

## 4.5 GREENHOUSE GAS EMISSIONS

### 4.5.1 INTRODUCTION

This section describes the potential greenhouse gas (GHG) emissions and related impacts associated with the proposed General Plan Update. The impact analysis examines GHG emissions associated with both construction and operational activities within the Planning Area. To provide context for the impact analysis, this chapter begins with a discussion of the environmental setting, including the existing science related to GHGs and an overview of state and local GHG emissions inventories. Next, the regulatory framework is described, which provides part of the basis for impact significance thresholds used in the impact analysis. The regulatory framework includes the existing General Plan policies that are relevant to GHG emissions. The section concludes with impact analysis methodology used to estimate GHG emissions attributable to buildout of the General Plan and significance criteria, and an analysis of potential GHG emissions impacts of the proposed General Plan Update.

The General Plan would not, by itself, contribute GHG emissions that have a significant impact related to climate change; however, cumulative emissions from many projects and plans all contribute to global GHG concentrations and the climate system. Accordingly, this section considers the cumulative contribution of implementation of the General Plan to the significant cumulative impact of climate change.

The City has reviewed, and incorporated recommendations based on a letter from the Placer County Air Pollution Control District (PCAPCD) provided in response to the EIR Notice of Preparation (NOP), which includes recommendations related to thresholds of significance and mitigation.<sup>1</sup>

### 4.5.2 ENVIRONMENTAL SETTING

#### 4.5.2.1 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

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<sup>11</sup> The comment letter provided recommendations regarding appropriate methods of evaluation and thresholds of significance. PCAPCD recommended using the CalEEMod emission modeling software to estimate project-related emissions from construction and operational phases and recommended comparing emissions estimates to the PCAPCD-adopted thresholds of significance as a metric for the level of significance of potential impacts of such emissions. If the analysis demonstrates the potential for the proposed General Plan Update to cause or generate significant adverse impacts, PCAPCD provided reference to PCAPCD's recommended mitigation measures for GHGs to be considered to minimize or eliminate such adverse impacts.

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).

#### **4.5.2.2 PRINCIPAL GREENHOUSE GASES AND SOURCES**

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.

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

- ▶ Carbon Dioxide: Natural sources of CO<sub>2</sub> 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: CH<sub>4</sub> is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- ▶ Nitrous Oxide: Primary human-related sources of N<sub>2</sub>O are agricultural soil management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. N<sub>2</sub>O 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 (SF<sub>6</sub>): 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.

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<sub>2</sub> equivalents (MT CO<sub>2</sub>e), which compares the gas in question to that of the same mass of CO<sub>2</sub> (CO<sub>2</sub> has a GWP of 1, by definition).

#### 4.5.2.3 GREENHOUSE GAS EMISSION INVENTORIES

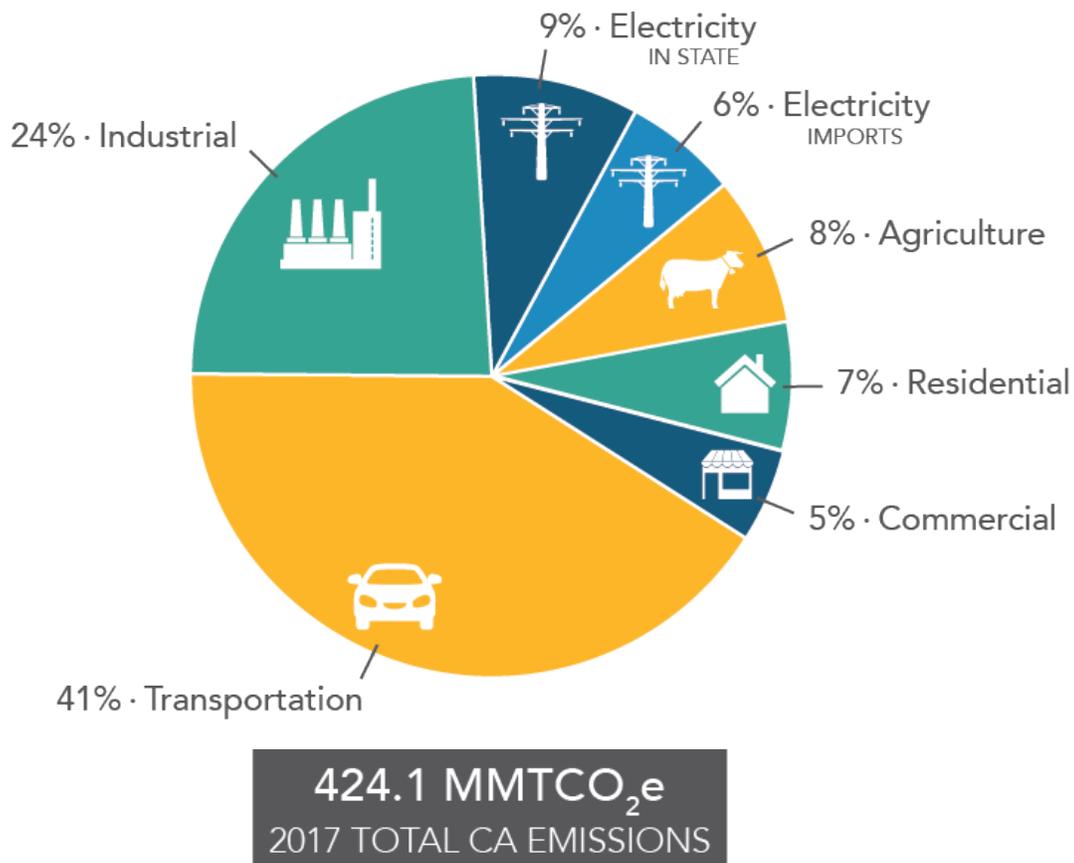
In order to better understand the sources and magnitudes of GHG emissions, public and private entities at the federal, state, and local level are developing GHG inventories. The Assembly Bill (AB) 32 Scoping Plan (the Scoping Plan) identifies the primary GHG emission “sectors,” or types of activities,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

- ▶ **Transportation:** This sector represents the 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.
- ▶ **Electricity:** This sector represents the 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:** This sector represents the 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:** This sector represents the 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 CO<sub>2</sub>, their high GWP results in considerable CO<sub>2</sub>e.
- ▶ **Recycling and Waste:** This sector represents the GHG emissions associated with waste management facilities and landfills.

### California State Inventory

The California Air Resources Board (ARB) prepares an annual, statewide GHG emissions inventory, including an analysis of emissions by sector. As shown in Exhibit 4.5-1, California produced 424.1 million MT CO<sub>2</sub>e in 2017 (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 2017, 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 (ARB 2020).

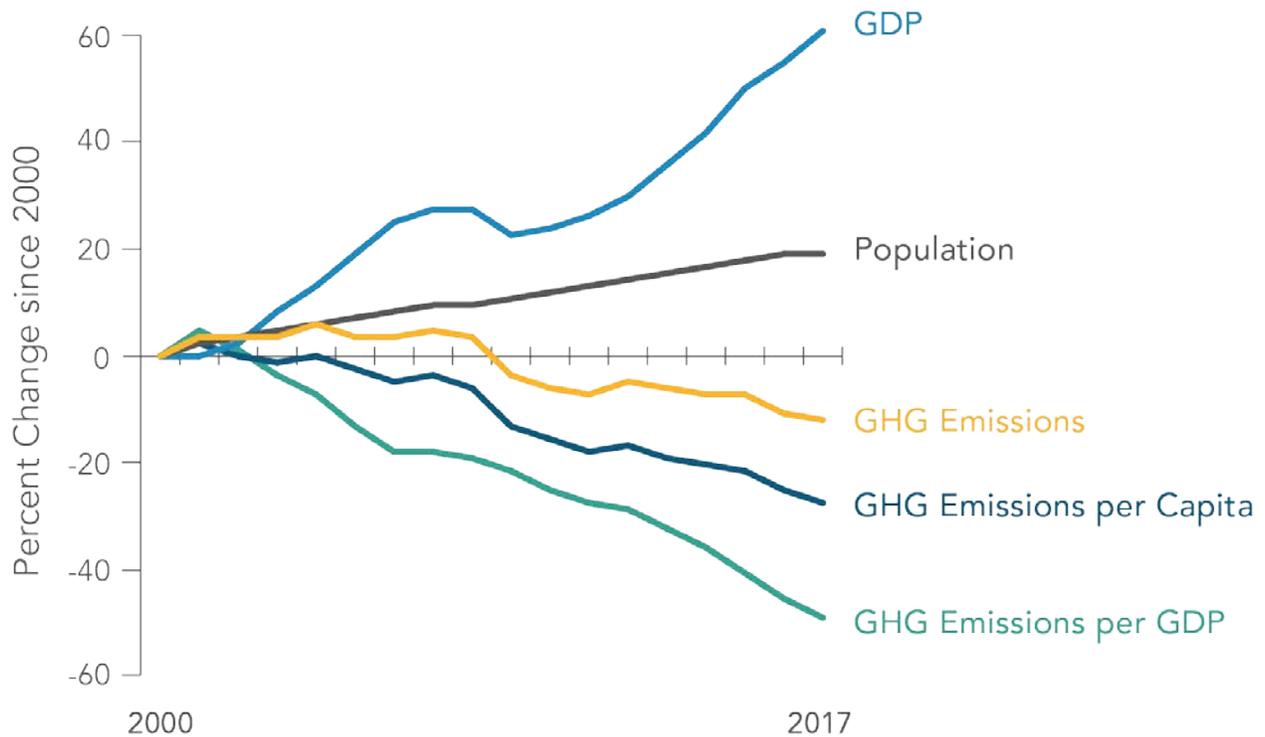


Source: ARB 2020

**Exhibit 4.5-1**

**2017 California GHG Emissions Inventory by Sector**

California has implemented several programs and regulatory measures to reduce GHG emissions. Exhibit 4.5-2 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 (GDP) have increased.



