Section 3b. Natural Resources – Greenhouse Gases

Greenhouse Gas Emissions

This section provides background information about greenhouse gas (GHG) emissions and climate change. Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute cumulatively to global climate change. Unlike criteria air pollutants and toxic air contaminants that tend to have more localized or regional impacts, GHG emissions tend to disperse more broadly and are more of a global concern because of their relatively longer atmospheric lifetimes compared to air pollutant emissions. Similarly, climate change is a global phenomenon; however, the impacts of climate change are experienced locally and vary by location.

Major Findings

The following provides a summary of key findings that will be taken into account for the General Plan Update. The technical background on each topic is further discussed in the sections to follow.

Effects of climate change that are particularly relevant to the Town of Loomis and surrounding region include increased average and extreme temperatures and shifting precipitation patterns that will likely result in the regions being increasingly prone to extremes like megadroughts, flooding and large wildfires, and affect water and energy availability, agricultural systems, plants and wildlife and public health.

While GHG emissions reductions at the local scale may seem insignificant relative to the global scale of emissions, actions to reduce GHG emissions have positive co-benefits, such as for the local economy, public health, and household and local business energy and transportation costs.

State legislation on the topics of climate change and GHG emissions has changed substantially since the Town of Loomis 2020 General Plan was adopted in 2001. California has established several statewide GHG targets through legislative action that can help to inform local GHG target selection. State agencies, including the California Air Resources Board (CARB) and the Governor's Office of Planning and Research (OPR), have also issued guidance to local governments on this topic. Local governments have unique influence and exclusive authority over significant GHG emission sources.

Placer County has taken steps to evaluate GHG emissions sources from County operations and the unincorporated County, and adopted the Placer County Sustainability Plan in January 2020 that lays a framework for programs and policies that will be undertaken to achieve the most significant GHG emission reductions in the unincorporated County. Coordination between local policies and actions under the Town of Loomis General Plan with County actions may provide efficiencies and mutual benefit.

The California Environmental Quality Act (CEQA) generally requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible. The evaluation of GHG emissions as part of the CEQA process was recognized by the passage of Senate Bill 97 in 2007, and the guidance was further refined by amendments to the CEQA Guidelines in 2018 (Section 15064.4) that clarified several points, including that lead agencies must analyze the GHG emissions of proposed projects and the focus of the analysis should be on the project's effect on climate change, rather than simply the quantity of emissions. The amendments also held that a

project's incremental contribution may be cumulative considerable even if it appears relatively small compared to statewide, national, or global emissions levels.

Overview of Greenhouse Gases

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space through the atmosphere. However, infrared radiation is selectively absorbed by GHGs in the atmosphere. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Anthropogenic (e.g., human caused) emissions of these GHGs lead to atmospheric levels in excess of natural ambient concentrations and have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change.

The Intergovernmental Panel on Climate Change (IPCC) concluded that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the warming of the earth from pre-industrial times to 1950. Some variations in natural phenomena also had a small cooling effect. From 1950 to the present, increasing GHG concentrations resulting from human activity, such as fossil fuel burning and deforestation, have been responsible for most of the observed temperature increase (IPCC 2015).

During the same period when increased global warming has occurred, many other changes have occurred in other natural systems. Sea levels have risen; precipitation patterns throughout the world have shifted, with some areas becoming wetter and others drier; snowlines have increased elevation, resulting in changes to the snowpack, runoff, and water storage; and numerous other conditions have been observed. Although it is difficult to prove a definitive cause-and-effect relationship between global warming and other observed changes to natural systems, there is a high level of confidence in the scientific community that these changes are a direct result of increased global temperatures caused by the increased presence of GHGs in the atmosphere (IPCC 2018).

The following are the principal GHG pollutants that contribute to climate change and their primary emission sources:

- Carbon Dioxide: Natural sources of CO2 include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; and evaporation from oceans. Anthropogenic (human) sources include burning of coal, oil, natural gas, and wood.

- Methane: CH4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

- Nitrous Oxide: Primary human-related sources of N2O are agricultural soil management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. N2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests.

- Fluorinated gases: These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes called High Global Warming Potential (High GWP) gases. These High GWP gases include:

- Chlorofluorocarbons (CFC)s: These GHGs are used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants.

- Perfluorinated Chemicals (PFCs): PFCs are emitted as by-products of industrial processes and are also used in manufacturing.

- Sulfur hexafluoride (SF6): This is a strong GHG used primarily as an insulator in electrical transmission and distribution systems.

- Hydrochlorofluorocarbons (HCFCs): These have been introduced as temporary replacements for CFCs and are also GHGs.

