4.8 GREENHOUSE GAS EMISSIONS

This section summarizes existing greenhouse gas (GHG) emissions and discusses global climate change, its causes, and the contribution of human activities. This section also estimates the likely GHG emissions that would result from construction and operational activities associated with implementation of the proposed Specific Plan, including vehicular traffic, energy consumption and other emission sources. Mitigation measures are recommended where appropriate to reduce impacts to a less-than-significant level. The analysis performed for this section is based on the anticipated buildout as described in Chapter 3, Project Description, and as included in Table 3.A, and the San Joaquin Valley Air Pollution Control District (SJVAPCD) *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI).[1]

4.8.1 Environmental Setting

The following discussion describes existing GHG emissions in the City of Madera (City) and the Central Valley, beginning with a discussion of typical GHG types and sources, impacts of global climate changes, the regulatory framework surrounding these issues, and current emission levels.

4.8.1.1 Specific Plan Area

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

The study area for project impacts regarding GHG emissions is the City of Madera because potential development under the proposed Specific Plan is limited to areas within the Specific Plan Area where the emissions are generated. However, it should be noted that GHG impacts are inherently cumulative impacts. The study area for the analysis of cumulative GHG impacts is the State of California. This analysis is based on a summary of projections approach as provided in Section 15130(b)(1)(B) of the California Environmental Quality Act (CEQA) Guidelines. The applicable projections include those provided by the State pursuant to Assembly Bill (AB) 32 and the California Air Resources Board (CARB) Scoping Plan prepared to address AB 32 requirements.

4.8.1.2 Background

The following discussion describes existing GHG emissions in the City of Madera and the SJVAB, beginning with a discussion of typical GHG types and sources, impacts of global climate changes, the regulatory framework surrounding these issues, and current emission levels.

Global Climate Change. Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. The Earth's average near-surface atmospheric temperature rose 0.6 ± 0.2° Celsius (°C) or 1.1 ± 0.4° Fahrenheit (°F) in the 20th century. The prevailing scientific consensus on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and

[1] San Joaquin Valley Air Pollution Control District. 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. Website: www.valleyair.org/transportation/ceqa_idx.htm (accessed February 2020). March 19.

other GHGs are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.[2]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are the following:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this air quality analysis, the term "GHGs" will refer collectively to the six gases listed above only.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to carbon dioxide, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e). Table

[2] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

4.8.A shows the GWP for each type of GHG. For example, sulfur hexafluoride is 22,800 times more potent at contributing to global warming than carbon dioxide.

Table 4.8.A: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: Intergovernmental Panel on Climate Change (2007). *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

The following discussion summarizes the characteristics of the six GHGs and black carbon.

Carbon Dioxide. In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic out gassing, decomposition of organic matter and evaporation from the oceans. Human caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural sources release approximately 150 billion tons of CO_2 each year, far outweighing the 7 billion tons of man-made emissions of CO_2 each year. Nevertheless, natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO_2, and consequently, the gas is building up in the atmosphere.

In 2017, total annual CO_2 emissions in California were approximately 351 million tons, accounting for approximately 83 percent of California's overall GHG emissions.[3] Transportation is the single largest source of CO_2 in California, approximately 47 percent, which is primarily comprised of on-road travel. Electricity production, industrial and residential sources also make important contributions to CO_2 emissions in California.

Methane. Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also significant sources of CH_4 in California. Total

[3] California Air Resources Board. 2020. *GHG Descriptions and Sources in California*. Website: ww2.arb.ca.gov/ghg-descriptions-sources (accessed February 2020).

annual emissions of methane in California are approximately 39.9 million tons, accounting for approximately 9.0 percent of GHG emissions in California in 2017.[4]

Nitrous Oxide. Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. Nitrous oxide emissions accounted for approximately 3 percent of GHG emissions in California in 2017.[5]

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride. HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[6] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry has resulted in greater use of PFCs. HFCs, PFCs, and SF_6 accounted for about 5 percent of GHG emissions in California in 2017.[7]

Black Carbon. Black carbon is the most strongly light-absorbing component of particulate matter (PM) formed by burning fossil fuels such as coal, diesel, and biomass. Black carbon is emitted directly into the atmosphere in the form of particulate matter less than 2.5 microns in size ($PM_{2.5}$) and is the most effective form of PM, by mass, at absorbing solar energy. Per unit of mass in the atmosphere, black carbon can absorb one million times more energy than CO_2.[8] Black carbon contributes to climate change both directly, such as absorbing sunlight, and indirectly, such as affecting cloud formation. However, because black carbon is short-lived in the atmosphere, it can be difficult to quantify its effect on global-warming.

Most U.S. emissions of black carbon come from mobile sources (52 percent), particularly from diesel fueled vehicles.[9] The other major source of black carbon is open biomass burning, including wildfires, although residential heating and industry also contribute. Black carbon

4 Ibid.

5 Ibid.

6 The Montreal Protocol is an international treaty that was approved on January 1, 1989 and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

7 Ibid.

8 U.S. Environmental Protection Agency. 2017. Black Carbon, Basic Information. Website: https://19january2017snapshot.epa.gov/air-research/black-carbon-research_.html (accessed April 28, 2020). February 14.

9 Ibid.

emissions in the U.S. are projected to decline substantially by 2030, largely due to controls on new mobile diesel emissions.[10]

Effects of Global Climate Change. Effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme weather events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture. Global climate change may also contribute to air quality problems from increased frequency of smog and particulate air pollution.[11]

Additionally, according to the 2006 California Climate Action Team (CAT) Report,[12] the following climate change effects, which are based on trends established by the United Nations Intergovernmental Panel on Climate Change (IPCC), can be expected in California over the course of the next century:

- The loss of sea ice and mountain snow pack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;[13]

- Rise in global average sea level, primarily due to thermal expansion and melting of glaciers and ice caps in the Greenland and Antarctic ice sheets;[14]

- Changes in weather that include widespread changes in precipitation, ocean salinity, wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;[15]

- Decline of the Sierra snowpack, which accounts for approximately one-half of the surface water storage in California by 70 percent to as much as 90 percent over the next 100 years;[16]

- Increase in the number of days conducive to ozone (O_3) formation by 25–85 percent (depending on the future temperature scenario) in high O_3 areas of Los Angeles and the San Joaquin Valley by the end of the 21st century;[17] and

10 Ibid.

11 U.S. Environmental Protection Agency. 2016. Climate Impacts on Human Health. Website: 19january 2017snapshot.epa.gov/climate-impacts/climate-impacts-human-health_.html (accessed April 28, 2020).

12 California Environmental Protection Agency. 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

13 Ibid.

14 Ibid.

15 Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*. February.

16 California Environmental Protection Agency. 2006, op. cit.

- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.[18]

A summary of these potential effects are identified in Table 4.8.B.

Table 4.8.B: Potential Impacts of Global Warming and Expected Consequences for California

Potential Water Resource Impacts	Anticipated Consequences Statewide
Reduction of the State's average annual snowpack	• Specifically, the decline of the Sierra snowpack, would lead to a loss in half of the surface water storage in California by 70% to 90% over the next 100 years • Potential loss of 5 million acre-feet or more of average annual water storage in the State's snowpack • Increased challenges for reservoir management and balancing the competing concerns of flood protection and water supply • Higher surface evaporation rates with a corresponding increase in tropospheric water vapor
Rise in average sea level	• Potential economic impacts related to coastal tourism, commercial fisheries, coastal agriculture, and ports • Increased risk of flooding, coastal erosion along the State's coastline, seawater intrusion into the Delta and levee systems
Changes in weather	• Changes in precipitation, ocean salinity, and wind patterns • Increased likelihood for extreme weather events, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones
Changes in the timing, intensity, location, amount, and variability of precipitation	• Potential increased storm intensity and increased potential for flooding • Possible increased potential for droughts • Long-term changes in vegetation and increased incidence of wildfires • Changes in the intensity and timing of runoff • Possible increased incidence of flooding and increased sedimentation • Sea level rise and inundation of coastal marshes and estuaries • Increased salinity intrusion into the Sacramento-San Joaquin River Delta (Delta) • Increased potential for Delta levee failure • Increased potential for salinity intrusion into coastal aquifers (groundwater) • Increased potential for flooding near the mouths of rivers due to backwater effects
Increased water temperatures	• Increased environmental water demand for temperature control • Possible increased problems with foreign invasive species in aquatic ecosystems • Potential adverse changes in water quality, including the reduction of dissolved oxygen levels • Possible critical effects on listed and endangered aquatic species
Changes in urban and agricultural water demand	• Changes in demand patterns and evapotranspiration
Increase in the number of days conducive to O_3 formation	• Increased temperatures • Potential health effects, including adverse impacts to respiratory systems

Source: U.S. Department of the Interior, *Environmental Water Account Draft Supplemental EIS/EIR to the Environmental Water Account Final EIS/EIR, Bureau of Reclamation Mid-Pacific Region*, Sacramento, California (October 2007).
EIR = Environmental Impact Report
EIS = Environmental Impact Statement
O_3 = ozone

17 California Environmental Protection Agency. 2006, op. cit.
18 Ibid.

Emissions Inventories. An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, United States, and California GHG emission inventories.