Source: ARB 2020

**Exhibit 4.5-2 Trends in California GHG Emissions (Years 2000 to 2017)**

**Placer County Inventory**

In 2018, the Sierra Business Council published a community-wide GHG emissions inventory in collaboration with Placer County (Placer County 2018). The inventory estimated 2015 GHG emissions for unincorporated Placer County community-wide activities and sources and County operations, and compared this 2015 emissions inventory to the baseline year of 2005 using the International Local Government Operations Protocol and the U.S. Community Protocol.

Like the state as a whole and most communities around the state, by far, the largest contribution to total GHG emissions in unincorporated Placer County is transportation. The inventory identified GHG emissions from multiple sectors: residential energy use, non-residential energy use, transportation, waste, water and wastewater, and agriculture, livestock and forestry. According to this estimate, total community-wide GHG emissions

decreased 18 percent from 1,440,913 to 1,181,915 MT CO<sub>2</sub>e from 2005 to 2015. Over this time, the population of unincorporated Placer County increased by 6 percent and employment increased by 19 percent. Overall per-capita (per person) emissions decreased by 23 percent and per-service population (a combination of residents and employees) emissions decreased by 24 percent. Residential and non-residential energy use declined due to reduced energy use and increased electricity emissions efficiency. Agricultural emissions also declined substantially, due in large part to a reduction in acres of rice cultivation and number of livestock. Transportation emissions declined slightly because of improvements in vehicle fuel efficiency and cleaner burning fuels despite an increase in overall vehicle miles traveled (VMT).

### **4.5.3 REGULATORY FRAMEWORK**

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

#### **4.5.3.1 FEDERAL PLANS, POLICIES, REGULATIONS AND LAWS**

##### **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—CO<sub>2</sub>, 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<sub>2</sub>e 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.

##### **U.S. Environmental Protection Agency and National Highway Traffic Safety Administration Standards**

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 California. Part 2 of the regulations pertaining to emissions standards for model years 2021 through 2026 are still pending.

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<sub>2</sub> 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).

#### **4.5.3.2 STATE PLANS, POLICIES, REGULATIONS, AND LAWS**

Independent of federal requirements, the State of California (State) has adopted its own GHG regulations and emission reduction goals. The following presents a summary of the State’s GHG emission targets and related regulations, as well as a summary of key State policies and programs related to emission sources relevant to the proposed General Plan Update.

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

##### ***Executive Order S-3-05 (2005) and Assembly Bill (AB) 32 (2006)***

Issued by the Governor in recognition of California’s vulnerability to the effects of climate change, Executive Order (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 Senate Bill (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 the ARB 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**

ARB 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, ARB 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, ARB 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.

## Advanced Clean Cars Program/Zero Emission Vehicle Program (AB 1493)

AB 1493, also known as the Pavley regulations, required CARB to adopt regulations by January 1, 2005, that would result in the achievement of the "maximum feasible" reduction in GHG emissions from vehicles used in the state primarily for noncommercial, personal transportation. In 2009, the EPA Administrator granted a CAA waiver of preemption to California, allowing the state to implement its own GHG emissions standards for motor vehicles. California agencies worked with federal agencies to conduct joint rulemaking to approve a new emissions-control program for model years 2017–2025.

The program was implemented through a single package of standards called Advanced Clean Cars (California Code of Regulations [CCR] Title 13, Sections 1962.1 and 1962.2), inclusive of the Low-Emission Vehicle III amendments, the Zero-Emission Vehicle program, and the Clean Fuels Outlet regulation.

As described above under Federal Regulations, the SAFE Vehicles Rule Part One: One National Program was effective November 26, 2019. Through this ruling, EPA withdrew California's waiver of preemption and NHTSA finalized regulatory text related to preemption. California and 22 other states have filed suit to challenge the NHTSA preemptive regulations and California filed suit to challenge EPA's waiver rescission. Thus, the future status of these programs is currently speculative.

## Building Energy Policies

### ***Title 24, Part 6***

Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Although not initially developed to reduce GHG emissions, Part 6 of Title 24 specifically establishes Building Energy Efficiency Standards that save energy, increase electricity supply

reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

### **Title 24, Part 11**

The California Green Building Standards Code (Part 11 of Title 24), commonly referred to as CALGreen, set minimum mandatory standards, as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality.

### **Title 20**

Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. Performance of appliances must be certified through the California Energy Commission to demonstrate compliance with standards.

## **4.5.3.3 LOCAL PLANS, POLICIES, REGULATIONS, AND LAWS**

At the local level, GHG emission sources are managed through land use, development and transportation planning practices.

### **Placer County Air Pollution Control District**

PCAPCD regulates local air quality and air pollutant emissions sources in Placer County. In its *CEQA Air Quality Handbook*, PCAPCD includes a chapter that outlines guidance for analyzing construction emissions, including GHG emissions, and a GHG-specific chapter that discusses the recommended approach to evaluating operational GHG emissions. PCAPCD also includes a list of analysis expectations and methodologies for CEQA analyses.

On October 13, 2016, the PCAPCD Board of Directors adopted the Review of Land Use Projects under CEQA Policy, which established thresholds of significance for GHG emissions. In developing the thresholds, the district took into account health-based air quality standards and the strategies to attain air quality standards, historical CEQA project review data in Placer County, statewide regulations to achieve GHG emission reduction targets, and the geographic and land use features of Placer County. PCAPCD adopted three threshold approaches: (1) a bright-line threshold of 10,000 metric tons of CO<sub>2</sub>e per year for the construction and operational phases of land use projects as well as stationary source projects; (2) an efficiency matrix for the operational phase of land use development projects when emissions exceed a de minimis level of emissions; and (3) a de minimis for the operational phases of 1,100 metric tons of CO<sub>2</sub>e per year. The Air District's objective was to identify a "reasonable threshold which would capture larger-scale projects with significant GHG emission contributions that should implement mitigation" that was largely based on the work of other air districts for mass emissions and considered how the selected thresholds would affect projects (PCAPCD 2016). The Air District used assumptions (such as a single average household size figure, model defaults, the previous versions of the CalGreen Code, and assumptions related to statewide reduction programs) to create an efficiency matrix that is tied to population for residential projects and building square footage for non-residential projects that is more permissive for rural project locations compared to urban project locations.<sup>2</sup> These thresholds were designed to apply to land use

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<sup>2</sup> Although the Low Carbon Fuel Standard was removed from the CalEEMod software by ARB since the emissions reductions occur "upstream" from development projects, it appears LCFS was incorporated in the PCAPCD approach.

projects, but are not necessarily applicable to a General Plan analysis, so are not used herein. Refer to the “Thresholds of Significance” section, below, for a discussion of the selected threshold.

## **Sacramento Area Council of Governments**

The Sacramento Area Council of Governments (SACOG). SACOG is the MPO 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 the ARB. 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.

## **Existing City of Roseville General Plan**

The following goals and policies are included in the existing General Plan, and are relevant to reducing GHG emissions within the City (City of Roseville 2016).

**Air Quality Goal 2:** Integrate air quality planning with the land use and transportation planning process.

**Air Quality Goal 3:** Encourage the coordination and integration of all forms of public transport while reducing motor vehicle emissions through a decrease in the average daily trips and vehicle miles traveled and by increasing the commute vehicle occupancy rate by 50% to 1.5 or more persons per vehicle.