- Hydrofluorocarbons (HFCs): These were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are GHGs emitted as by-products of industrial processes and are also used in manufacturing.

GHGs are not monitored at local air pollution monitoring stations and do not represent a direct impact to human health. Rather, GHGs generated locally contribute to global concentrations of GHGs, which result in changes to the climate and environment.

Greenhouse Gas Emissions Inventories

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic (human-caused) sources and are formed from secondary reactions taking place in the atmosphere. Natural sources of GHGs include the respiration of humans, animals, and plants; decomposition of organic matter; volcanic activity; and evaporation from the oceans. Anthropogenic sources include the combustion of fossil fuels by stationary and mobile sources, waste treatment, and agricultural processes.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in IPCC reference documents. GWP is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time the gas remains in the atmosphere ("atmospheric lifetime"). IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of metric tons of CO_2 equivalents (MT CO_2e), which compares the gas in question to that of the same mass of CO_2 (CO_2 has a GWP of 1, by definition).

In order to better understand the sources and magnitudes of GHG emissions, public and private entities at the federal, state, and local level are developing GHG inventories. The Assembly Bill (AB) 32 Scoping Plan (the Scoping Plan) identifies the primary GHG emission "sectors," or types of activities, that account for the majority of GHG emissions generated within California. A brief description of each of the GHG emission sectors is provided below.

- Transportation: GHG emissions associated with on-road motor vehicles, off-road equipment, recreational vehicles, aviation, ships, and rail. Transportation is the largest emissions sector for the state as a whole (and for the county and for Loomis, as well).

- Electricity: GHG emissions associated with use and production of electrical energy. Approximately 25 percent of electricity consumed in California is imported; thus, GHG emissions associated with out-of-state electricity production are also included as part of this sector.

- Industry: GHG emissions associated with industrial land uses (e.g., manufacturing plants and refineries). Industrial sources are predominantly composed of stationary sources (e.g., boilers and engines) associated with process emissions.

- Commercial and Residential: Commercial and residential GHG emission sources include area sources such as landscape maintenance equipment, fireplaces, and natural gas consumption for space and water heating.

- Agriculture: GHG emissions associated with agricultural processes. Agricultural sources of GHG emissions include off-road farm equipment, irrigation pumps, residue burning, livestock, and fertilizer volatilization.

- High Global Warming Potential: This sector represents the generation of high GWP GHGs. Examples of high GWP GHG sources include refrigerants (e.g., hydrofluorocarbons [HFCs], chlorofluorocarbons [CFCs]) and electrical insulation (e.g., sulfur hexafluoride). Although these GHGs are typically generated in much smaller quantities than CO2, their high GWP results in considerable CO2e.

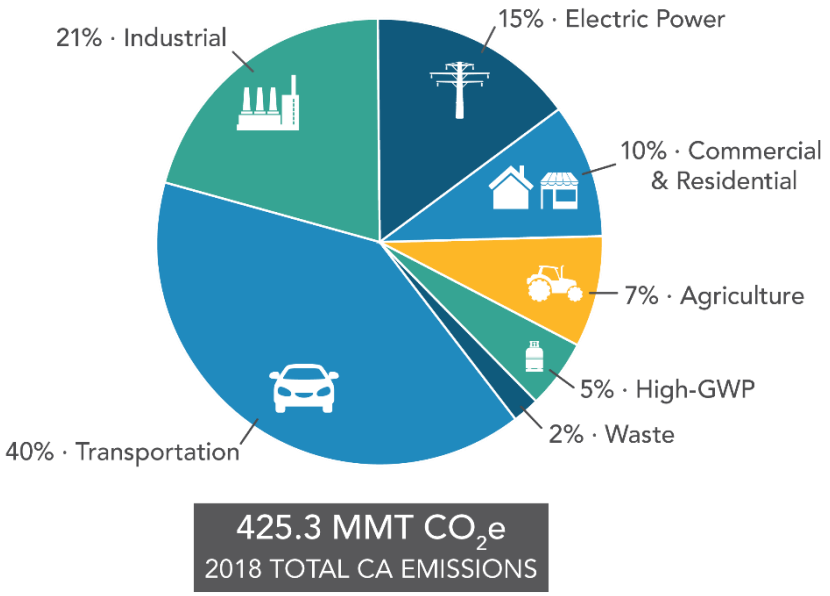
- Recycling and Waste: GHG emissions associated with waste management facilities and landfills.

CARB prepares an annual, statewide GHG emissions inventory, including an analysis of emissions by sector. As shown in Figure 3-1, California produced 425.3 million MT CO_2e in 2018 (the latest available full year of reporting). Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2018, accounting for 41 percent of total GHG emissions. Transportation was followed by industry, which accounted for 24 percent, and then the electricity sector (including in-state and out-of-state sources) accounted for 9 percent of total GHG emissions (CARB 2020).