Global Emissions.Worldwide emissions of GHGs in 2016 totaled approximately 26 billion metric tons of CO_2e.[19] Global estimates are based on country inventories developed as part of the programs of the United Nations Framework Convention on Climate Change (UNFCCC).

United States Emissions. In 2018, the United States emitted about 6,677.8 million metric tons of CO_2e. The total 2018 CO_2e emissions represent a 3.7 percent increase from 1990 to 2018, down from a high of 15.2 percent above 1990 levels in 2007. Overall, net emissions in 2018 increased 3.2 percent since 2017 and decreased 10.2 percent from 2005 levels. Of the six major sectors – residential, commercial, agricultural, industry, transportation, and electricity generation – transportation accounted for the highest amount of GHG emissions in 2018 (approximately 27.9 percent), with electricity generation second at 26.9 percent and emissions from industry third at 22.2 percent.[20]

State of California Emissions.According to CARB emission inventory estimates, the State emitted approximately 424.1 million metric tons of CO_2e (million metric tons CO_2e) emissions in 2017. This is a decrease of 4.9 million metric tons CO_2e since 2016.[21]

The CARB estimates that transportation was the source of approximately 41 percent of the State's GHG emissions in 2017, followed by industrial sources at 24 percent and electricity generation at 15 percent. The remaining sources of GHG emissions were agriculture at 8 percent, residential activities at 7 percent and commercial activities at 5 percent.[22]

City of Madera Emissions. The City of Madera prepared a community-wide GHG emissions inventory as part of the Climate Action Plan to identify the major sources and quantities of GHG emissions produced within the City of Madera's jurisdictional boundaries in 2007 and forecast how emissions may change over time. The community-wide inventory provides information on the scale of emissions from various sources and where the opportunities to reduce emissions lie. It also provides a baseline against which the City can measure its progress in reducing GHG emissions

19 United Nations Climate Change. 2016. GHG data from UNFCCC. Website: unfccc.int/process/transparency-and-reporting/greenhouse-gas-data/ghg-data-unfccc (accessed April 28, 2020).

20 U.S. Environmental Protection Agency. 2020. Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018. Available online at: www.epa.gov/sites/production/files/2020-02/documents/us-ghg-inventory-2020-main-text.pdf (accessed April 28, 2020).

21 California Air Resources Board. 2019. GHG Current California Emission Inventory Data. Website: ww2.arb.ca.gov/ghg-inventory-data (accessed April 28, 2020).

22 Ibid.

As shown in Table 4.8.C, the City as a whole emitted approximately 324,690 metric tons of CO_2e from the residential energy, commercial/industrial energy, transportation and mobile sources, solid waste, water, and wastewater sectors. As shown in Table 4.8.C, the largest contributors of GHG emissions were the transportation and mobile sources (58 percent), residential energy (20 percent), and commercial/industrial energy (17 percent) sectors. The remainder of emissions resulted from the solid waste (4 percent), water (1 percent) and wastewater (less than 1 percent) sectors.

Table 4.8.C: 2007 Community-Wide GHG Emissions by Sector

Sector	Description	GHG Emissions (Metric Tons CO_2e)	Percent of Total
Residential Energy	Electricity and natural gas consumption in residential buildings.	65,210	20
Commercial/ Industrial Energy	Electricity and natural gas consumption in non-residential buildings.	54,387	17
Transportation and Mobile Sources	Vehicle miles traveled (VMT)[1] and fuel consumption in on-road vehicles and off-road equipment.	188,585	58
Solid Waste	Solid waste generated and sent to landfills.	12,973	4
Water	Electricity and natural gas used to convey and treat potable water.	2,840	1
Wastewater	Electricity used to convey and treat wastewater and wastewater treatment process emissions	695	<1
	Total	**324,690**	**100**

Source: City of Madera (2015).

4.8.1.3 Regulatory Context

This section describes regulations related to GHG emissions at the federal, State, and local level.

Federal Regulations. The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the United States Environmental Protection Agency (USEPA) has the authority to regulate CO_2 emissions under the federal Clean Air Act. While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the USEPA commenced several actions in 2009 to implement a regulatory approach to global climate change.

This includes the 2009 USEPA final rule for mandatory reporting of GHGs from large GHG emission sources in the United States. Additionally, the USEPA Administrator signed an endangerment finding action in 2009 under the Clean Air Act, finding that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change, leading to national GHG emission standards.

State Regulations. The CARB is the lead agency for implementing climate change regulations in the State. Since its formation, the CARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems. Key efforts by the State are described below.

Assembly Bill 1493 (2002). In a response to the transportation sector's significant contribution to California CO_2 emissions, Assembly Bill 1493 (AB 1493) was enacted on July 22, 2002. AB 1493 requires the CARB to set GHG emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. These standards (starting in model years 2009 to 2016) were approved by the CARB in 2004, but the needed waiver of CAA Preemption was not granted by the USEPA until June 30, 2009. The CARB responded by amending its original regulation, now referred to as Low Emission Vehicle III, to take effect for model years starting in 2017 to 2025.

Executive Order S-3-05 (2005). Governor Arnold Schwarzenegger signed Executive Order S-3-05 on June 1, 2005, which proclaimed that California is vulnerable to the impacts of climate change. To combat those concerns, the executive order established California GHG emissions reduction targets, which established the following goals:

- GHG emissions should be reduced to 2000 levels by 2010;
- GHG emissions should be reduced to 1990 levels by 2020; and
- GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

The Secretary of the California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various State agencies in order to collectively and efficiently reduce GHGs. A biannual progress report must be submitted to the Governor and State legislature disclosing the progress made toward greenhouse emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, the coastline, and forestry, and report possible mitigation and adaptation plans to address these impacts.

The Secretary of CalEPA leads the Climate Action Team (CAT) comprised of representatives from State agencies as well as numerous other boards and departments. CAT members work to coordinate Statewide efforts to implement global warming emission reduction programs and the State Climate Adaptation Strategy. The CAT is also responsible for reporting on the progress made toward meeting the Statewide GHG targets that were established in the executive order and further defined under AB 32, the "Global Warming Solutions Act of 2006." The first CAT Report to the Governor and State legislature was released in March 2006 and it presented 46 specific emission reduction strategies for reducing GHG emissions and reaching the targets established in the Executive Order. The most recent CAT Report to the Governor and State legislature was released in December 2010.

Assembly Bill 32 (2006), California Global Warming Solutions Act. California's major initiative for reducing GHG emissions is AB 32, passed by the State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. The CARB has established the level of GHG emissions in 1990 at 427 million metric tons (MMT) CO_2e. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires the CARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global

climate change. The Scoping Plan was approved by the CARB on December 11, 2008 and contains the main strategies California will implement to achieve the reduction of approximately 169 MMT of CO_2e, or approximately 30 percent, from the State's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent from 2002-2004 average emissions). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e);
- The Low-Carbon Fuel Standard (15.0 MMT CO_2e);
- Energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e); and
- A renewable portfolio standard for electricity production (21.3 MMT CO_2e).

The Scoping Plan identifies 18 emission reduction measures that address cap-and-trade programs, vehicle gas standards, energy efficiency, low carbon fuel standards, renewable energy, regional transportation-related GHG targets, vehicle efficiency measures, goods movement, solar roof programs, industrial emissions, high speed rail, green building strategies, recycling, sustainable forests, water, and air. The measures would result in a total reduction of 174 MMT CO_2e by 2020.

On August 24, 2011, the CARB unanimously approved both the new supplemental assessment and reapproved its Scoping Plan, which provides the overall roadmap and rule measures to carry out AB 32. The CARB also approved a more robust CEQA-equivalent document supporting the supplemental analysis of the cap-and-trade program. The cap-and-trade took effect on January 1, 2012, with an enforceable compliance obligation that began January 1, 2013.

CARB has not yet determined what amount of GHG reductions it recommends from local government operations and local land use decisions; however, the Scoping Plan states that land use planning and urban growth decisions will play an important role in the State's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions (meanwhile, CARB is also developing an additional protocol for community emissions). CARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. With regard to land use planning, the Scoping Plan expects an approximately 5.0 MMT CO_2e reduction due to implementation of Senate Bill (SB) 375.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed the CARB and the CAT to identify a list of "discrete early action GHG reduction measures" that could be adopted and made enforceable by January 1, 2010. On January 18, 2007, Governor Schwarzenegger

signed Executive Order S-1-07, further solidifying California's dedication to reducing GHGs by setting a new Low Carbon Fuel Standard. The Executive Order sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs the CARB to consider the Low Carbon Fuel Standard as a discrete early action measure. In 2011, U.S. District Court Judge Lawrence O'Neil issued an injunction preventing implementation of the Low Carbon Fuel Standard, ruling that it is unconstitutional. In 2012, the Ninth Circuit Court of Appeal stayed the District Court's injunction, allowing implementation of the Low Carbon Fuel Standard. The Ninth Circuit decided to uphold the Low Carbon Fuel Standard.