**Air Quality Goal 5:** Provide adequate pedestrian and bikeway facilities for present and future transportation needs.

**Air Quality Goal 6:** Promote a well-designed and efficient light rail and transit system.

**Air Quality Goal 7:** While recognizing that the automobile is the primary form of transportation, the City of Roseville should make a commitment to shift from the automobile to other modes of transportation.

- ▶ **Air Quality - Transportation and Circulation Related Policy 6:** Develop consistent and accurate procedures for mitigating transportation emissions from new and existing projects.
- ▶ **Air Quality - Transportation and Circulation Related Policy 7:** Encourage alternative modes of transportation including pedestrian, bicycle, and transit usage.
- ▶ **Air Quality – Land-Use-Related Policy 9:** Encourage land use policies that maintain and improve air quality.

- ▶ **Air Quality - Energy Conservation Related Policy 10:** Conserve energy and reduce air emissions by encouraging energy efficient building designs and transportation systems.
- ▶ **Circulation - Level of Service Policy 2:** Strive to meet the level of service standards through a balanced transportation system that reduces the auto emissions that contribute to climate change by providing alternatives to the automobile and avoiding excessive vehicle congestion through roadway improvements, Intelligent Transportation Systems, and transit improvements.
- ▶ **Circulation - Level of Service Policy 5:** Enable the City to designate a Pedestrian District over a geographic area for the purpose of implementing measures that promote pedestrian walkability and reduce total vehicle miles travelled and resultant air pollution emissions that contribute to climate change. In these districts, the City recognizes that pedestrian travel takes a higher priority than automobile travel, which could reduce the vehicular level of service.
- ▶ **Circulation – Transit Policy 1:** Pursue and support transit services within the community and region and pursue land use, design and other mechanisms that promote the use of such services.
- ▶ **Circulation - Transportation Systems Management Policy 2:** Work with appropriate agencies to develop measures to reduce vehicular travel demand and total vehicle miles traveled and meet air quality goals.
- ▶ **Circulation - Bikeway/Trails Policy 1:** Develop a comprehensive and safe system of recreational and commuter bicycle routes and trails that provides connections between the City’s major employment and housing areas and between its existing and planned bikeways.

**Housing - Residential Energy Efficiency and Conservation Goal 1:** Continue efforts to encourage energy efficiency in housing construction and maintenance.

- ▶ **Housing - Residential Energy Efficiency and Conservation Policy 1:** Roseville electric shall commit to offering Energy Efficiency and Renewable Energy programs.
- ▶ **Housing - Residential Energy Efficiency and Conservation Policy 2:** Roseville Electric shall continue to apply energy-efficient requirements to all residential construction.

**Land Use General Goal 2:** While recognizing that the automobile is the primary form of transportation, the City of Roseville should make a commitment to shift from the automobile to other modes of transportation.

- ▶ **Land Use - Community Form – Relationship to Transit, Pedestrian, Air Quality (RTPAQ) Policy 1:** Promote land use patterns that support a variety of transportation modes and accommodate pedestrian mobility.
- ▶ **Land Use - Community Form – Relationship to Transit, Pedestrian, Air Quality (RTPAQ) Policy 2:** Allow for land use patterns and mixed use development that integrate residential and non-residential land uses, such that residents may easily walk or bike to shopping, services, employment and leisure activities.
- ▶ **Land Use - Community Form – Relationship to Transit, Pedestrian, Air Quality (RTPAQ) Policy 3:** Concentrate higher intensity uses and appropriate support uses within close proximity of transit and bikeway

corridors as identified in the Bicycle Master Plan. In addition, some component of public use such as parks, plazas, public buildings, community centers and/or libraries should be located within the corridors.

- ▶ **Land Use - Community Form – Relationship to Transit, Pedestrian, Air Quality (RTPAQ) Policy 4:** Promote and encourage the location of employee services such as childcare, restaurants, banking facilities, convenience markets, etc., within major employment centers for the purpose of reducing midday service-related vehicle trips.
- ▶ **Land Use - Community Form – Relationship to Transit, Pedestrian, Air Quality (RTPAQ) Policy 5:** Where feasible, improve existing development areas to create better pedestrian and transit accessibility.
- ▶ **Land Use - Community Form – Relationship to Transit, Pedestrian, Air Quality (RTPAQ) Policy 6:** Through City land use planning and development approvals, require that neighborhood serving uses (e.g. neighborhood commercial uses, day care, parks, schools, and other community facilities) be physically linked with adjacent residential neighborhoods.
- ▶ **Land Use - Community Form – Downtown, Neighborhoods Policy 5:** Encourage infill development and rehabilitation that: upgrades the quality and enhances the character of existing areas; enhances public transit use and pedestrian access; efficiently utilizes and does not overburden existing services and infrastructure; and results in land use patterns and densities that provide the opportunity for the construction of household types affordable to all income groups.
- ▶ **Land Use - Community Form – Relationship to New Development Policy 1:** Require that new development areas and associated community-wide facilities (open space resources, parks, libraries, etc.) be linked and oriented to existing developed areas of the community through road networks, public transit systems, open space systems, bike way and pedestrian systems, and other physical connections.
- ▶ **Land Use - Community Form – Jobs/Housing and Economic Development Policy 1:** Strive for a land use mix and pattern of development that provides linkages between jobs and employment uses, will provide a reasonable jobs/housing balance, and will maintain the fiscal viability of the City.
- ▶ **Land Use - Community Form – Community Design Policy 2:** Continue to develop and apply design standards that result in efficient site and building designs, pedestrian friendly projects that stimulate the use of alternative modes of transportation, and the establishment of a functional relationship between adjacent developments.
- ▶ **Public Facilities - Electric Utility Policy 8:** Pursue reasonable and cost-effective energy efficiency, conservation, and management programs that pertinent to the electric utility system.
- ▶ **Public Facilities - Water and Energy Conservation Policy 7:** Require large electricity users to submit a use and conservation plan concurrent with development review specifying measures to be taken to minimize demand.
- ▶ **Public Facilities - Water and Energy Conservation Policy 8:** Enforce energy requirements and encourage development and construction standards that promote energy efficiency and conservation.

- ▶ **Public Facilities - Water and Energy Conservation Policy 10:** Continue and expand energy efficiency and conservation programs to serve all utility users.

## **City of Roseville Communitywide Sustainability Action Plan**

The City of Roseville Communitywide Sustainability Action Plan was an early action by the City in 2010 to set forth a comprehensive strategy to reduce GHG emissions and air pollutant emissions within the community, and addressed both municipal and community-wide emissions (City of Roseville, 2010a). Although it was ultimately not adopted by the City of Roseville, the Sustainability Action Plan was published, and includes important information about GHG emissions within the City, including a baseline 2006 GHG emissions inventory and an efficiency-based emissions target for the year 2020.

### **Adopted Specific Plans and Mitigation Measures**

Currently, the City has adopted 14 Specific Plans. A Specific Plan is a comprehensive planning and zoning document that implements the General Plan by providing development and conservation standards for a defined geographic location within the Planning Area. Each Specific Plan has developed guidelines for site, architectural, landscaping, lighting, roadway networks, pedestrian/bicycle paths, open space corridors, parks, and other aspects of design. Each adopted Specific Plan included an EIR, some of which evaluated potential impacts related to GHG emissions. Where appropriate, mitigation measures were adopted to reduce GHG emissions, and these measures are required to be implemented in the respective Specific Plan Areas. Adopted mitigation measures for GHGs include incorporating a suite of best available and practical approaches to reduce operational emissions in tentative map and design review permit applications, and in consultation with PCAPCD. Copies of the adopted Specific Plans and their associated EIRs are available through the City of Roseville Development Services Department, Planning Division.

## **4.5.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

### **4.5.4.1 METHODOLOGY**

The discussion below presents the methods used for GHG emissions analysis and how significance of GHG emissions impacts was determined. Buildout of the General Plan would generate GHG emissions as a result of short-term construction and long-term operational activities. GHG emissions have the potential to adversely affect the environment because such emissions contribute cumulatively to global climate change. It is unlikely that a single project will contribute significantly to climate change, but cumulative emissions from many projects could affect global GHG concentrations and the climate system. Therefore, impacts are analyzed within the context of the potential contribution to the cumulatively significant impact of climate change.

Potential GHG emissions impacts associated with short-term construction and long-term operations of buildout of the General Plan were evaluated consistent with methods described in Section 4.4, “Air Quality.” Detailed inputs, assumptions, and calculations are provided in Appendix B.

In order to provide a more comprehensive assessment of cumulative GHG emissions, construction-related GHG emissions that would result from construction of all proposed land use with buildout of the General Plan were

summed and then amortized over a 30-year operational lifetime<sup>3</sup> and added to the operational emissions associated with these land uses. The annual operational emissions, along with the amortized construction emissions were compared with applicable significance thresholds to determine cumulative significance.