California has implemented several programs and regulatory measures to reduce GHG emissions. Figure 3-2 demonstrates California's progress in achieving statewide GHG emissions reduction targets. Since 2007, California's GHG emissions have been declining; GHG emissions have continued to decline even as population and gross domestic product have increased.

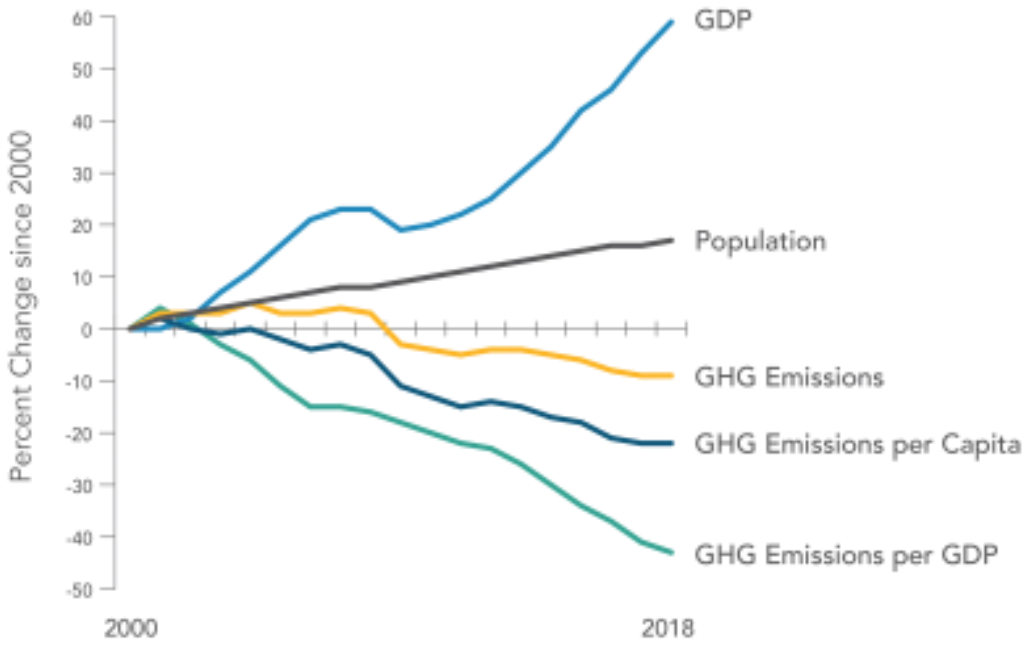
Placer County conducted a baseline (2005) and updated (2015) emissions inventory for County government operations and emissions associated with the unincorporated county. In 2005, unincorporated Placer County's emissions were 1,440,910 $MTCO_2e$ in total; transportation was the largest source of emissions followed by residential energy use and agricultural and forest management, accounting for approximately 36 percent, 24 percent, and 19 percent, respectively, of the total. County operations resulted in 40,520 $MTCO_2e$; solid waste was the largest source, generating 39 percent of the total, followed by employee commute and travel, buildings and facilities, and the County's vehicle fleet, accounting for 22 percent, 17 percent, and 13 percent, respectively. Community-wide emissions in 2015 totaled 1,203,260 $MTCO_2e$, a 16-percent decrease from 2005 levels, although the relative contribution of the sectors remained similar. County operations emissions increased to 49,390 $MTCO_2e$ in 2015 (an approximately 22 percent increase), but again the relative contribution of each sector was similar to the 2005 findings. The comparison between 2005 and 2015 emissions for the unincorporated county and County operations are shown in Figures 3-3 and 3-4.

In 2012, the Sierra Business Council published a community-wide GHG emissions inventory in collaboration with the Town of Loomis. The inventory (Sierra Business Council 2012) estimated emissions using the baseline year of 2005 using the International Local Government GHG Emissions Analysis Protocol. The inventory, summarized in Table 3-1, identified GHG emissions from multiple sectors: residential, commercial, industrial, vehicle transportation, solid waste, and wastewater. According to this estimate, in 2005 the Town of Loomis produced approximately 56,000 $MTCO_2e$, for a per-capita rate of approximately 8.8 $MTCO_2e$ per resident. As with the state as a whole, vehicle transportation was the largest source of GHG emissions, contributing more than 61 percent of the total.