In June 2007, the CARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on GWP Refrigerants, and Landfill CH_4 Capture).[23] Discrete early action measures are measures that were required to be adopted as regulations and made effective no later than January 1, 2010, the date established by Health and Safety Code Section 38560.5. The CARB adopted additional early action measures in October 2007 that tripled the number of discrete early action measures. These measures relate to truck efficiency, port electrification, reduction of PFCs from the semiconductor industry, reduction of propellants in consumer products, proper tire inflation, and SF_6 reductions from the non-electricity sector. The combination of early action measures is estimated to reduce statewide GHG emissions by nearly 16 MMT.[24]

The CARB approved the First Update to the Climate Change Scoping Plan on May 22, 2014. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines CARB climate change priorities until 2020, and also sets the groundwork to reach long-term goals set forth in Executive Orders S-3-05 and B-16-2012. The First Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals as defined in the initial Scoping Plan, and it also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. The CARB released a second update to the Scoping Plan, the 2017 Scoping Plan,[25] to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32.

Senate Bill 97 (2007). Senate Bill 97 (SB 97), signed by the Governor in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code, Sections 21083.05 and 21097), acknowledges climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the OPR to prepare, develop, and transmit to the California Resources Agency guidelines for mitigating GHG emissions or the effects of GHG emissions, as required by CEQA.

The California Natural Resources Agency adopted the amendments to the CEQA Guidelines in January 2010, which went into effect in March 2010. The amendments do not identify a

23 California Air Resources Board. 2007. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration*. October.

24 California Air Resources Board. 2007. ARB approves tripling of early action measures required under AB 32, News Release 07-46. October 25.

25 California Air Resources Board. 2017. *California's 2017 Climate Change Scoping Plan*. November.

threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs when they perform individual project analyses.

Senate Bill 375 (2008).Signed into law on October 1, 2008, SB 375 supplements GHG reductions from new vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation. Under the law, the CARB approved GHG reduction targets in February 2011 for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations (MPOs). The CARB may update the targets every four years and must update them every eight years. MPOs in turn must demonstrate how their plans, policies and transportation investments meet the targets set by the CARB through Sustainable Community Strategies (SCS). The SCS are included with the Regional Transportation Plan (RTP), a report required by State law. However, if an MPO finds that their SCS will not meet the GHG reduction target, they may prepare an Alternative Planning Strategy (APS). The APS identifies the impediments to achieving the targets.

Executive Order B-30-15 (2015). Governor Jerry Brown signed Executive Order B-30-15 on April 29, 2015, which added the immediate target of:

- GHG emissions should be reduced to 40 percent below 1990 levels by 2030.

All State agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the AB 32 Scoping Plan to reflect the 2030 target, and therefore, is moving forward with the update process. The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue reducing emissions.

Senate Bill 350 (2015) Clean Energy and Pollution Reduction Act. Senate Bill 350 (SB 350), signed by Governor Jerry Brown on October 7, 2015, updates and enhances AB 32 by introducing the following set of objectives in clean energy, clean air, and pollution reduction for 2030:

- Raise California's renewable portfolio standard from 33 percent to 50 percent; and
- Increasing energy efficiency in buildings by 50 percent by the year 2030.

The 50 percent renewable energy standard will be implemented by the California Public Utilities Commission for the private utilities and by the California Energy Commission for municipal utilities. Each utility must submit a procurement plan showing it will purchase clean energy to displace other non-renewable resources. The 50 percent increase in energy efficiency in buildings must be achieved through the use of existing energy efficiency retrofit funding and regulatory tools already available to state energy agencies under existing law. The addition

made by this legislation requires state energy agencies to plan for, and implement those programs in a manner that achieves the energy efficiency target.

Senate Bill 32, California Global Warming Solutions Act of 2016, and Assembly Bill 197. In summer 2016 the Legislature passed, and the Governor signed, SB 32, and Assembly Bill 197 (AB 197). SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 Executive Order B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an IPCC analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million CO_2e and reduce the likelihood of catastrophic impacts from climate change.

The companion bill to SB 32, AB 197, provides additional direction to CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 meant to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

Senate Bill 100 (SB 100).On September 10, 2018, Governor Brown signed SB 100, which raises California's RPS requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18. Executive Order B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Executive Order B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Title 24, Building Standards Code and CALGreen Code.In November 2008, the California Building Standards Commission established the California Green Building Standards (CALGreen) Code, which sets performance standards for residential and nonresidential development to reduce environmental impacts and encourage sustainable construction practices. The CALGreen Code addresses energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The CALGreen Code was updated in 2016 to include new mandatory measures for residential as well as nonresidential uses; the new measures took effect on January 1, 2017.

Cap and Trade.The development of a cap-and-trade program was included as a key reduction measure of the CARB AB 32 Climate Change Scoping Plan. The purpose of the cap-and-trade program is to aid California on the path to meet its goal of reducing GHG emissions to 1990 levels by 2020 and ultimately achieving an 80 percent reduction from 1990 levels by 2050. The cap-and-trade emissions trading program developed by CARB took effect on January 1, 2012, with enforceable compliance obligations beginning January 1, 2013. The cap-and-trade program aims to regulate GHG emissions from the largest producers in the State by setting a statewide firm limit, or cap, on allowable annual GHG emissions. The cap was set in 2013 at approximately 2 percent below the emissions forecast for 2020. In 2014, the cap declined approximately 2 percent. Beginning in 2015 and continuing through 2020, the cap has been declining approximately 3 percent annually. CARB administered the first auction on November 14, 2012, with many of the qualified bidders representing corporations or organizations that produce large amounts of GHG emissions, including energy companies, agriculture and food industries, steel mills, cement companies, and universities. On January 1, 2015, compliance obligation began for distributors of transportation fuels, natural gas, and other fuels. California is working closely with British Columbia, Ontario, Quebec, and Manitoba through the Western Climate Initiative to develop harmonized cap-and-trade programs that will deliver cost-effective emission reductions. Two lawsuits have been filed against cap-and-trade, but the cap-and-trade program will be implemented as is until further notice.[26]

San Joaquin Valley Air Pollution Control District. The City of Madera is located within the SJVAB, which is under the jurisdiction of the SJVAPCD. The SJVAPCD has regulatory authority over certain stationary and industrial GHG emission sources and provides voluntary technical guidance on addressing GHGs for other emission sources in a CEQA context. District initiatives related to GHGs are described below.

Climate Change Action Plan. The District Governing Board approved the San Joaquin Valley Air Pollution Control District Climate Change Action Plan (CCAP) on August 21, 2008. The CCAP began a public process to bring together stakeholders, land use agencies, environmental groups, and business groups, and to conduct public workshops to develop comprehensive policies for CEQA Guidelines, a carbon exchange bank, and voluntary GHG emissions mitigation agreements for the Governing Board's consideration. The CCAP contains the following goals and actions:

Goals:

1. Assist local land-use agencies with CEQA (California Environmental Quality Act) issues relative to projects with GHG emissions increases.

2. Assist Valley businesses in complying with mandates of AB 32 (Global Warming Solutions Act of 2006).

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

[26] California Air Resources Board. 2014. Cap-and-Trade Program. Website: www.arb.ca.gov/cc/capandtrade/capandtrade.htm (accessed April 28, 2020).

Actions:

1. Develop GHG significance threshold(s) or other mechanisms to address CEQA projects with GHG emissions increases.

2. Develop necessary regulations and instruments for establishment and administration of the San Joaquin Valley Carbon Exchange Bank for voluntary GHG reductions created in the Valley.

3. Enhance the District's existing criteria pollutant emissions inventory reporting system to allow businesses subject to AB 32 emission reporting requirements to submit simultaneous streamlined reports to the District and the state of California with minimal duplication.

4. Develop and administer voluntary GHG emission reduction agreements to mitigate proposed GHG increases from new projects.

CEQA Greenhouse Gas Guidance. The District developed several resource documents that were used as guidance for developing the GHG Plan. The most important is the Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA, which is intended to assist local agencies in complying with CEQA and which contains a GHG threshold approach that has been widely accepted for use in the San Joaquin Valley and in other parts of the State. The District concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climatic change. The District found the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The District found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation. Many San Joaquin Valley local jurisdictions, including Madera, have used the District guidance for CEQA compliance.

The primary features of the District's approach include:

- Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less-than-significant cumulative impact. The GHG Plan is intended to meet the criteria as an approved plan or mitigation program.

- Projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency would evaluate the project against a performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce GHG emissions.

- Projects incorporating Best Performance Standards would not require specific quantification of GHG emissions, and automatically would be determined to have a less-than-significant cumulative impact for GHG emissions.

San Joaquin Valley Carbon Exchange and Rule 2301. The District initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The Exchange was implemented with the adoption of Amendments to Rule 2301 Emission Reduction Credit Banking on January 19, 2012. The purpose of the carbon exchange is to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley.

The District incorporated a method to register voluntary GHG emission reductions with amendments to Rule 2301. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.
- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.
- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

The District is participating in a new program developed by the California Air Pollution Control Officers Association (CAPCOA) to encourage banking and use of GHG reduction credits referred to as the CAPCOA Greenhouse Gas Reduction Exchange (GHGRx). The GHGRx provides information on GHG credit projects within participating air districts. The District is one of the first to have offsets available for trading on the Exchange.

City of Madera General Plan. The City of Madera addresses greenhouse gas in the Conservation Element of the General Plan.[27] The Conservation Element provides goals, policies, and action items that work to meet or exceed all current and future state-mandated targets for reducing emissions of greenhouse gases. The policies and action items from the Conservation Element, listed in Table 4.8.D would be applicable to the proposed Specific Plan.

City of Madera Climate Action Plan. The City of Madera Climate Action Plan (CAP)[28] is a long-range plan to reduce GHG emissions from City government (municipal) and community-wide activities within the City of Madera and prepare for the anticipated effects of climate change. Specifically, the CAP is designed to:

- Benchmark Madera's 2007 GHG emissions and 2020 and 2030 projected emissions;
- Establish GHG emissions targets for the years 2020 and 2030 to support California's larger effort to reduce statewide emissions under AB 32 and Executive Orders S-3-05 and B-30-15;

[27] Madera, City of. 2009. *City of Madera General Plan. Conservation Element*. October 7.

[28] Madera, City of. 2015. *City of Madera Climate Action Plan*. Available online at: www.cityofmadera.ca.gov/wp-content/uploads/2017/08/Final-Madera-CAP_September-2015.pdf (accessed February 2020). Adopted September 2.

Table 4.8.D: General Plan Policies Related to Greenhouse Gas Emissions

Policy/Action Item Number	Policy/Action Item
Conservation Element	
Policy CON-35	The City shall implement and enforce State and Regional regulations pertaining to greenhouse gas emissions and climate change.
Policy CON-36	The City supports local, regional, and statewide efforts to reduce the emission of greenhouse gases linked to climate change.
Action Item CON-36.2	Within six months of the completion of the Greenhouse Gas Inventory if possible (but not later than one year after completion of the Inventory), the City will, in collaboration with stakeholders and the community, prepare a Climate Action Plan (CAP) that incorporates and/or addresses the following criteria: • The CAP will identify goals for reducing manmade greenhouse gas (GHG) emissions from the community, municipal and business activities. • The CAP will establish resiliency and adaptation programs to prepare for potential impacts of climate change, and provide a phased implementation plan to achieve these goals. • The CAP will establish a greenhouse gas emissions reduction target of 15% percent below 2007 levels by 2020, consistent with California Assembly Bill 32, the Global Warming Solutions Act of 2006 (AB32) and the guidance provided in the associated California Air Resources Board Climate Change Scoping Plan approved in December 2008. • The CAP will also outline a strategy to achieve 1990 GHG levels by 2020 and an 80% reduction from 1990 GHG levels by 2050 in accordance with California State Executive Order S-3-05.
Policy CON-37	The City shall collaborate and coordinate with regional organizations and local jurisdictions within the City to reduce greenhouse gas emissions.
Policy CON-38	The City shall partner with local agencies and organizations to coordinate outreach and education regarding the effects of greenhouse gas emissions and climate change.
Policy CON-39	The City supports the goals of recently adopted Senate Bill 375 and will review this General Plan for consistency with the Sustainable Community Strategy (SCS) to be adopted by the Madera County Transportation Commission. The City will consider amendments to the General Plan as it deems appropriate to implement the SCS.
Policy CON-40	All public and private development—including homes, commercial, and industrial—should be designed to be energy-efficient.
Action Item CON-40.1	Work with the local energy providers and developers on voluntary incentive-based programs to encourage the use of energy efficient designs and equipment.
Action Item CON-40.2	Promote enhanced energy conservation standards for new construction through informational handouts, outreach to the construction industry, or other methods.
Action Item CON-40.3	City buildings and facilities will be operated in the most energy-efficient manner without endangering public health and safety and without reducing public safety or service levels.
Action Item CON-40.4	To the extent practical, integrate appropriate renewable energy and clean generation technologies into existing City facilities, such as solar, wind, biofuel, cogeneration, and fuel cells to power City facilities.
Policy CON-44	The City supports the use of green building practices in the planning, design, construction, management, renovation, operations, and demolition of all private buildings and projects, including: • Land planning and design techniques that preserve the natural environment and minimize disturbance of the land. • Site development to reduce erosion, minimize paved surfaces and runoff and protect vegetation, especially trees. • Water conservation indoors and outdoors. • Energy efficiency in heating/cooling systems, appliances, lighting and the building envelope. • Selection of materials based on recyclability, durability and the amount of energy used to create the material. • Waste reduction, reuse and recycling during construction and throughout the life of the project. • Other new aspects of green design and construction included in LEED or other certification programs. • Control nighttime lighting to lower energy use, reduce glare, and prevent illumination of the night sky.
Action Item CON-44.1	Develop a voluntary, market-driven Green Building Program that includes performance standards, guidelines, review criteria, incentives, and implementation schedules for private sector development, with criteria tailored to project types (i.e., residential, commercial, retail), size, and location.

Table 4.8.D: General Plan Policies Related to Greenhouse Gas Emissions

Policy/Action Item Number	Policy/Action Item
Action Item CON-44.2	Identify, evaluate, and provide incentives to encourage projects that incorporate green building practices and site design, including the potential for certification through the City's Building Department.
Action Item CON-44.3	Facilitate the professional development and education of City staff to learn about green building practices and to have the tools to evaluate development proposals.
Action Item CON-44.4	Offer information, technical assistance, and training to promote green building to property owners, building, design, and planning professionals, school districts, and special districts.
Policy CON-45	The City supports the use of green building practices in the planning, design, construction, management, renovation, operations, and demolition of facilities constructed, owned, managed, or financed by the City. All new building projects (projects intended for human occupancy) involving the use of local public funds should incorporate green building practices. Except as dictated by unique circumstances associated with a given project, the typical standard for green building will be the equivalent of the "LEED Silver Standard."
Action Item CON-45.1	Evaluate and update the City's procurement processes to provide incentives to bidders who propose the use of green building practices in the construction of City buildings and facilities.
Action Item CON-45.2	Require that any building constructed in whole or in part with local, public funding incorporate passive solar design features, such as daylighting and passive solar heating, where feasible.
Policy CON-46	The City will identify and remove regulatory or procedural barriers to implementing green building practices within its jurisdiction, such as updating codes, guidelines, and zoning, and will ensure that all plan review and building inspection staff are trained in green building materials, practices, and techniques.

Source: City of Madera General Plan (October 2009).

- Provide a roadmap for achieving the City's GHG emissions reduction targets;
- Fulfill City of Madera General Plan Action Item CON-36.2, which directs the City to prepare the CAP; and
- As a qualified CAP, support the streamlining of the environmental review process for future projects within Madera in accordance with State California Environmental Quality Act (CEQA) Guidelines Sections 15152 and 15183.5.

4.8.2 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to greenhouse gas emissions that could result from implementation of the proposed Specific Plan. The section begins with the criteria of significance, which establish the thresholds to determine if an impact is significant. The latter part of this section presents the impacts associated with implementation of the proposed Specific Plan and the recommended mitigation measures, if required. Mitigation measures are recommended, as appropriate, for significant impacts to eliminate or reduce them to a less-than-significant level. Cumulative impacts are also addressed.

4.8.2.1 Significance Criteria

The thresholds for impacts related to greenhouse gas emissions used in this analysis are consistent with Appendix G of the State CEQA Guidelines. Development of the proposed Specific Plan would result in a significant impact related to greenhouse gas emissions if it would:

Threshold 4.8.1 **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or**

Threshold 4.8.2 **Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.**

Section 15064.4 of the CEQA Guidelines states that: "A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." In performing that analysis, the lead agency has discretion to determine whether to use a model or methodology to quantify greenhouse gas emissions, or to rely on a qualitative analysis or performance-based standards. In making a determination as to the significance of potential impacts, the lead agency then considers the extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting, whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project, and the extent to which the project complies with regulations or requirements adopted to implement a Statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.