The proposed General Plan Update consists of changes to goals, policies, and implementation measures, which are analyzed as part of this EIR, but does not include any changes to land use designations, expansion to the City's Planning Area, or other physical changes to areas planned for development compared to the existing General Plan. This EIR analyzes buildout of the Planning Area consistent with the existing General Plan land use designations to existing conditions, which constitute the baseline physical conditions for determining whether potential impacts are significant.

#### 4.5.4.2 THRESHOLDS OF SIGNIFICANCE

The CEQA Guidelines Appendix G has identified significance criteria to be considered for determining whether a project could have significant impacts due to GHG emissions. The proposed project would have a significant impact if it would:

- ▶ generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or
- ▶ conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Whether or not implementation of the General Plan would generate GHG emissions that would have a significant impact on the environment depends on whether the rate of GHG emissions would provide its share of AB 32, Executive Order B-30-15, SB 32, and Executive Order S-3-05 emissions reductions. The City has elected to use an efficiency threshold to quantify consistency with these statewide plans. Efficiency thresholds express emissions based on the amount of GHG emitted per capita or per service population. A per capita analysis measures only the residential population, while a per service population analysis measures the total of the residential population *and* employment accommodated by a given project. When dividing total GHG emissions by service population, a community is able to evaluate its overall growth and conservation plans and consider whether emissions will decrease on a per-unit basis in a way that is consistent with the State's emissions goals. **The threshold used in this analysis is 2.25 MT CO<sub>2</sub>e per service population**, with a target year of 2035 (the General Plan horizon year). The discussion below describes how this target was calculated.

As described in the Regulatory Framework section above, State legislation and Executive Orders have established GHG reduction targets for several target years: 2020, 2030, and 2050. AB 32 established a statewide GHG emissions reduction target to return to 1990 emissions levels by the year 2020, SB 31 established a target of 40 percent below 1990 levels by 2030, and Executive Order (EO) S-3-05 established a long-term emissions target of 80 percent below 1990 levels by 2050. AB 32 also required ARB to prepare a plan to reduce GHG emissions, which included the need to establish a statewide greenhouse gas emissions limit, equal to the 1990 level, to be achieved by 2020. Table 4.5-1 shows the State's 2020, 2030, and 2050 emissions targets based on the approved

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<sup>3</sup> The 30-year operational lifetime is based upon the expected operational life of a project. Estimates derived from the State of California Executive Order D-16-00 and US Green Building Council's *The Costs and Financial Benefits of Green Building* (SMAQMD 2016).

1990 limit. A 2035 target year value was interpolated between the 2030 and 2050 targets to correspond with the General Plan’s planning horizon.

	<b>1990</b>	<b>2020</b>	<b>2030</b>	<b>2035</b>	<b>2050</b>
Statewide Emissions Targets (MMT CO <sub>2</sub> e)	431.0 <sup>1</sup>	431.0 <sup>1</sup>	258.6 <sup>2</sup>	n/a	86.2 <sup>4</sup>
Interpolated Mid-term Reduction Target	n/a	n/a	n/a	215.5 <sup>3</sup>	n/a
Amount below 1990 Levels	0%	0%	40%	50%	80%

Note: MMT CO<sub>2</sub>e = million metric tons of carbon dioxide equivalent  
<sup>1</sup> California 1990 Greenhouse Gas Emissions Level and 2020 Limit, ARB: <<http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm>>  
<sup>2</sup> 40% below 1990 levels per SB 32  
<sup>3</sup> Interpolated between 2030 and 2050 targets  
<sup>4</sup> 80% below 1990 levels per EO-S-3-05

As previously stated, statewide emissions reduction targets can be adjusted and expressed on a per-capita or per-service population basis, called an efficiency target, to represent the rate of emissions needed statewide to achieve targets. For example, to create an efficiency target that achieves the AB 32 target, one would divide the statewide emissions target for 2020 (shown in Table 4.5-2) by the statewide population and employment forecasts for 2020 to yield an emissions “budget” for each California resident and employee. As noted previously, ARB’s Proposed Scoping Plan recommends an efficiency target approach for local governments for 2030 and 2050 target years.

Local governments do not have control over all the statewide emissions sources – many emissions sources reflected in the ARB inventories are not relevant in every city or county. The statewide emissions targets, population, and employment can be tailored to focus on the emission sources and service population that are relevant for the Planning Area. Some emissions sources and employment sectors are not relevant to this proposed General Plan Update (such as agriculture and forestry), and the efficiency threshold developed for this EIR removes consideration of irrelevant emissions sources and employment that are not found in the Planning Area to provide a customized threshold that is appropriate for this Planning Area specifically.

In order to develop a GHG efficiency target that is appropriate for the Planning Area, the non-land use-related emissions and jobs must be removed from consideration. Therefore, a scaled version of the full statewide emissions inventory was developed as part of this analysis, which is based on the land uses over which the City can have some influence through land use planning, zoning, development approval, and permitting authority. The revised inventory is more appropriate for use in GHG emissions target-setting because it focuses attention on the emissions sources that can be influenced and are applicable locally. Table 4.5-2 presents a revised version of the 1990 statewide emissions shown in Table 4.5-1 and includes only the sectors and sub-sectors over which the City has some influence, and which are present in the City. This data was used to generate the City’s significance threshold.

To align with the modifications to the applicable sectors described above, the service population information has also been tailored based on the City’s demographics and services. Using tailored demographic forecasts and GHG targets, both per capita and per service population emissions efficiency targets have been developed for the 2020, 2030, 2035, and 2050 target years, as shown in Table 4.5-3. The 2020 target is an informational baseline figure. In reporting thresholds for multiple future target years, stated in terms of per capita *and* per service population, the City is creating and using significance thresholds that can be used for future projects within the City. For this EIR,

the most appropriate threshold is the 2035 threshold of 2.25 MT CO<sub>2</sub>e per service population (see Table 4.5-3 below), because this aligns with the General Plan horizon year and the per service population metric is most appropriate<sup>4</sup> for large-scale projects involving a broad range of land uses, such as this General Plan.

Main Sector / Sub Sector Level 1	Total Emissions (MMT CO <sub>2</sub> e/yr) <sup>1</sup>	Adjusted Land Use-Related Emissions (MMT CO <sub>2</sub> e/yr)	Notes/Adjustments
Agriculture & Forestry	18.9	0.0	Not included in land use sector
Commercial	14.4	13.9	Excludes National Security emissions from Sub Sector Level 1
Electricity Generation (Imports)	61.5	61.5	Land use sector includes all emissions
Electricity Generation (In State)	49.0	34.4	Excludes Combined Heat and Power: Industrial from Sub Sector Level 1
Industrial	105.3	11.7	Industrial emissions excluded from land use sector, except as described in sub sectors below
<i>CHP: Industrial</i>	<i>9.7</i>	<i>0.0</i>	
<i>Flaring</i>	<i>0.1</i>	<i>0.0</i>	
<i>Landfills</i>	<i>7.4</i>	<i>7.4</i>	
<i>Manufacturing</i>	<i>32.1</i>	<i>0.7</i>	<i>Construction emissions from Sub Sector Level 2 included in land use sector</i>
<i>Mining</i>	<i>0.03</i>	<i>0.0</i>	
<i>Not Specified</i>	<i>2.7</i>	<i>0.0</i>	
<i>Oil &amp; Gas Extraction</i>	<i>14.8</i>	<i>0.0</i>	
<i>Petroleum Marketing</i>	<i>0.02</i>	<i>0.0</i>	
<i>Petroleum Refining</i>	<i>32.8</i>	<i>0.0</i>	
<i>Pipelines</i>	<i>1.92</i>	<i>0.0</i>	
<i>Waste Water Treatment</i>	<i>3.6</i>	<i>3.6</i>	<i>Waste water treatment emissions are included in community-wide GHG inventory</i>
Not Specified	1.3	1.3	Land use sector includes all emissions
Residential	29.7	29.7	Land use sector includes all emissions
Transportation	150.6	140.9	Excludes Aviation, Rail, and Water-borne emissions from Sub Sector Level 1
<b>Total</b>	<b>431.0</b>	<b>293.4</b>	

Notes: Sectors/sub-sectors may not sum exactly due to rounding  
<sup>1</sup> California 1990 Greenhouse Gas Emissions Level and 2020 Limit by Sector, ARB:  
<http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm>

<sup>4</sup> Note that this differs from the transportation analysis, which uses per capita. This is because the per capita data from the City's traffic analysis is more reliable, and this metric aligns with SB 375 and other regulations related to VMT.