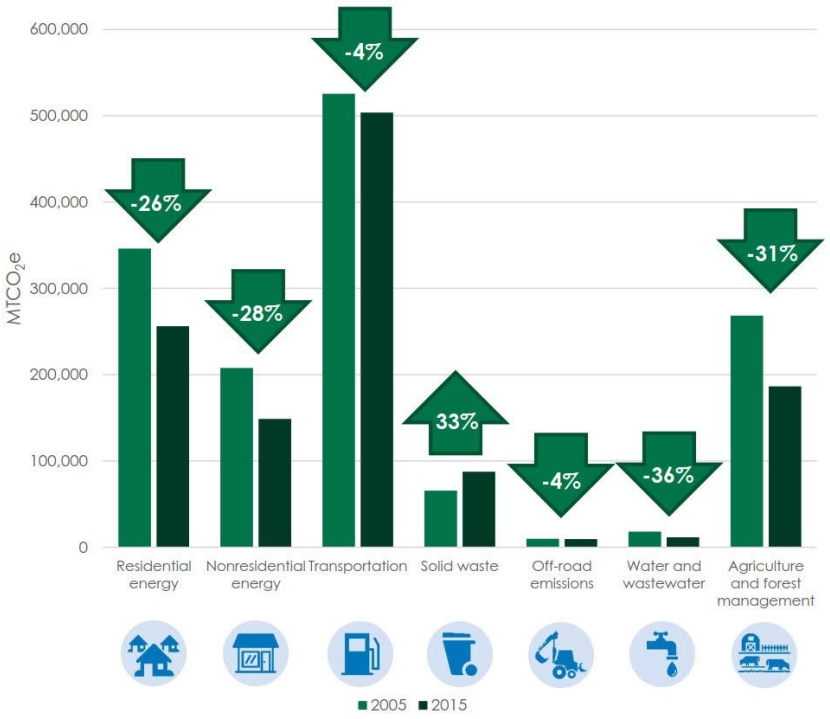
Source: CARB 2020

Figure 3-1. 2018 California GHG Emissions Inventory by Sector



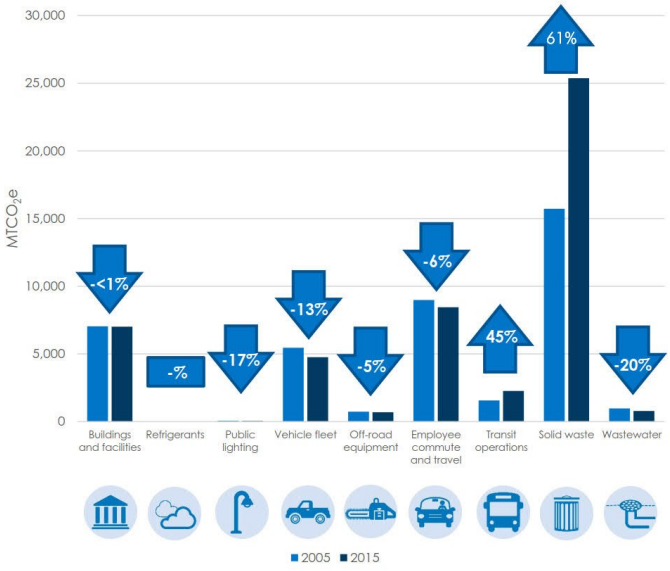
Source: CARB 2020

Figure 3-2. Trends in California GHG Emissions (Years 2000 to 2018)



Source: Placer County 2020

Figure 3-3. Placer County Unincorporated Community-Wide GHG Emissions by Sector (Years 2005 vs 2015)



Source: Placer County 2020

Figure 3-4. Placer County Government Operations GHG Emissions by Sector (Years 2005 vs 2015)

Table 3-1. Town of Loomis 2005 GHG Emissions Inventory (Community-wide)

Sector	Emissions (MT CO_2e)	Percent of Inventory
Residential	11,619	20.7
Commercial and Industrial	8,488	15.2
Vehicle transportation	34,238	61.1
Waste and wastewater	1,696	3.0
Total Emissions in Tow of Loomis	**56,041**	**100.0**

Notes:
CO_2e = carbon dioxide equivalent; MT = metric tons
Source: Sierra Business Council 2012

Since the Town of Loomis' 2005 GHG emissions inventory, statewide actions have continued to be implemented to reduce GHG emissions, including a cleaner-burning vehicle fleet throughout California and increased requirements for reducing the carbon intensity of electricity. As a part of the Town of Loomis 2005 GHG Emissions Inventory, next steps in sustainability and climate change mitigation activities were identified. These actions include:

- Leading by example through actions to reduce government operations emissions.
    - E.g., installing energy-efficient light bulbs and establishing carpool programs.
- Establishing robust community-wide recycling and waste reduction programs.
- Collaborating with Placer Sustain, a Placer County sustainability non-profit organization.