According to the SJVAPCD, if a project is consistent with an adopted qualified Greenhouse Gas Reduction Strategy that meets the standards, it can be presumed that the project will not have significant GHG emission impacts. This approach is consistent with the State CEQA Guidelines, Section 15183.5, and will be used in this analysis.

The City of Madera CAP meets the requirements for a Qualified Greenhouse Gas Reduction Strategy. Therefore, the project's GHG emissions would not be considered a significant impact if the project would be consistent with the City's CAP.

4.8.2.2 Project Impacts

The following discussion describes the potential impacts related to GHG emissions that could result from implementation of the proposed Specific Plan.

Threshold 4.8.1 **Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

The following section describes potential impacts to GHG emissions associated with implementation of the proposed Specific Plan. Potential impacts discussed below are differentiated between Phase I, Phase II, and Phase III, where applicable.

Construction Impacts. Construction-related GHG emissions associated with each phase of the proposed Specific Plan would occur over a short periods, and would consist primarily of emissions from equipment exhaust. Although the proposed Specific Plan's anticipated emissions from construction activities are quantified herein, in determining the potential significance from such activities, it is important to note the SJVAPCD has not established quantified construction GHG emissions threshold. The SJVAPCD recommends that GHG emissions are quantified and lead

agencies are encouraged to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable.

Construction activities associated with the proposed Specific Plan would produce combustion emissions from various sources. During construction, GHG emissions would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

Using CalEEMod, it is estimated that implementation of the proposed Specific Plan would generate a total of approximately 173,218 metric tons of CO_2e during construction. When considered over the approximately 30-year life of the proposed Specific Plan, amortized construction emissions would be approximately 5,774.9 metric tons of CO_2e per year. The SJVAPCD does not have an adopted threshold of significance for construction-related GHG emissions. Implementation of Mitigation Measure GHG-1.1 requires that by 2020, construction contractors shall employ five percent of construction vehicles/equipment that utilize new technologies (i.e., repowered engines, electric drive trains), CARB-approved low carbon fuel, or are electrically-powered. By 2030, construction contractors shall employ 10 percent of construction vehicles/equipment that utilize new technologies, CARB-approved low carbon fuel, or are electrically-powered. Implementation of Mitigation Measure GHG-1.1 would reduce construction-related GHG emissions and would ensure project construction impacts associated with GHG emissions would be considered less than significant.

Operational Emission Impacts. Long-term operation of the proposed Specific Plan would generate GHG emissions from mobile, area, waste, and water sources as well as indirect emissions from sources associated with energy consumption. Mobile-source GHG emissions would include Specific Plan-generated vehicle trips. Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses. Energy source emissions are typically generated at off-site utility providers as a result of increased electricity demand generated by a project. Waste source emissions generated by the proposed Specific Plan include energy generated by land filling and other methods of disposal related to transporting and managing waste. In addition, water source emissions associated with the proposed Specific Plan are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

Following guidance from the SJVAPCD, GHG emissions for operation of the project were calculated using CalEEMod. Model results are shown in Table 4.8.E. For purposes of evaluating the proposed Specific Plan, the county in CalEEMod was specified as Madera County and the climate zone of 3 was selected. Based on this climate zone, CalEEMod assumed a wind speed of 2.9 meters per second and precipitation frequency of 51 days per year. The operational year was assumed to be 2029 for Phase I, 2040 for Phase II, and 2050 for Phase III. The utility company for the region was selected as Pacific Gas & Electric Company (PG&E) and the CO_2 intensity was determined to be 328.8 pounds per megawatt hour based on a 5-year average estimated by PG&E.

Table 4.8.E: Unmitigated GHG Emissions (Metric Tons Per Year)

Emissions Source	Operational Emissions			
	CO_2	CH_4	N_2O	CO_2e
Phase I Operational Emissions				
Phase I Area Sources	3,652.9	8.9	<0.1	3,884.4
Phase I Energy Sources	10,010.2	0.5	0.2	10,078.3
Phase I Mobile Sources	52,709.2	2.8	0.0	52,778.8
Phase I Waste Sources	598.5	35.3	0.0	1,482.7
Phase I Water Sources	421.7	8.1	0.2	682.3
Total Phase I Operational Emissions				**68,906.4**
Phase II Operational Emissions				
Phase II Area Sources	10,455.3	33.8	0.1	11,317.1
Phase II Energy Sources	19,277.3	1.0	0.4	19,408.4
Phase II Mobile Sources	69,854.7	3.4	0.0	69,939.7
Phase II Waste Sources	1,157.6	64.4	0.0	2,868.0
Phase II Water Sources	791.2	15.3	0.4	1,283.8
Total Phase II Operational Emissions				**104,817.0**
Phase III Operational Emissions				
Phase III Area Sources	1,557.1	45.9	0.1	15,749.4
Phase III Energy Sources	28,460.2	1.6	0.5	28,654.0
Phase III Mobile Sources	116,360.7	5.4	0.0	116,494.2
Phase III Waste Sources	1,719.1	101.6	0.0	4,258.9
Phase III Water Sources	1,194.5	23.2	0.6	1,942.0
Total Phase III Operational Emissions				**167,098.5**
Amortized Construction Emissions				5,773.9
Total Project Annual Emissions				**172,872.4**

Source: LSA (March 2020).

Trip generation rates used in CalEEMod for the project were based on the proposed Specific Plan's trip generation estimates,[29] which assumes that Phase I of the project would typically generate approximately 31,250 average daily trips, completion of Phase I and Phase II of the project would typically generate approximately 56,825 average daily trips, and full build out (completion of Phase I, Phase II, and Phase III) of the project would typically generate approximately 89,650 average daily trips. Where project-specific data were not available, default assumptions from CalEEMod were used to estimate project emissions. Additional calculation details are included in Appendix E.

The SJVAPCD *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* presents a tiered approach to analyzing project significance with respect to GHG emissions.[30] Project GHG emissions are considered less than significant if they can meet any of the following conditions, evaluated in the order presented:

29 LSA, 2020. *Traffic Impact Analysis Village D Specific Plan*. May.

30 San Joaquin Valley Air Pollution Control District. 2009. *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*. December 17. Available online at: www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf (accessed March 2020).

- Project is exempt from CEQA requirements;
- Project complies with an approved GHG emission reduction plan or GHG mitigation program;
- Project implements Best Performance Standards (BPS); or
- Project demonstrates that specific GHG emissions would be reduced or mitigated by at least 29 percent compared to Business-as-Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period.

On November 20, 2015, the California Supreme Court (Court) issued its decision on the Center for Biological Diversity v. California Department of Fish and Wildlife on the Newhall Ranch project case (Newhall Ranch case). Among the findings, the Court supported the use of BAU analyses if it also substantiates the reduction a project must achieve to comply with Statewide goals. If no additional reductions are required from an individual project beyond that achieved by regulations to achieve the AB 32 target for 2020, then the amount needed to reach the AB 32 target is the reduction a project must achieve to comply with Statewide goals.

The proposed Specific Plan is not expected to be exempt from CEQA requirements. The City has an adopted CAP that includes 2020 and 2030 emission forecasts and reduction targets and a 2030 horizon. The reduction target is based on AB 32, Executive Order S-3-05, and Executive Order B-30-15. The State has since adopted updated emission targets for 2030 and additional 2045; therefore, additional reductions would be required.

In order to evaluate a proposed Specific Plan's consistency with the CAP, the City has developed the CAP Consistency Worksheet (Appendix E of the CAP). The worksheet is designed to help the City determine if a project is consistent with the CAP but does not define which measures would need to be implemented for the consistency determination, as requirements may vary by project type. This worksheet should be filled out for each new project, subject to discretionary review of the City of Madera.

Projects that demonstrate consistency with the CAP are considered less than significant in terms of the contribution of GHG emissions. If it is determined that a project is not consistent with the CAP, further CEQA analysis would be required. The proposed Specific Plan's consistency with the CAP Consistency Worksheet is summarized in Table 4.8.F below.