<b>Table 4.5-3 City of Roseville Efficiency Thresholds*</b>				
	2020	2030	2035	2050
Emissions Targets (MT CO <sub>2</sub> e/yr) <sup>1</sup>	293,400,000	176,040,000	146,700,000	58,680,000
Percent Mass Emissions Reduction	n/a	40% below 2020	50% below 2020	80% below 2020
Population <sup>2</sup>	40,719,999	44,019,846	45,521,334	49,158,401
Employment	18,686,300 <sup>3</sup>	20,634,693 <sup>4</sup>	21,338,529 <sup>4</sup>	23,043,437 <sup>4</sup>
Service Population (SP)	57,898,579	63,029,965	65,179,875	70,387,622
Per Capita Emissions Efficiency Targets (MT CO <sub>2</sub> e/capita/yr)	<b>7.21</b>	<b>4.00</b>	<b>3.22</b>	<b>1.19</b>
Per Service Population Emissions Efficiency Targets (MT CO <sub>2</sub> e/SP/yr)	<b>5.07</b>	<b>2.79</b>	<b>2.25</b>	<b>0.83</b>
<p>*Future projects which use these thresholds for environmental analysis should include a brief justification of the type of efficiency target and the target year selected. Per capita is most applicable to projects which only include residential uses, or in cases where reliable data to generate a service population estimate is unavailable. Projects should generally use the 2035 target year. Note that future projects consistent with the General Plan will not require further analysis, per the tiering provisions of CEQA.</p> <p>Note: MMT CO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; Service Population (SP) = population + employment</p> <p><sup>1</sup> California 1990 Greenhouse Gas Emissions Level and 2020 Limit by Sector, ARB: &lt;<a href="http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm">http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm</a>&gt;; targets for future years based upon percent mass emissions reduction targets established by SB 32 and EO-S-3-05, and an interpolation between 2030 and 2050 targets for the year 2035, in alignment with state reduction targets presented in Table 4.5-1.</p> <p><sup>2</sup> DOF Table P-1 Total Estimated and Projected Population for California and Counties: July 1, 2010 to July 1, 2060 in 5-year increments. February 2017. Available online at: &lt;<a href="http://www.dof.ca.gov/Forecasting/Demographics/projections/">http://www.dof.ca.gov/Forecasting/Demographics/projections/</a>&gt;</p> <p><sup>3</sup> Interpolated from revised (i.e., land-use related) Employee Development Department (EDD) Employment Projections for 2014 (15,694,600) and 2024 (18,167,900). Available online at: &lt;<a href="http://www.labormarketinfo.edd.ca.gov/data/employment-projections.html">http://www.labormarketinfo.edd.ca.gov/data/employment-projections.html</a>&gt;. Sorted to remove jobs from: 11-9013 Farmers, Ranchers, and Other Agricultural Managers; 19-1032 Foresters; 19-4041 Geological and Petroleum Technicians; 19-4093 Forest and Conservation Technicians; 45-000 Farming, Fishing, and Forestry Occupations; 47-5000 Extraction Workers; 49-3011 Aircraft Mechanics and Service Technicians; 49-3041 Farm Equipment Mechanics and Service Technicians; 49-9041 Industrial Machinery Mechanics; 49-9043 Maintenance Workers, Machinery; 49-9044 Millwrights; 51-0000 Production Occupations; 53-2000 Air Transportation Workers; 53-4000 Rail Transportation Workers; and 53-5000 Water Transportation Workers.</p> <p><sup>4</sup> EDD does not provide employment estimates to 2050, so the ratio of employment to population estimated in 2024 (i.e., 43.2%) was applied to the DOF population estimates for 2030, 2035, and 2050 to estimate employment in those years. See Appendix B for detailed calculations and data inputs.</p>				

#### 4.5.4.3 ISSUES NOT DISCUSSED FURTHER

All issues related to GHG emissions are discussed in detail below.

#### 4.5.4.4 IMPACT ANALYSIS

**IMPACT 4.5-1** *Generation of Greenhouse Gas Emissions or Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of GHGs. Buildout of the General Plan would involve land use change and construction and operation of public facilities and infrastructure that would result in construction and operational GHG emissions. The impact is cumulatively considerable.*

The proposed General Plan Update will generate GHG emissions due to construction as the Planning Area builds out and due to operation of completed uses. This analysis section addresses construction emissions first, followed by operational emissions. The intensity and pace of construction under the General Plan will depend on market and economic conditions. Buildout of the General Plan would involve land use change and associated

infrastructure and public facility improvements that would generate GHG emissions from a variety of sources. Construction-related GHG emissions would be generated primarily from exhaust emissions associated with off-road construction equipment, heavy-duty material haul trucks, and construction worker commutes.

Daily GHG emissions would vary depending on the type of construction activities. For example, daily GHG emissions would be higher during construction-equipment-intensive phases, such as site grading, and lower during less intensive phases, such as building construction. The City anticipates that there will be times with little construction activity and other times when multiple projects are proceeding at once, resulting in higher daily and annual emissions. GHG emissions generated by these sources were quantified using emission factors and methodologies described in Section 4.5.3.1, “Methodology.” The construction-related emissions estimates use conservative assumptions based on construction occurring in the earliest possible year (year 2021), a construction scenario of maximum overlap of the most intensive days of equipment use of each construction phase (site prep, grading, building construction, paving, and architectural coating), and concurrent construction to develop up to 10 percent of the proposed General Plan Update buildout acreage in a single year. Because of these conservative assumptions, actual emissions could be less than those estimated. If construction is delayed or occurs over a longer period, emissions could be reduced because of a more modern and cleaner burning (less emitting) construction equipment fleet mix and a less intensive and overlapping construction schedule.

Table 4.5-4 summarizes the maximum annual and total construction-related GHG emissions from buildout of the General Plan. In order to provide a more comprehensive assessment of cumulative GHG emissions, construction-related GHG emissions that would result from full buildout of the General Plan were summed and then amortized over an estimated 30-year operational lifetime and added to the operational emissions associated with these land uses. The amortized construction-related GHG emissions are also presented in Table 4.5-4. Refer to Appendix B for detailed model inputs, assumptions and calculations.

<b>Table 4.5-4. Summary of Maximum Construction-Related Greenhouse Gas Emissions for the Maximum Single-Year Construction Scenario (year 2021) and with Full Buildout</b>	
	MT CO <sub>2</sub> e
Maximum Single-Year Construction Scenario	54,820
Total Construction Emissions from Full Buildout <sup>1</sup>	548,204
Amortized Construction Emissions, per year <sup>2</sup>	18,273
Notes: MT CO <sub>2</sub> e = metric tons of carbon dioxide equivalents	
<sup>1</sup> Total construction emissions are estimated by multiplying the annual worst-case constructions, which represents construction emissions associated with development of 10 percent of the total proposed land uses, by ten.	
<sup>2</sup> Construction emissions are amortized over 30 years, which is the average assumed lifetime of proposed land use development.	
Source: AECOM 2019; See Appendix B for detailed modeling assumptions, outputs, and results.	

Long-term operational emissions would be generated by the day-to-day activities associated with existing and proposed land uses within the Planning Area. Operational GHG emission sources would include energy consumption (i.e., electricity and natural gas), transportation, waste, and water and wastewater. Operational GHG emissions are distinguished by direct and indirect GHG emissions. Direct GHG emissions are generated at the location of consumption or use. For example, mobile-source emissions are direct because GHG emissions are generated as a vehicle begins to move. Indirect emissions occur at a different time or location from the point of consumption or use. For example, electricity-related GHG emissions are indirect because although a consumer uses electricity at their home, the fuel combustion and emissions associated with creating that electricity likely occurred off-site or at a different time. Table 4.5-7 presents the operational GHG emissions estimates for existing

land uses and activity within the Planning Area, proposed new land uses, and total operations under the proposed General Plan Update. Existing operational emissions are based on data from the transportation modeling prepared for the proposed General Plan Update. Operational emissions for buildout of the proposed General Plan Update are provided for the year 2035, consistent with the cumulative horizon year for the General Plan. Amortized construction-related emissions are then added to the total operational emissions of the Planning Area anticipated with full buildout of the General Plan in 2035, and these emissions are compared the GHG efficiency threshold for 2035 (see Table 4.5-3).