As shown above, vehicle transportation is a substantial driver of GHG emissions at both a state and regional level. There is a direct link between vehicle miles traveled (VMT) and mobile-source GHG emissions. According to the Placer County Transportation Planning Agency 2036 Regional Transportation Plan (2016), Placer County VMT was approximately 9,770,592 miles per day in 2012, projected to increase approximately 40 percent by 2036. However, the VMT per capita for the county was estimated to be 28.16 miles per day per capita in 2012, and projected to decrease 4.5 percent by 2036 through the integrated land use plans of Placer County jurisdictions and transportation projects contained in the 2036 Regional Transportation Plan (PCTPA 2016).

Effects of Climate Change

Climate change is caused by an increase in levels of GHG emissions in the atmosphere. Despite the level of action taken on the part of the world's governments to reduce GHG emissions, the earth is already committed to a certain level of climate change caused by GHG emissions that occurred over the last 150 years, and some climate change impacts can be considered foreseeable. Although climate change is a global phenomenon, the effects vary by location and can be experienced on a regional and local scale.

As noted in the Sacramento Valley Regional Report of the California's Fourth Climate Change Assessment, in which the western portion of Placer County is a part of the Sacramento Valley region, climate change is expected to make the Sacramento region hotter, drier, and increasingly prone to extremes like megadroughts, flooding, and large wildfires. These changing conditions are likely to affect water and energy availability, agricultural systems, plants and wildlife, public health, housing, and quality of life.

In Placer County, potential hazards (or exposures) related to climate change have also been analyzed as part of a vulnerability assessment for the County. Findings indicated that the most prominent localized effects of climate change include increased risks associated with agriculture and forestry pests and disease, avalanche (specific to higher elevation areas in the northeastern portion of the county), drought, extreme heat, flooding, fog, human health hazards, landslides, severe winter weather, and wildfire.

The warmer temperatures brought on by climate change are likely to cause an increase in extreme heat events in all parts of California, including Placer County and the Sacramento Valley. Depending on emissions levels and location, the number of extreme heat days is expected to increase from a historical average of 4 to between 22 and 32 days per year by the middle of the century, and between 33 and 62 days per year by the end of the century. Placer County is also expected to see an increase in average daily high temperatures. More frequent and intense heat waves in the Sacramento Valley, with fewer cooling degree days, place stress on certain crops, optimal human health conditions, and the longevity of transportation and electrical infrastructure.

Although droughts are a regular feature of California's climate, scientists expect that climate change will lead to more frequent and more intense droughts statewide. Overall, precipitation levels are expected to stay similar, and may even increase in some places. However, the state's current data says that there will be more years with extreme levels of precipitation, both high and low, which is expected to cause more droughts that last longer and are more intense, compared to historical norms. To exacerbate this changing condition, an increase in the global average temperature is expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Snowpack in the Sierra Nevada provides both water supply (runoff from melting) and storage (within the snowpack before melting), which is a major source of supply for the state, including the Town of Loomis. According to California's Fourth Climate Change Assessment, the Northern Sierras – a primary water source for the Sacramento Valley – are expected to have almost no annual snowpack by the end of the 21st century, while the Southern Sierras, which have higher elevations and therefore less impacted by rising temperatures, are expected to have total snow water decline by about 40 percent by the end of the century (CEC, et. at. 2018). Although current forecasts are uncertain, this may make water levels particularly low in late summer and early fall, which are often the hottest parts of the year in the region.

A flood can be caused by heavy rainfall, long periods of moderate rainfall, and rapid melting of accumulated snow. As noted above, more extreme precipitate events are anticipated as a result of climate change; these events are expected to increase the risk of flooding and are expected to occur more often throughout the Sacramento Valley and Placer County. In addition, the increased drought conditions may result in less permeable soils as they dry out and harden, and therefore increased runoff of precipitation along the soil rather than being absorbed into the ground. New extremes will challenge water storage and food control systems which were designed for the historical climate patterns. In particular, particular, higher extreme rainfall will bring more surface runoff and less groundwater recharge.

The forests, farms, and ranches of Placer County all face risk from assorted pests and diseases that may affect crop plants, trees, and livestock. One of the most direct effects of climate change is that average temperatures will increase, and this has a bearing on many pests and diseases. Many pests and organisms that carry diseases are most active during warmer months, so the threat of infection or infestation can be higher during this time of year. Temperatures are expected to get warmer earlier in the year and remain warmer until later in the year due to climate change, creating a wider window for active pests and diseases that impact agricultural production.