As demonstrated in Table 4.8.F, the proposed Specific Plan's consistency with many of the CAP measures would be determined by design decisions that are currently not evident from the conceptual plans evaluated for the environmental analysis in this Draft EIR. Implementation of Mitigation Measure GHG-1.1 would ensure the proposed Specific Plan incorporates design features consistent with the applicable measures as included in the City's CAP. With implementation of these measures, the proposed Specific Plan would be in compliance with the City's CAP. The mitigated project would implement GHGs reduction strategies in compliance with the CAP and would not be a significant source of GHG emissions. Therefore, the proposed Specific Plan's impacts would be less than significant with mitigation incorporated.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
E-2 Energy Efficient New Construction	Is the project consistent with applicable policies of the Conservation Element of the General Plan?	Yes	Applicable policies of the Conservation Element of the General Plan state that all development should be designed to be energy-efficient (Policy CON-40) and development should include green building practices in all projects (Policy CON-44). The proposed Specific Plan is consistent with the applicable polices of the Conservation Element of the General Plan as Section 7.15 Sustainability Guidelines of the proposed Specific Plan states that future development under the proposed Specific Plan should strive for energy reduction in excess of that required by Title 24 standards and implement energy efficiency strategies.
	Does the project exceed Title 24 Energy Efficiency Building Standards, meet the State's Green Building Standards voluntary tier levels, or is LEED Greenpoint, or ENERGY STAR rated?	Yes with Mitigation Measure GHG-1.1	As identified in Section 7.15 Sustainability Guidelines of the proposed Specific Plan, future development under the proposed Specific Plan should strive for energy reduction in excess of that required by Title 24 standards. In addition, the proposed Specific Plan encourages the following energy efficiency strategies, which are required by Mitigation Measure GHG-1.1: • Provide natural lighting, where feasible, to reduce reliance on artificial lighting. • Use Low-E or EnergyStar windows. • Use high-efficiency lighting systems with advanced lighting controls. For nonresidential buildings, consider providing motion sensors tied to dimmable lighting controls. Task lighting may be used to reduce general overhead light levels. • Use a properly sized and energy-efficient heat/cooling system in conjunction with a thermally efficient building shell. Consider using light colors for roofing and wall finish materials, and installing high R-value wall and ceiling insulation. • Implement some of the strategies of the EnergyStar program. • For retail, commercial and office uses, use light colored roofing with a high solar reflectance to reduce the heat island effect from roofs. • In retail, commercial and office development, encourage the provision of preferred parking spaces for hybrid, fuel cell, electric and/or other fuel efficient vehicles. However, current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate whether projects would exceed Title 24 Energy Efficiency Building Standards, meet the State's Green Building Standards voluntary tier levels, or is LEED Greenpoint, or ENERGY STAR rated. Future discretionary project plans would be reviewed by the City of Madera Planning Department for consistency with the applicable Title 24 standards prior to project approval.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
E-3 On-Site Small-Scale Renewable Energy	Does the project include solar PV systems or solar hot water heaters?	Yes with Mitigation Measure GHG-1.1	With implementation of Mitigation Measure GHG-1.1, the proposed Specific Plan would install solar PV systems or solar hot water heaters.
T-1: Infill and Mixed-Use Development	Is the project consistent with the land use designation(s) shown on the General Plan Land Use Map and with the applicable polies of the Land Use Element of the General Plan policies?	Yes	Section 4.11, Land Use and Planning, discusses the impacts related to land use and planning that could result from implementation of the proposed Specific Plan. The proposed project includes a General Plan Land Use category titled Specific Plan Area. Detailed land use regulations are contained within each adopted Specific Plan document. As such, the proposed Specific Plan includes a mix of Village Reserve (VR), Village Mixed Use (VMU), Neighborhood Mixed Use (NMU), Low Density Residential (LD), Medium Density Residential (MD), High Density Residential (HD), and Open Space (OS). Upon approval of the proposed Specific Plan (including the requested General Plan Amendment), the proposed project would be consistent with the General Land Use Map.
	Is the project consistent with the Madera County Blueprint?	Yes	Section 4.11 Land Use and Planning discusses the impacts related to land use and planning that could result from implementation of the proposed Specific Plan.
	Does the project include mixed-use, higher density (22.5 to 50 units per acre), or infill development?	Yes	Implementation of the proposed Specific Plan would result in a mix of residential, commercial/office, business park industrial uses, public facilities and park/open space uses in the Specific Plan Area. As described in Chapter 3, Project Description, high density residential has a density range of 15.1 to 50 development units per acre, with an anticipated density of 22.5 du/ac.
	Is the project located within ¼ mile of transit stops or in existing community centers/downtown?	Yes	Implementation of the proposed Specific Plan would create a transportation network that would fulfill the policies of the Madera General Plan Circulation Element by allowing residents to live within proximity to schools, recreational opportunities, retail centers, and commercial development, and minimizing vehicle trips through utilizing access to a variety of transportation opportunities, including pedestrian pathways, bikeways, regional arterials, and transit. Public transportation in the City includes bus and rail service. The study area is serviced by the Madera Area Express System, the JET Express System, and the Madera County Connection System. The City has an Amtrak station on Road 26, and there are plans to move the station south to Avenue 12 and to possibly add a High-Speed Rail stop in the City in the future. Although the Specific Plan Area is not currently within ¼ mile of transit stops, the current population of the Specific Plan Area does not support transit stops. The proposed Specific Plan would encourage the addition of new transit stops to expand service in the Specific Plan Area. As such, the project would include transit stops within the Specific Plan Area.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
T-2 Bicycle and Pedestrian Environment	Is the project consistent with applicable policies of the Community Design and Circulation Elements of the General Plan?	Yes	Applicable policies of the Community Design Element and the Circulation Element of the General Plan relate to designing new development to be walkable pedestrian- and bicycle- oriented development. Implementation of the proposed Specific Plan would fulfill the policies of the Madera General Plan Circulation Element and the City's CAP by allowing residents to live within proximity to schools, recreational opportunities, retail centers, and commercial development, and minimizing vehicle trips through utilizing access to a variety of transportation opportunities, including pedestrian pathways, bikeways, regional arterials, and transit.
	Is the project consistent with the Bicycle Master Plan?	NA	The City does not have an adopted Bicycle Master Plan, however, the proposed Specific Plan would include bicycle lanes and off-street in order to create accessibility and mobility within the Specific Plan Area. A multi-purpose pedestrian and bicycle trail would be provided along the Fresno River area. The proposed Specific Plan would also construct trail connections to link the multi-purpose trail along the river with the larger on-street bicycle network for the proposed Specific Plan. These bike paths would encourage linkages to the City's planned bike path system.
	Does the project meet minimum design criteria for bicycle and pedestrian circulation?	Yes	The proposed Specific Plan would include bicycle lanes and off-street in order to create accessibility and mobility within the Specific Plan Area. A multi-purpose pedestrian and bicycle trail would be provided along the Fresno River area. The proposed Specific Plan would construct trail connections to link the multi-purpose trail along the river with the larger on-street bicycle network for the proposed Specific Plan. These bike paths would provide linkages to the City's master planned bike path system.
	Does the project provide adequate and secure bicycle parking?	Yes	As identified in the proposed Specific Plan, bicycle parking areas would be located close to building entrances, protected from the weather, and not in conflict with pedestrian traffic.
T-3 Transit Travel	Is the project consistent with applicable policies of the Circulation and Community Development Elements of the General Plan?	Yes	Applicable policies of the Community Design Element and the Circulation Element of the General Plan relate to planning and accommodating for transit travel (Policy CI-28, Policy CI-30, Policy CI-31, Policy CI-41, Policy CI-50, Policy H-5.3, and Policy CD-59). Implementation of the proposed Specific Plan would create a transportation network that would fulfill these policies by allowing residents to live within proximity to schools, recreational opportunities, retail centers, and commercial development, and minimizing vehicle trips through utilizing access to a variety of transportation opportunities, including pedestrian pathways, bikeways, regional arterials, and transit.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
	Does the project provide safe routes to adjacent transit stops, where applicable?	Yes with Mitigation Measure GHG-1.1	Current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate safe routes to adjacent transit stops. Project plans would be reviewed by the City of Madera Planning Department to determine whether projects provide safe routes to adjacent transit stops prior to project approval. With implementation of Mitigation Measure GHG-1.1, prior to approval of future projects associated with the Specific Plan, applicants shall submit to the City of Madera Planning Department a Greenhouse Gas Reduction Plan referencing construction plans details and specifications to document implementation and compliance with applicable Climate Action Plan (CAP) measures, including providing safe routes to transit stops.
	Does the project finance and/or construct bus turnouts and shelters where transit demand warrants such improvements?	Yes with Mitigation Measure GHG-1.1	Current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate bus turnouts and shelters. To the extent deemed feasible by the City of Madera Planning Department, project plans would be reviewed to determine whether projects provide bus turnouts and shelters prior to project approval.
	Does the project provide public transit vouchers to its employees?	Yes with Mitigation Measure GHG-1.1	With implementation of Mitigation Measure GHG-1.1, the proposed Specific Plan would provide a transit subsidy to employees.
T-4 Commute Trip Reduction	Is the project consistent with applicable policies of the Community Development Element of the General Plan?	Yes	Applicable policies of the Community Design Element and the Circulation Element of the General Plan aim to provide parking for alternative modes of transportation (Policy CD-59), encourage the use of ridesharing (Policy CI-37), facilitate employment opportunities that minimize the need for vehicle trips (Policy CI-42) and promote jobs that reduce the need for residents to commute to work outside the City (Policy SUS-15). Implementation of the proposed Specific Plan would fulfill these policies allowing residents to live within proximity to schools, recreational opportunities, retail centers, and commercial development, and minimizing vehicle trips through utilizing access to a variety of transportation opportunities, including pedestrian pathways, bikeways, regional arterials, and transit.
	Does the project include and/or promote Traffic Demand Management (TDM) programs?	Yes	Commute trip reduction measures facilitate programs that give commuters and employers resources and incentives to reduce single-occupancy vehicle trips. Implementation of the proposed Specific Plan would create a transportation network that would fulfill the policies of the Madera General Plan Circulation Element by allowing residents to live within proximity to schools, recreational opportunities, retail centers, and commercial development, and minimizing vehicle trips through utilizing access to a variety of transportation opportunities, including pedestrian pathways, bikeways, regional arterials, and transit.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
T-5 Traffic Flow and Vehicle Idling	Does the project include measures to improve traffic flow?	Yes	As identified in the proposed Specific Plan, the proposed Specific Plan includes a circulation plan that would allow for efficient traffic flow throughout the Specific Plan Area to reduce unnecessary vehicle idling. In addition, the proposed Specific Plan includes options for transportation within the Specific Plan Area to reduce vehicle use.
T-6 Low Carbon Fuel Vehicles and Infrastructure	Is the project consistent with applicable policies of the Community Development Element of the General Plan?	Yes with Mitigation Measure GHG-1.1	Applicable policies of the Community Design Element of the General Plan aim to provide parking for alternative modes of transportation (Policy CD-59) and develop alternative fuel fueling stations (Policy CON-33). With implementation of Mitigation Measure GHG-1.1, the project plans would be reviewed by the City of Madera Planning Department to determine whether projects provide plug-in electric vehicle facilities prior to project approval. Therefore, with implementation of Mitigation Measure GHG-1.1, the proposed Specific Plan is consistent with applicable policies of the Community Development Element of the General Plan.
	Is the project consistent with the San Joaquin Valley Plug-in Electric Vehicle (PEV) Readiness Plan?	Yes with Mitigation Measure GHG-1.1	Current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate whether projects provide plug-in electric vehicle facilities. Notwithstanding, project plans would be reviewed by the City of Madera Planning Department to determine whether projects provide plug-in electric vehicle facilities prior to project approval consistent with Mitigation Measure GHG-1.1.
	Does the project include alternative fueling stations or EV charging stations?	Yes with Mitigation Measure GHG-1.1	Current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate whether projects include alternative fueling stations or electric vehicle (EV) charging stations. Project plans would be reviewed by the City of Madera Planning Department, to determine whether projects include alternative fueling stations or EV charging stations prior to project approval consistent with Mitigation Measure GHG-1.1.
T-7 Construction and Off-Road Equipment	Would construction of the project use alternatively fueled construction vehicles/equipment (i.e., repowered engines, electric drive trains, CARB-approved low carbon fuel, electrically-powered)?	Yes with Mitigation Measure GHG-1.1	Current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate whether construction of projects associated with the proposed Specific Plan would use alternatively fueled construction vehicles/equipment. In compliance with Mitigation measure GHG-1.1, project construction plans would be reviewed by the City of Madera Planning Department, to determine whether construction of projects associated with the proposed Specific Plan would use alternatively fueled construction vehicles/equipment prior to project approval.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
	Would the project include low-maintenance native landscaping or xeriscaping?	Yes with Mitigation Measure GHG-1.1	The Section 7.15 Sustainability Guidelines of proposed Specific Plan encourages the following landscape design strategies: • Use low- or medium-water use and native plant materials where appropriate. Turf areas should be minimized in the community to promote water conservation. Limit the use of turf to areas that experience high functional use and are needed to accommodate outdoor activities such as sports, picnicking, etc. Only turf varieties that are suited to the climate should be used. • Promote the use of plant materials that are well suited to the solar orientation and shading of the buildings. • Encourage grouping of plants according to water use, slope aspect and sun/shade requirements. Each hydrozone may be irrigated on a separate valve using high-efficiency irrigation techniques. • Consider the use of organic wood or shredded bark mulch and soil amendments to retain soil moisture. • Encourage the use of colored hardscape materials to reduce glare and/or reflect heat in outdoor plazas and gathering areas. • Encourage the use of low-growing, low- to medium-water use plant material in parkways instead of turf. • Provide shade trees in paved areas and adjacent to buildings, where feasible, to increase natural cooling and conserve energy. However, current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate whether projects would include these water efficiency measures. Notwithstanding, project plans would be reviewed by the City of Madera Planning Department for inclusion of low-maintenance native landscaping or xeriscaping prior to project approval as required by Mitigation Measure GHG-1.1.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
W-1 Exceed SB X7-7 Water Conservation Target	Does the project incorporate water efficiency and water conservation measures?	Yes	Projects associated with the proposed Specific Plan would comply with the California Green Building Code standards, which requires residential and nonresidential water efficiency and conservation measures for new buildings and structures that will reduce the overall potable water use inside the building by 20 percent. Projects would install ultra-low flow fixtures and appliances. Projects would install water meters at all of the service connections. The service provider will assess service charges based on volumetric rates and/or tiered rates. The rate structure will encourage reasonable water uses. In addition, as identified in Section 7.15 Sustainability Guidelines of the proposed Specific Plan, future development under the proposed Specific Plan should strive for water efficiency in excess of that required by Title 24 standards. In addition, the proposed Specific Plan encourages the following water efficiency strategies: • Where feasible reduce water consumption by providing low-flush toilets, low-flow shower heads and other water conserving fixtures, where feasible. • Promote the use of recirculating systems for centralized hot water distribution. • Promote the use of tankless water heaters. • Use micro-irrigation (which excludes sprinklers and high-pressure sprayers) to supply water in non-turf areas, where applicable. • Encourage the use of state-of-the-art irrigation controllers and self-closing nozzles on hoses. • Where feasible, use separate valves for planting areas with different water usage levels, so that plants with similar water needs are irrigated by the same valve. However, current plans for projects associated with the proposed Specific Plan do not provide sufficient detail to demonstrate whether projects would include these water efficiency measures. Project plans would be reviewed by the City of Madera Planning Department for incorporation of water efficiency and water conservation measures prior to project approval.
W-2 Recycled Water	Is the project consistent with applicable policies of the Conservation Element of the General Plan?	Yes	Applicable policies of the Conservation Element of the General Plan support the use of reclaimed water (Policy CI-54, Policy CON-5, and Policy CON-6), implement strategies to ensure long-term sustainability of water supply (Policy CON-2), and encourage the use of gray water systems and other water reuse methods (Policy CON-7). The proposed Specific Plan is consistent with these policies as future development under the proposed Specific Plan would strive for water efficiency in excess of that required by Title 24 standards and the proposed Specific Plan encourages various water efficiency strategies.