<b>Table 4.5-5 Modeled GHG Emissions Generated within the Planning Area (<i>emissions are presented in MT CO<sub>2</sub>e unless otherwise stated</i>)</b>		
	Existing Conditions	Total Planning Area (Existing + New Development)
<b>Operational Source</b>		
Area	Not Available	115,302
Energy <sup>1</sup>	446,557	303,238
Mobile <sup>2</sup>	565,734	1,071,201
Waste	33,236	87,758
Water	4,903	33,268
Total Annual Operational Emissions	1,050,430	1,610,767
Total Annual Operational (2035) + Amortized Construction Emissions	-	1,629,040
Existing Service Population (residents + employees)	204,802	318,252
<b>Total<sup>4</sup> Annual Project Emissions (MT CO<sub>2</sub>e) per Service Population<sup>3</sup></b>	<b>5.13</b>	<b>5.12</b>
<i>GHG Efficiency Threshold (MT CO<sub>2</sub>e per service population)</i>	-	2.25
<b>Exceed threshold?</b>	-	<b>Yes</b>
Notes:		
<sup>1</sup> Energy emissions are calculated based upon Roseville Electric Utility emissions factor for year 2016, and projected Roseville Electric Utility emission factor for 2035 based upon increased RPS percentage within the power mix.		
<sup>2</sup> Mobile emissions are calculated outside of CalEEMod using EMFAC 2017 emissions rates and VMT from the Transportation Impact Analysis.		
<sup>3</sup> Annual project emissions (amortized construction + operational) per service population are calculated based upon estimate of 198,000 residents + 120,000 employees in the City of Roseville in 2035 with buildout of the proposed General Plan Update (See General Plan Land Use Element)		
<sup>4</sup> Totals do not add due to rounding.		
Source: Modeled by AECOM in 2019		

As shown in Table 4.5-5, without consideration of the reduction benefits associated with proposed General Plan Update policies and implementation measures, buildout of the proposed General Plan Update would result in a GHG emissions efficiency of 5.12 MT CO<sub>2</sub>e per service population in 2035, which exceeds the GHG efficiency threshold of 2.25 MT CO<sub>2</sub>e per service population. The estimated GHG emissions efficiency is calculated using a conservative estimate of total residents and employees anticipated within the Planning Area in the year 2035; estimates for total service population show that employment could be nearly 10 percent higher, which could generate a GHG emissions efficiency of approximately 4.86 MT CO<sub>2</sub>e per service population.

The emissions shown in this table are unmitigated; they do not take into consideration mobile source emissions reductions that would be available or implementation of the proposed General Plan Update's revised policies related to infill development, VMT, transit service, bicycle and pedestrian access, and related topics. In addition, the degree to which the proposed General Plan Update will achieve VMT reductions depends on a number of factors, many of which are not within the City's control and cannot be predicted. VMT reduction depends on factors such as demographic change, household preferences for housing types and locations, the cost of fuel, and the competitiveness of regional transit relative to driving (which relates to congestion along vehicular commute routes that are not under the City's jurisdiction, as well as transit provided by agencies other than the City), and funding availability to improve non-vehicular travel options.

To the extent that the City can influence whether the proposed General Plan Update will reduce VMT, this will depend on planning that reduces travel demand per capita and per employee by promoting increased density near transit, improving the quality of non-vehicular transportation options, providing incentives for non-vehicular travel, encouraging the mixing of complementary land uses in proximity to one another, and other feasible methods.

The results reported here can also be considered conservative because some of the analysis uses default CalEEMod assumptions, which tend to overestimate emissions. For example, based on a comparison to 2016 waste generation and waste use data provided by the City of Roseville, the emissions estimated by CalEEMod represent waste generation and water use rates that are approximately one-third higher than actual rates for the City of Roseville in 2016. It can be assumed that, based on regulations and trends in conservation, waste generation and water use rates would decline over time and not increase. Therefore, it is also reasonable to assume that the waste and water emissions presented for 2035 are at least one-third higher than what is likely to occur within the Planning Area in the year 2035.

EPA and ARB have developed regulations, programs, and strategies that address GHG emissions. See Section 4.5.3, "Regulatory Framework," for a description of regulations that would help reduce GHG emissions associated with the Proposed Project. Those regulations that pertain to mobile- and energy-related emissions would have the most substantial effect on reducing future emissions within the Planning Area. As cleaner burning fuel and fuel efficiency of vehicles improves over time, mobile emissions decrease per vehicle mile travelled. As utility providers are mandated to meet more stringent emission standards and incorporate a greater percentage of renewable energy sources in the power grid, emissions from electricity decline per unit of energy.

The following goals and policies related to GHG emissions would be revised as a part of the proposed General Plan Update, with additions shown in **bold, underlined** text and deletions shown in ~~strikethrough~~ text:

**Goal AQ1.3:** ~~Encourage the coordination~~ **Coordinate** and integration of all forms of public transport ~~to, while reducing motor vehicle emissions, through a decrease in the average daily vehicular trips and vehicle miles traveled,~~ **while encouraging an increase in,** and by increasing the commute vehicle occupancy rate by 50% to 1.5 or more persons per vehicle.

**Goal AQ1.4:** Increase the capacity of the **pedestrian, bicycle, and transit** transportation systems ~~and~~ **and** ~~Promote and the share of City owned~~ **vehicular transportation that uses less-polluting fuels, such as electricity,** including the roadway system and alternate modes of transportation.

**Goal AQ1.5:** Provide adequate pedestrian and ~~bikeway~~ **bicycle** facilities for present and future transportation needs.

**Goal AQ1.6:** Promote a well-designed and efficient ~~light rail and~~ transit system.

**Goal AQ1.7:** ~~While recognizing that the automobile is the primary form of transportation, the City of Roseville should make a commitment to shift from the automobile to other modes of transportation.~~ **Improve transit, biking, bicycle, and pedestrian access to lessen dependence on automobile travel and reduce household transportation costs.**

**Goal AQ1.8: Reduce City greenhouse gas emissions, consistent with local, regional, and state goals.**

- ▶ **Policy AQ1.1:** Cooperate with other agencies to develop a consistent and an effective approach to **reducing** air pollution ~~planning~~.
- ▶ **Policy AQ1.3:** **Projects that could generate substantial air pollutant emissions or expose sensitive uses to substantial air pollutant concentrations should incorporate strategies to reduce** ~~operational emissions, applicable emissions control~~ **exposure to such emissions using measures recommended by the Placer County Air Pollution Control District, and other relevant applicable, feasible strategies, as needed, to avoid significant air quality impacts** ~~Develop consistent and accurate procedures for evaluating the air quality impacts of new projects.~~
- ▶ **Policy AQ1.6:** **Require new development and City projects to reduce greenhouse gas emissions sources in the Planning Area to the greatest degree feasible.**
- ▶ **Policy AQ1.7:** **The City will participate in and support regional greenhouse gas reduction and adaptation programs that are consistent with the General Plan and have available funding.**
- ▶ **Policy AQ1.9:** **Preserve and enhance carbon sequestration resources in the City to improve air quality and reduce net greenhouse gas emissions.**
- ▶ **Policy AQ1.10:** **Improve overall health and sustainability of the community by reducing emissions of greenhouse gases that contribute to climate change.**
- ▶ **Policy AQ1.11:** **Promote local purchase and use of electric vehicles through incentives and strategic expansion of charging infrastructure.**
- ▶ **Policy AQ1.12:** Develop transportation systems that ~~minimize vehicle delay and~~ **reduce vehicle emissions by improving the desirability of walking, bicycling, and public transportation relative to vehicular travel** ~~air pollution~~.
- ▶ **Policy AQ1.13:** ~~Develop~~ **Identify feasible strategies to reduce** ~~consistent and accurate procedures for mitigating transportation emissions from new and existing projects~~ **and transportation associated with existing development within the Planning Area.**
- ▶ **Policy AQ1.14:** Encourage alternative modes of transportation, including pedestrian, bicycle, and transit ~~usage~~ **use**.