Placer County adopted the Placer County Sustainability Plan in January of 2020 that serves as a road map outlining programs and policies that will be undertaken by the community and the County to achieve the most significant GHG emission reductions in the unincorporated county. While the Placer County

Sustainability Plan does not specifically address the Town of Loomis, the plan includes actions being taken to promote sustainability and GHG emissions reductions in the region, several of which are applicable to the Town of Looms. Many of the regional emissions sources are similar to those of the Town of Loomis, and many actions may also support emissions reductions within the Town or demonstrate what programs are feasible and applicable to a municipality like the Town of Loomis.

Regulatory Framework

While many federal, State, regional, and local GHG-related plans, policies, and regulations do not directly apply to the implementation of the Town's General Plan Update, the information below is helpful for understanding the overall context for GHG emissions impacts and strategies to reduce GHG emissions.

Federal

U.S. Environmental Protection Agency "Endangerment" and "Cause or Contribute" Findings

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- Endangerment Finding: The current and projected concentrations of the six key GHGs—CO2, methane, nitrous oxide, hydrofluorocarbons, perfluorinated chemicals, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to GHG pollution, which threatens public health and welfare.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year 2008 Consolidated Appropriations Act (House of Representatives Bill 2764; Public Law 110-161), which required EPA to develop "…mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy…." The Reporting Rule applies to most entities that emit 25,000 MT CO_2e or more per year. Since 2010, facility owners have been required to submit an annual GHG emissions report with detailed calculations of the facility's GHG emissions. The Reporting Rule also mandates compliance with recordkeeping and administrative requirements to enable EPA to verify annual GHG emissions reports.

Corporate Average Fuel Economy (CAFE) Standards and the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule

U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) implemented national GHG emission and fuel economy standards for model year 2012–2016 light-duty cars and trucks. The second phase of the standards includes GHG and fuel economy standards for model years 2017–2025. The 2017–2025 standards are anticipated to save approximately 4 billion barrels of oil and 2 billion MT of GHG emissions. In 2025, if all standards are met through fuel efficiency improvements, the average industry fleetwide fuel efficiency for light-duty cars and trucks would be approximately 54.5 miles per gallon (EPA 2012). In 2018, the United States Department of Transportation and EPA proposed to amend the existing CAFE standards and establish new standards for model years 2021 through 2026. In 2019, EPA and NHTSA published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019.) The One National Program revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in Part 2 of the regulations, if implemented, would address fuel efficiency standards for light-duty vehicles model years 2021 through 2026, have not been drafted as of the writing of this document.

Standards for light-duty cars and trucks, EPA and NHTSA have implemented Phase 1 of the Medium- and Heavy-Duty Vehicle GHG Emissions and Fuel Efficiency Standards, which apply to model years 2014–2018. It is anticipated that medium- and heavy-duty vehicles built to these standards from 2014–2018 will reduce CO_2 emissions by approximately 270 million MT over their lifetimes (EPA 2012). Phase 2 of these standards apply to model years 2021–2027 and would reduce GHG emissions by 1 billion MT over the lifetimes of those vehicles (EPA 2015).

State

The State's legal framework for GHG emission reductions has come about through Executive Orders, legislation, regulations, and court decisions. Legislation with regard to climate change adaptation and resilience is also highlighted below.

Statewide Emission Reduction Targets Pursuant to the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32 and Senate Bill [SB] 32, and Executive Orders [EOs] S-3-05 and B-30-15)

EO S-3-05 (2005) and AB 32 (2006)

Issued by the Governor in recognition of California's vulnerability to the effects of climate change, EO S-3-05 established progressive GHG emission reduction targets for the State, as follows:

- By 2010, reduce GHG emission to the year 2000 level;
- By 2020, reduce GHG emissions to the year 1990 level; and,
- By 2050, reduce GHG emissions to 80 percent below the 1990 level.

The California Global Warming Solutions Act of 2006, commonly known as AB 32, further detailed and put into law the midterm GHG reduction target established in EO S 3 05 to reduce statewide GHG emissions to 1990 levels by 2020 and created a comprehensive, multi-year program to reduce GHG emissions in California. AB 32 also directed CARB to accomplish the following core tasks:

- Establish the statewide goal of reducing GHG emissions.
- Establish a mandatory reporting system to track and monitor emissions levels.
- Develop various compliance options and enforcement mechanisms.

EO B-30-15 (2014) and SB 32 (2016)

EO B-30-15 established a statewide GHG reduction goal of 40 percent below 1990 levels by 2030. This emission reduction goal serves as an interim goal between the AB 32 target to achieve 1990 emission levels by 2020 and the long-term goal set by EO S-3-05 to reduce statewide emissions 80 percent below 1990 levels by 2050. In addition, the executive order aligned California's 2030 GHG reduction goal with the European Union's 2030 reduction target that was adopted in October 2014.