Table 4.8.F: Project Consistency with the City of Madera Climate Action Plan

Measure Name	Project Actions	Project Compliance (Yes/No/NA)	Description/Details
	Does the project incorporate recycled/reclaimed water?	Yes	As identified in the Infrastructure Master Plan, the proposed Specific Plan includes a Non-Potable Water System Master Plan that requires that reclaimed water would be used for groundwater recharge and irrigation of landscaped areas and open space areas to reduce groundwater demand.
U-1 Trees and Vegetation	Is the project consistent with applicable policies of the Community Design Element of the General Plan?	Yes	Applicable policies of the Community Design Element of the General Plan support the planning of street trees (Policy CD-26, Policy CD-43), encourage landscaping to reduce the urban heat island effect (Policy CON-10, Policy Con-31, Policy CD-4), and establish landscape and façade maintenance programs (Policy CD-7). The proposed Specific Plan is consistent with these policies as the proposed Specific Plan would include the planting of new trees and landscaping throughout the Specific Plan Area consistent with the Landscape Guidelines and the Master Landscape Concept Plan.
	Does the project include the planting of new trees or new acres of vegetated land?	Yes	The proposed Specific Plan would include the planting of new trees and landscaping throughout the Specific Plan Area consistent with the Landscape Guidelines and the Master Landscape Concept Plan.

Source: City of Madera (2015) and LSA (February 2020).

The proposed Specific Plan requires mitigation in order to have consistency with the City's CAP measures as outlined in Table 4.8.F. The CAP itself has aligned its 2020 and 2030 reduction targets and measures to meet the Statewide goals. It is important to note that while the CAP measures were implemented prior to the adoption of SB 32 in 2016, the CAP set its 2030 reduction target in alignment with Executive Order B-30-15, where GHG reduction targets are mandated to 40 percent below 1990 levels by 2030. The 2030 goal in Executive Order B-30-15 matches the Statewide goal in SB 32. Therefore, the City's CAP goal and the State's latest target for 2030 are in alignment and development projects that implement the reduction measures to meet the 2030 reduction target are considered less than significant with mitigation incorporated in regard to GHG impacts. In addition, Mitigation Measure AIR-2.2 as identified in Section 4.3 Air Quality, is required and would further reduce GHG emissions and would ensure consistency with the CAP and State reduction targets.