- ▶ **Policy AQ1.15: Promote and incentivize low-emissions vehicles and associated charging infrastructure. Pursue funding from state programs and other sources to facilitate local purchase and use of electric vehicles.**
- ▶ **Policy AQ1.16: Encourage ~~Encourage~~ **Implement** land use policies that maintain and improve air quality **and expand opportunities for transit-oriented development, which allows residents to significantly reduce vehicular transportation and associated air pollutant emissions.****
- ▶ **Policy AQ1.17: Conserve energy and reduce air **pollutant** emissions by encouraging energy efficient building designs and transportation systems **and promoting energy efficiency retrofits of existing structures.****
- ▶ **Policy AQ1.18: Promote building and transportation energy efficiency in new residential and commercial development through encouraging and incentivizing implementation measures early in the design and development process.**
- ▶ **Policy AQ1.19: Encourage energy efficiency by identifying potential cost savings, resource, and health benefits.**
- ▶ **Policy AQ1.22: Support improvements to diesel engines, limits on idling, and incorporation of technology and management practices that reduce harmful emissions at the Rail Yard.**
- ▶ **Policy CIRC2.6: Prioritize investments in pedestrian, bicycle, and transit access in Pedestrian Districts.**

**Goal CIRC.3: ~~Promote~~ **Provide** a safe, convenient, and efficient transit system, ~~utilizing both bus and rail modes,~~ **to enhance mobility**; reduce congestion; reduce auto emissions, including emissions that contribute to climate change; improve the environment; and provide viable non-automotive means of transportation in and through Roseville.**

- ▶ **Policy CIRC3.1: ~~Pursue and support transit services within the community and region and pursue land use, design, and other mechanisms that promote the use of such services.~~ **Promote transit service that is convenient, cost- effective, and responsive to the challenges and opportunities of serving Roseville and surrounding communities, and explore opportunities for transit innovation and service improvements.****
- ▶ **Policy CIRC3.6: Identify opportunities to increase the number and/or capacity of park-and-ride lots as needed, to increase transit and carpool/vanpool use.**

**Goal CIRC4: Reduce ~~travel demand~~ **vehicle miles traveled** on the City's **and regional roadway** systems, **while expanding mobility options for residents, employees, and visitors.****

- ▶ **Policy CIRC4.1: ~~Continue to enforce the City's TSM ordinance and monitor its effectiveness.~~ **The City will review and condition projects, as appropriate, to reduce travel demand per capita and per employee by promoting increased density near transit, improving the quality of non-vehicular transportation options, providing incentives for non-vehicular travel, encouraging the mixing of complementary land uses in proximity to one another, and using other feasible methods.****

- ▶ **Policy CIRC4.2:** Work with appropriate agencies to develop implementation measures to reduce vehicular travel demand and total vehicle miles traveled and meet air quality goals.
- ▶ **Policy CIRC4.3: Specific Plan Amendments and land use development projects not included in a Specific Plan shall be evaluated for consistency with the City’s VMT Impact Standards.**
- ▶ **Policy CIRC4.4: If the evaluation required by CIRC4.3 finds a Specific Plan Amendment or land use development project not included in an adopted Specific Plan is inconsistent with thresholds established within the City’s VMT Impact Standards, on-site land use, transportation, and urban design-related VMT-reducing features should be prioritized to demonstrate consistency. If feasible on-site features cannot achieve the VMT threshold, Specific Plan Amendments and land use development projects outside Specific Plan Areas may demonstrate equivalent consistency through off-site actions or fair-share fee contributions, or if consistency cannot be achieved, shall implement all feasible measures.**
- ▶ **Policy CIRC4.5: Policy CIRC4.3 does not apply to projects that propose residential or office uses in Transit Priority Areas or low-VMT areas. Low-VMT areas are those shown by the General Plan travel demand model or the SCS travel demand model to have per-capita, per-employee, or per-service-population VMT rates that are at least 15 percent less than the baseline citywide or regional rate.**
- ▶ **Policy CIRC4.6: Promote and incentivize Infill development, particularly affordable housing development, through assistance in obtaining outside grant funding and reductions or deferrals in impact fees.**
- ▶ **Policy CIRC5.1:** Develop a comprehensive and safe system of recreational and commuter bicycle routes and trails that provides connections between the City's major employment destinations (including employment) and housing areas and between its existing and planned bikeways.

**Goal CIRC6.1: Increase the percentage of pedestrian trips in Roseville.**

- ▶ **Policy CIRC6.1: Establish and maintain a safe and continuous pedestrian network that provides connections between residential areas and commercial retail and services, employment, public services, parks, and public transit.**
- ▶ **Policy CIRC6.2: Promote development patterns that encourage people to walk to destinations.**
- ▶ **Policy LU2.1:** Promote land use development patterns that support a variety of transportation modes and accommodate pedestrian mobility.
- ▶ **Policy LU2.2:** Allow ~~for land use patterns and~~ mixed-use development that integrates residential and non-residential land uses, ~~such~~ that residents may easily walk or bike to shopping, services, employment, and leisure activities.
- ▶ **Policy LU2.3:** Concentrate higher-intensity uses and appropriate support uses in **Pedestrian Districts and** within close proximity of transit and bikeway corridors, as identified in the **Transit Master Plans and Bicycle Master Plan**. ~~In addition, some component of public~~ **Public** uses, such as parks, plazas, public buildings, community centers, **schools**, and/or libraries, ~~should be located within Pedestrian Districts and transit and bikeway corridors~~ **easily accessible to the public.**

- ▶ **Policy LU2.4:** Promote and encourage the location of employee services, such as child care, restaurants, banking facilities, convenience markets, ~~etc~~ **and other daily needs**, within major employment centers for the purpose of reducing mid-day ~~service-related~~ vehicle trips.
- ▶ **Policy LU2.5:** Where feasible, improve existing developed ~~ment~~ areas to create better pedestrian, **bicycle**, and transit accessibility.
- ▶ **Policy LU2.6:** ~~Through City land use planning and development approvals,~~ Require **proposed** ~~that~~ neighborhood-serving uses (e.g. neighborhood commercial uses, day care, parks, schools, and other community facilities **and services**) **to** be physically linked with adjacent residential neighborhoods **through multi-modal transportation connections**.
- ▶ **Policy LU3.4:** Encourage infill development and ~~rehabilitation~~ **reinvestment** that:
  - Upgrades the quality and enhances the character of existing areas;
  - **Enhances the mix of land uses in proximity to one another so that more households can access services, recreation, and jobs without the use of a car;**
  - ~~enhances~~ **Facilitates pedestrian activity and** public transit use, ~~and pedestrian access;~~
  - Efficiently utilizes and does not overburden existing services and infrastructure; and
  - **Results in land use patterns and densities that provide the opportunity for the construction of a variety of household-housing types that are** affordable to all income groups.
- ▶ **Policy LU7.2:** Continue to develop and apply design standards that result in efficient site and building designs, pedestrian-friendly projects that stimulate the use of alternative modes of transportation, and ~~the establishment of~~ functional relationships between adjacent developments.
- ▶ **Policy LU8.10:** In addition to being consistent with the other goals and policies of the General Plan, **S**pecific **P**lans shall comply with the following:
  - a. Provide a public focal point, community, and/or theme feature. These features shall be specific to each area and be designed to promote and enhance community character. A special feature may include, but is not limited to, a community plaza, central park, or some other type of gathering area; outdoor amphitheater; community garden; regional park with special facilities; sports complex; or cultural facilities.
  - b. Provide entryways at entrances to the City in accordance with the Community Design Guidelines. Where possible, the entryways shall take advantage of and incorporate existing natural resources into the entry treatment. The **S**pecific **P**lans shall identify the location and treatment of the entryways, and shall consider the use of open space, oak regeneration areas, signage, and/or special landscaping to create a visual edge or buffer that provides a strong definition to entryways into the City.
  - c. The **S**pecific **P**lan areas shall be planned and oriented to be an integral part of the City consistent with the policies of the Community Form component of this Element.
  - d. Develop design guidelines, specifying screening and a transition between public utilities (e.g. substations, pump stations) and other uses, in conjunction with the public utility departments and agencies. In

addition, development along power line and pipeline easements shall incorporate design treatment to ensure compatibility and safety. Design guidelines and treatment may include minimum setbacks, building and landscape design standards, and possible limitations on certain types of uses and activities.

e. Preserve natural resource areas where they exist, and where feasible, along new roadways. Such roadways may create a public boundary between the resource area and other uses. The ~~S~~specific ~~P~~plans shall identify locations and standards for the preservation of natural resources along roadways, and shall identify sources of financing for such road segments.

▶ **Policy PF4.4: Comply with federal, state, and local greenhouse gas reduction targets, including the renewable portfolio standards and carbon-free electricity requirements.**

▶ **Policy PF4.6:** Pursue reasonable and cost-effective energy efficiency, conservation, and load management programs **that provide benefits to the community.** ~~pertinent to the electric utility system.~~

**Goal PF9.1:** Preserve scarce resources by recognizing the importance of **efficiency** ~~conservation~~ in water and energy management.

**Goal PF9. 2:** Balance ~~conservation~~ **efficiency** efforts with water and energy supplies for the maximum benefit of Roseville's residents.

▶ **Policy PF9.1:** Develop and implement water ~~conservation~~ **efficiency** standards

▶ **Policy PF9.4:** Develop and ~~adopt a landscape ordinance that provides~~ **implement** standards for the use of drought tolerant, and water-~~conserving~~ **efficient** landscape practices for both public and private projects.

▶ **Policy PF9.5:** Develop and implement public education programs designed to increase public participation in energy, water ~~conservation~~**efficiency**, and recycled water use.