SB 32 signed into law the emissions goal of EO B-30-15, extending the provisions of AB 32 from 2020 to 2030 with a new target of 40 percent below 1990 levels by 2030.

EO B-55-18 (2018)

EO B-55-18 acknowledges the environmental, community, and public health risks posed by future climate change. It further recognizes the climate stabilization goal adopted by 194 states and the European Union under the Paris Agreement. Based on the worldwide scientific agreement that carbon neutrality

must be achieved by midcentury, EO B-55-18 establishes a new state goal to achieve carbon neutrality as soon as possible and no later than 2045, and to achieve and maintain net negative emissions thereafter. The EO charges CARB with developing a framework for implementing and tracking progress towards these goals. EO B-55-18 is only binding on state agencies.

California's Climate Change Scoping Plan

CARB adopted the Climate Change Scoping Plan (Scoping Plan) in December 2008, which contains California's primary strategies for achieving the GHG reductions required by AB 32. The Scoping Plan encourages local governments to align land use, transportation, and housing plans to minimize vehicle trips.

CARB is required to update the Scoping Plan at least once every five years to evaluate progress and develop future inventories that may guide this process. The First Update to the Climate Change Scoping Plan: Building on the Framework (2014 Scoping Plan Update) determined that the state was on schedule to achieve the 2020 target. However, an accelerated reduction in GHG emissions would be required to achieve the EO S-3-05 emissions reduction target for 2050.

California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target (2017 Scoping Plan Update) was driven by the 2030 target (pursuant to SB 32). The 2017 Scoping Plan Update established a plan of action, consisting of a variety of strategies to be implemented, rather than a single solution, to achieve the SB 32 emissions target.

Sustainable Communities and Climate Protection Act of 2008 (SB 375)

The Sustainable Communities and Climate Protection Act of 2008 (SB 375) built upon the existing framework of regional planning. In 2010, CARB adopted regional GHG targets for passenger vehicles and light trucks for 2020 and 2035 for the 18 metropolitan planning organizations (MPOs) in California. In 2018, CARB updated these targets. Under this legislation, each MPO is required to incorporate these GHG emissions targets into the regional transportation planning process and adopt either a "sustainable communities strategy" or an "alternative planning strategy" as part of its regional transportation plan to identify land use, housing, and transportation strategies that will achieve the regional GHG reduction targets.

Renewables Portfolio Standard

SB 1078, SB 107, EO S 14 08, and SB X1-2 have established increasingly stringent renewable portfolio standard (RPS) requirements for California's utility companies. RPS-eligible energy sources include wind, solar, geothermal, biomass, and small-scale hydro projects.

SB 1078 required investor-owned utilities to provide at least 20% of their electricity from renewable resources by 2020.

SB 107 accelerated the SB 1078 timeframe to take effect in 2010.

EO-S-14-08, codified by SB X1-2, increased the RPS further to 33% by 2020.

SB 350 increased the RPS to 50% by 2030.

SB 100 increased the RPS to 60% by 2030 and required the State's electricity to come from carbon-free resources by 2045.

These requirements reduce the carbon content of electricity generation and reduce GHG emissions associated with both existing and new development.

California Code of Regulations, Title 20 and 24

New buildings constructed in California must comply with the standards contained in California Code of Regulations (CCR) Title 20, Energy Building Regulations, and Title 24, Energy Conservation Standards.

Title 20 standards range from power plant procedures and siting to energy efficiency standards for appliances, ensuring reliable energy sources are provided and diversified through energy efficiency and renewable energy resources. California's 2009 Appliance Efficiency Regulations (20 CCR 1601–1608) were adopted by the CEC on December 3, 2008, and approved by the California Office of Administrative Law on July 10, 2009. The regulations include standards for both federally regulated appliances and non-federally regulated appliances.

Title 24 requires the design of building shells and building components to conserve energy. The Energy Conservation Standards for new residential and nonresidential buildings were established by the CEC in June 1977 June 1977 and were most recently revised in 2019 (Title 24, Part 6 of the California Code of Regulations [Title 24]). Title 24 governs energy consumed by commercial and residential buildings in California. This includes the HVAC system; water heating; and some fixed lighting. Non-building energy use, or "plug-in" energy use, is not covered by Title 24. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. California's Building Energy Efficiency Standards are updated on an approximate three-year cycle. The most recent update was in 2019 and took effect July 1, 2020. One of the improvements included within the 2019 Building Energy Efficiency Standards is the requirements that certain residential developments, including some single-family and low-rise residential development, include on-site solar energy systems capable of producing 100 percent of the electricity demand of the residences. With implementation of solar photovoltaic systems with new residential development, homes built under the 2019 standards will use approximately 53 percent less energy than those under the 2016 standards. Nonresidential buildings are anticipated to consume 30 percent less energy as compared to nonresidential buildings constructed under the 2016 California Energy Code, primarily through prescriptive requirements for high-efficiency lighting (CEC 2018). The Energy Code is enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary related to local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in the California Energy Code.

