biennial Report. CEC-500-2006-077.

## 5. Environmental Analysis

### GREENHOUSE GAS EMISSIONS

- . 2006c, December. Refining Estimates of Water-Related Energy Use in California. CEC-500-2006-118. Prepared by Navigant Consulting, Inc. Based on the electricity use for Northern California.
- Clovis, City. 2011, November. Urban Water Management Plan 2010 Update. Prepared by Provost & Pritchard Consulting Group.  
<http://www.water.ca.gov/urbanwatermanagement/2010uwmps/Clovis,%20City%20of/20111213%20Clovis%202010%20UWMP.pdf>.
- Fresno Council of Governments. 2014, March. Draft 2014-2040 Regional Transportation Plan & Sustainable Communities Strategy.  
[http://www.fresnocog.org/sites/default/files/publications/RTP/Draft\\_RTP/Draft\\_2014\\_RTP.pdf](http://www.fresnocog.org/sites/default/files/publications/RTP/Draft_RTP/Draft_2014_RTP.pdf).
- Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press.
- . 2001. “2001 IPCC Third Assessment Report: Climate Change 2001.
- Governor’s Office of Planning and Research (OPR). 2008, June. Technical Advisory, CEQA and Climate Change: Addressing Climate Change Through CEQA Review.  
<http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>.
- San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009a, December 17. Guidance for Valley Land-Use Agencies in Addressing GHG Emissions for New Projects.
- . 2009b, December 17. Climate Change Action Plan, Final Staff Report, Addressing Greenhouse Gas Emissions Impacts under the California Environmental Quality Act.
- US Environmental Protection Agency (EPA). 2013, December 5. The Green Book Nonattainment Areas for Criteria Air Pollutants. <http://www.epa.gov/air/oaqps/greenbk/index.html>.
- . eGRID2012 Version 1.0 Year 2009 GHG Annual Emission Rates.  
[http://www.epa.gov/cleanenergy/documents/egridziips/eGRID2012V1\\_0\\_year09\\_GHGOutputrates.pdf](http://www.epa.gov/cleanenergy/documents/egridziips/eGRID2012V1_0_year09_GHGOutputrates.pdf).