Level of Significance Without Mitigation: Potentially significant.

Impact GHG-1: The Specific Plan could generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Mitigation Measure GHG-1.1 Prior to issuance of grading permits, applicants shall submit to the City of Madera Planning Department a Greenhouse Gas Reduction Plan, or proof of compliance with the City's Climate Action Plan (CAP), referencing construction plans details and specifications to document implementation and compliance with the following applicable CAP measures. Implementation of the following CAP measures is considered to be applicable, feasible, and effective in reducing greenhouse gas emissions generated by the project:

- Exceed Title 24 Energy Efficiency Building Standards, meet State Green Building Standards voluntary tier levels, become Leadership in Energy and Environmental Design (LEED) Greenpoint rated, or ENERGY STAR rated.
- Install solar photovoltaic (PV) systems or solar hot water heaters.
- Provide safe routes to adjacent transit stops.
- Finance and/or construct bus turnouts and shelters where transit demand warrants such improvements.
- Provide public transit vouchers to employees.
- Include alternative fueling stations or electric vehicle (EV) charging stations.

- By 2020, ensure construction contractors employ five percent of construction vehicles/equipment that utilize new technologies (i.e., repowered engines, electric drive trains), California Air Resources Board (CARB)-approved low carbon fuel, or are electrically-powered. By 2030, ensure construction contractors employ 10 percent of construction vehicles/equipment that utilize new technologies, CARB-approved low carbon fuel, or are electrically-powered.

- Include low-maintenance native landscaping or xeriscaping.

Level of Significance With Mitigation**:** Less than significant.

Threshold 4.8.2 Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The following discusses the consistency of the proposed Specific Plan to the State GHG reduction goals and the CARB Scoping Plan.

AB 32 is aimed at reducing GHG emissions to 1990 levels by 2020. AB 32 requires the CARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The AB 32 Scoping Plan has a range of GHG reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 implementation fee to fund the program.

Executive Order Executive Order B-30-15 added the immediate target of reducing GHG emissions to 40 percent below 1990 levels by 2030. CARB released a second update to the Scoping Plan, the 2017 Scoping Plan,[31] to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Executive Order B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels. The companion bill to SB 32, AB 197, provides additional direction to the CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 intended to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

As identified above, the AB 32 Scoping Plan contains GHG reduction measures that work towards reducing GHG emissions, consistent with the targets set by AB 32, Executive Order B-30-15 and codified by SB 32 and AB 197. The measures applicable to the proposed Specific Plan include energy efficiency measures, water conservation and efficiency measures, and transportation and motor vehicle measures, as discussed below.

[31] California Air Resources Board. 2017, op. cit.

Energy efficient measures are intended to maximize energy efficiency building and appliance standards, pursue additional efficiency efforts including new technologies and new policy and implementation mechanisms, and pursue comparable investment in energy efficiency from all retail providers of electricity in California. In addition, these measures are designed to expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings. The proposed Specific Plan encourages future development to exceed Title 24 standards. In addition, the proposed Specific Plan encourages the following energy efficiency strategies:

- Provide natural lighting, where feasible, to reduce reliance on artificial lighting.
- Use Low-E or EnergyStar windows.
- Use high-efficiency lighting systems with advanced lighting controls. For nonresidential buildings, consider providing motion sensors tied to dimmable lighting controls. Task lighting may be used to reduce general overhead light levels.
- Use a properly sized and energy-efficient heat/cooling system in conjunction with a thermally efficient building shell. Consider using light colors for roofing and wall finish materials, and installing high R-value wall and ceiling insulation.
- Implement some of the strategies of the EnergyStar program.
- For retail, commercial and office uses, use light colored roofing with a high solar reflectance to reduce the heat island effect from roofs.
- In retail, commercial and office development, encourage the provision of preferred parking spaces for hybrid, fuel cell, electric and/or other fuel-efficient vehicles.

Therefore, the proposed Specific Plan would not conflict with energy efficient measures.

Water conservation and efficiency measures are intended to continue efficiency programs and use cleaner energy sources to move and treat water. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. The proposed Specific Plan would be constructed to the CALGreen Code, which requires residential and nonresidential water efficiency and conservation measures for new buildings and structures that will reduce the overall potable water use inside the building by 20 percent. In addition, the proposed Specific Plan would install ultra-low flow fixtures and appliances. Therefore, the proposed Specific Plan would not conflict with any of the water conservation and efficiency measures.

The goal of transportation and motor vehicle measures is to develop regional GHG emissions reduction targets for passenger vehicles. Specific regional emission targets for transportation emissions would not directly apply to the proposed Specific Plan. The proposed Specific Plan would promote initiatives to reduce vehicle trips and vehicle miles traveled and would increase the use of alternate means of transportation. Therefore, the proposed Specific Plan would not conflict with the identified transportation and motor vehicle measures.

The proposed Specific Plan would comply with existing State regulations adopted to achieve the overall GHG emissions reduction goals identified in AB 32, the AB 32 Scoping Plan, Executive Order B-30-15, SB 32, and AB 197 and would be consistent with applicable State plans and programs designed to reduce GHG emissions. With implementation of Mitigation Measure GHG-1.1, the proposed project would be consistent with the City's CAP. As discussed above, the CAP itself has aligned its 2020 and 2030 reduction targets and measures to meet the Statewide goals. It is important to note that while the CAP measures were implemented prior to the adoption of SB 32 in 2016, the CAP set its 2030 reduction target in alignment with Executive Order B-30-15, where GHG reduction targets are mandated to 40 percent below 1990 levels by 2030. The 2030 goal in Executive Order B-30-15 matches the Statewide goal in SB 32. Therefore, the City's CAP goal and the State's latest target for 2030 are in alignment and development projects that implement the reduction measures to meet the 2030 reduction target are considered less than significant with mitigation incorporated in regard to GHG impacts. Therefore, with mitigation to bring the Specific Plan into compliance with the CAP, the proposed Specific Plan would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be less than significant with implementation of Mitigation Measure GHG-1.1.

Level of Significance Without Mitigation: Potentially significant.

Impact GHG-2: The Specific Plan would conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Mitigation Measure GHG-2.1 Implement Mitigation Measure GHG-1.1.

Level of Significance With Mitigation: Less than significant.

4.8.2.3 Cumulative Impacts

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

AB 32 requires CARB to reduce Statewide GHG emissions to 1990 level by 2020. As part of this legislation, CARB was required to prepare a "Scoping Plan" that demonstrates how the State will achieve this goal. The Scoping Plan was first adopted in 2011 and in it local governments were described as "essential partners" in meeting the Statewide goal, recommending a GHG reduction level of 15 percent below 2005 to 2008 levels, depending on when a full emissions inventory is available, by 2020. As discussed above, the City's CAP has established GHG emissions targets for the years 2020 and 2030 to support California's larger effort to reduce statewide emissions under AB 32 and Executive Orders S-3-05 and B-30-15.

Reductions will be achieved by existing development and new projects. Residents of new development projects will achieve lower per capita rates than residents of existing development. This is because of greater energy efficiency in new structures and lower motor vehicle travel resulting from the project designs and higher development densities anticipated from implementation of the proposed Specific Plan.

The CARB released the First Update to the Climate Change Scoping Plan on February 10, 2014. The draft update emphasized the need for a mid-term target between 2020 and 2050 to provide a continuum of action to reduce cumulative emissions. The EO B-30-15 and SB 32 required CARB to reduce Statewide GHG emissions to 40 percent below 1990 levels by 2030. The EO B-30-15 further stated that the emission reduction target of 40 percent below 1990 levels by 2030 is an interim-year goal to make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. The order directs CARB to provide a plan with specific regulations to reduce Statewide sources of GHG emissions. The Executive Order does not include a specific guideline for local governments. The 2017 Scoping Plan recommends local plan level GHG emissions reduction goals.

Buildout of the proposed Specific Plan would occur in 2049. As such, projects associated with implementation of the proposed Specific Plan would be required to help the City do its part in reducing GHG emissions for the short-term (2020) and the long term (2049).

As identified above, the proposed Specific Plan includes various energy-efficiency and water-efficiency measures, which would help reduce GHG emissions and align with State targets. As discussed above, implementation of Mitigation Measure GHG-1.1 would ensure the proposed Specific Plan incorporates design features consistent with the applicable measures as included in the City's CAP. The mitigated project would implement GHGs reduction strategies in compliance with the CAP and would not be a significant source of GHG emissions. Therefore, with implementation of Mitigation Measure GHG-1.1, implementation of the proposed Specific Plan would meet the City's reduction targets, consistent with the State's goals.

Level of Significance Without Mitigation: Potentially significant impact.

Impact GHG-3: The proposed Specific Plan, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to greenhouse gas emissions.

Mitigation Measure GHG-3.1 Implement Mitigation Measure GHG-1.1.

Level of Significance With Mitigation: Less than significant.

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