CALGreen (24 CCR Part 11) is intended to enhance the design and construction of buildings through the use of building concepts that benefit the environment and public health and encourage sustainability in construction and operations of a building. The provisions of the code apply to the planning, design, construction, use, and occupancy of all newly constructed buildings and structures throughout California. Some key provisions of the code include, but are not limited to, requirements related to the installation of electric vehicle charging infrastructure in residential and nonresidential developments, establishment of maximum fixture water use rates to reduce indoor water use consumption, diversion of 65 percent of construction and demolition waste from landfills, and mandatory use of low-pollutant emitting interior finish materials such as paints, carpet, and flooring.

Executive Order B 18 12

Executive Order B 18 12 orders all new State buildings and major renovations beginning design after 2025 be constructed as Zero Net Energy facilities. The Executive Order sets an interim target for 50 percent of new facilities beginning design after 2020 to be Zero Net Energy. It directs State agencies to

take measures toward achieving Zero Net Energy for 50 percent of the square footage of existing State-owned building area by 2025.

Senate Bill 379

Senate Bill 379 requires that all cities and counties within the California address climate change adaptation and resilience within the safety element of their general plans. The bill requires a review and update of general plans that includes a vulnerability assessment that identifies the risks climate change poses to the local jurisdiction and the geographic areas at risk from climate change, a set of adaptation and resilience goals, policies and objectives based on the findings of the vulnerability assessment, and a set of implementation strategies.

Regional and Local

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG). SACOG is designated by the federal government as the Metropolitan Planning Organization for the Sacramento region, maintaining a regional transportation plan in coordination with each of the local 28 member cities and counties, including Placer County. SACOG plays a central role in transportation infrastructure planning for the region, while also serving as a forum for the study, planning and resolution of other planning issues facing the local member governments. The most recent Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) for the SACOG region, the 2020 MTP/SCS, was adopted in November 2019. The 2020 MTP/SCS lays out a plan that links land use, air quality, and transportation needs. Under SB 375, the proposed MTP/SCS is subject to review and approval by CARB. Specifically, the SCS component of the regional plan will be reviewed by CARB to determine whether the adopted SCS, if implemented, would meet the region's 2035 19 percent per-capita passenger vehicle greenhouse gas reduction target. As shown in the 2020 MTP/SCS and EIR, the region is making progress in VMT reductions and is making significant strides in the development of new initiatives, projects, and programs in the 2020 MTP/SCS.

Placer County Transportation Planning Agency

Placer and El Dorado counties each have their own state designation as Regional Transportation Planning Agencies (RTPAs) that are responsible for developing their own transportation plans. SACOG, as the RTPA for Sacramento, Sutter, Yolo, and Yuba counties, works in coordination with Placer County Transportation Planning Agency to ensure consistency between the county-specific plan and the broader region-wide plan. Since 1991, Placer County has been eligible to receive an apportionment of Congestion Mitigation and Air Quality funds from the federal government for projects designed to reduce congestion and improve air quality. Since that time, PCTPA has approved millions of dollars in Congestion Mitigation and Air Quality funds for alternatively-fueled transit buses, transit facilities, bikeways, rail station improvements, and pedestrian safety projects. As the vehicle fleet mix in California shifts toward more fuel-efficient vehicles, the fuel demand per mile traveled will decrease over time.

Placer County Sustainability Plan

The Placer County Sustainability Plan was the County's first GHG emissions reduction plan and adaptation strategy, adopted in January 2020. The plan serves as a roadmap for programs and policies that will be undertaken at the county level to achieve GHG emissions reductions. The actions also provide co-benefits, such as reduced energy costs, reduced air and water pollution, supporting local economic development, and improving public health, safety, and quality of life. The GHG reduction measures address emissions from the building energy, land use and transportation, water consumption, and waste generation sectors. The plan's adaptation strategy includes a vulnerability assessment that establishes which areas, populations, and assets in the County are most vulnerable to severe hazards including wildfire, drought, extreme heat, bark beetle infestation, flooding, and severe winter weather, among

others. A set of adaptation and resiliency goals, policies, objectives, and feasible implementation measures are also included.