▶ **Policy PF9.8:** Preserve ~~scarce~~ **natural** resources by undertaking ~~major~~ projects in energy conservation and load management, including increasing efficiency in the City's electrical system.

▶ **Policy PF9.9:** Continue ~~and expand~~ energy efficiency and conservation programs to serve all utility users.

The proposed General Plan Update goal and policy changes listed above provide greater clarity related to the City's intent to encourage infill development and mixing of land uses in proximity, which allows non-vehicular travel. The revisions also relate to improving public transit options and bicycle and pedestrian facilities to encourage a shift away from vehicular travel and encourage cleaner-fuel vehicle use. The revisions clarify the City's intent to reduce GHG emissions in a way that is consistent with local, regional, and state goals, and that PCAPCD recommendations for reducing GHG emissions should be incorporated into projects to reduce emissions. Policy revisions clarify that, in addition to reducing emissions, the City should take advantage of existing sequestration potential in the City's open spaces, as well as encourage energy efficiency in new buildings. The revisions to goals and policies would result a reduction of GHG emissions, and would not result in any adverse environmental impacts.

## Conclusion

Both existing General Plan goals and policies that are not proposed for revision and goals and policies that would be revised as a part of the proposed General Plan Update would reduce GHG emissions from activities in the

Planning Area. Implementation of existing General Plan Air Quality General Policy 4; Bikeways/Trails Policy 2; Residential Energy Efficiency and Conservation Goal 1 and Policies 1, and 2; Water and Energy Conservation Policies 3, 7, and 8 (listed previously in the Regulatory Framework section, and which have been renumbered for the proposed General Plan Update), as well as revised proposed General Plan Update Goals AQ1.3–1.8 and Policies AQ1.1, 1.3, 1.6, 1.7, 1.9–1.19 and 1.22; Goal CIRC3 and Policies 3.1, and 3.6; Goal CIRC4 and Policies CIRC4.1–4.6; and Policy CIRC5.1; Goal CIRC6.1 and Policies CIRC6.1 and 6.2; Policies LU2.1–2.6, 3.4, 7.2, and 8.10; Policy PF4.6; Goals PF9.1 and 9.2 and Policies PF9.1, 9.4, 9.5, 9.8, and 9.9, listed above, would reduce GHG emissions.

Many of the changes embodied in the proposed General Plan Update are focused on achieving GHG emission reductions within the Planning Area through implementation of strategies and related policies that result in GHG emission reductions, while also providing co-benefits to the community, such as improved bicycle, pedestrian and transit mobility options, reductions in household and business transportation and utility costs, improvements to air quality and public health, and improving fiscal sustainability (by managing ongoing costs related to vehicular transportation facilities). In addition, the proposed General Plan Update puts greater emphasis on facilitating infill development, thereby promoting public health through active transportation and reducing GHG emissions.

Land Use Element policies referenced in this EIR chapter provide for the integration of existing and proposed land uses to create a land use mix and development pattern that results in reduced VMT due to accommodation of alternative modes of transportation and accessibility of services in proximity to relevant residential and employment centers. Goals and policies from the Circulation Element promote alternative modes of transportation and expansion of the use of such systems and require plan amendments and projects not included in existing adopted plans to achieve a VMT rate consistent with the MTP/SCS. The Air Quality and Climate Change Element contains policies that would reduce criteria emissions or substantial pollutant concentrations, but would also reduce GHG emissions. Air Quality and Climate Change Element policies would promote and incent low emissions vehicles and associated charging infrastructure, and encourage energy efficient project design for new construction and retrofit of existing structures.

Implementation of the proposed General Plan Update would encourage transportation and energy efficiencies within the Planning Area that would reduce the rate of GHG emissions. However, because there are many important factors about the character and location of future development, and the demographic characteristics of future households and employees within the Planning Area, the overall competitiveness of transit compared to driving throughout the region, the cost of fuel, and other factors, the degree to which General Plan Update policies and implementation measures will reduce emissions is currently unknown. Consequently, emissions from implementation of the proposed General Plan Update could still result in a net increase of GHG emissions that could exceed the local GHG emissions efficiency threshold of significance identified in Section 4.5.4.2, which represents the City's share of emissions reduction to be in alignment with State and regional plans to reduce GHG emission. Therefore, implementation of the proposed General Plan Update could result in the generation of GHG emissions at a level that may have a significant impact on the environment and conflict with State GHG emission targets adopted for the purpose of reducing the emissions of GHGs. Therefore, this impact is **cumulatively considerable**.

## **Mitigation Measures**

Mitigation Measure 4.5-1a: Implement Mitigation Measure 4.4-2a.

Mitigation Measure 4.5-1b: Implement Mitigation Measure 4.3-1.

Mitigation Measure 4.5-1c. The proposed General Plan Update should be amended as follows:

### **Implementation Measure**

#### **Area Sources**

- ▶ The City shall utilize electric landscape maintenance equipment to the extent feasible on parks and public/quasi-public lands.
- ▶ The installation of wood-burning fireplaces or appliances in new development shall not be permitted.

#### **Energy**

- ▶ The City will pursue within existing and future City facilities and may partner with other public agencies and organizations to promote replacement of appliances and office equipment with energy-efficient models with a priority from highest to lowest in terms of typical GHG reductions, on: water heater, vending machine, copier, refrigerator, printer, dishwasher, water cooler, computer, and clothes washer.
- ▶ The City will pursue improvements to existing and future City facilities and may partner with other public agencies and organizations to implement comprehensive building efficiency improvements, inclusive of, but not limited to, implement lighting efficiency upgrades, improved building temperature controls, building air sealing, duct air sealing and duct replacement, upgrading and/or insulating water heaters, ensuring proper functioning and efficiency of heating and air conditioning systems, reducing heat loss through and around windows, installation of cool roofs, and implementing energy conservation education.
- ▶ The City will support education and outreach to promote rebates, incentives, and other programs (as they become available) which would promote reductions in greenhouse gas emissions, and use available information on rebates used by consumers to determine where to focus education and outreach, including programs designed to promote electric appliances and replace natural gas appliances, and programs related to lighting.
- ▶ The City will promote the U.S. Department of Housing and Urban Development Energy Efficient Mortgage (EEM) program and similar programs that assist buyers in purchasing homes meeting energy-efficiency criteria.
- ▶ The City will partner with other agencies and organizations to expand the City's urban forest to promote sequestration, but also with a focus on selection and placement that reduces the need for air conditioning and the urban heat island effect.

## ***Land Use and Transportation***

- ▶ The City will direct its own investments and review proposed development projects to reduce vehicular travel demand, promote non-vehicular travel, and facilitate local purchase and use of electric vehicles.
- ▶ The City will continue to direct its own investments and pursue outside funding for infrastructure and operational programs to promote ease and convenience of pedestrian, bicycle, and transit travel for daily trips.
- ▶ The City will integrate its land use and transportation planning and review and condition proposed projects to better situate residents in proximity to workplaces, goods and services, and recreational opportunities, making updates to implementing plans, such as the Capital Improvement Program, Bicycle Master Plan, Pedestrian Master Plan, Transportation Systems Management program, transportation impact fee program, and transit plans.
- ▶ The City will support applications for affordable housing funds from agencies that reward and incentivize good planning, such as infill housing and housing built close to jobs, transportation, and amenities.
- ▶ The City will partner with other agencies and proposed developments to expand bicycle parking and other facilities, pedestrian facilities and amenities, and electric vehicle charging stations, with a focus on daily destinations.
- ▶ The City will support a reduction of parking requirements for projects with a location, design, surrounding mix of uses, access to non-vehicular transportation facilities, and/or ongoing travel demand management programs that would reduce the need for vehicular trips.

## **Significance after Mitigation**

In order to provide emissions reductions that would achieve the local GHG emissions efficiency target, estimated GHG emissions within the Planning Area would need to be reduced by up to 55 percent. Implementation of the above described mitigation would substantially reduce GHG emissions within the Planning Area with buildout of the General Plan.

Consistency with proposed General Plan Update Policy AQ1.3 would require projects that could have a potentially significant effect to incorporate applicable PCAPCD standard construction mitigation measures. Among other actions, the PCAPCD-identified standard construction measures include actions that would reduce exhaust emissions associated with equipment and vehicle use during construction activities, thereby also reducing construction-related GHG emissions.

Implementation of Mitigation Measure 4.5-1a (Mitigation Measure 4.4-2a), as detailed in Impact 4.4-2 of Section 4.4, “Air Quality,” would require projects that could have a potentially significant effect to incorporate applicable PCAPCD standard operational mitigation measures. Among other actions, the PCAPCD-identified standard operational measures include actions that would reduce area, energy, and mobile source emissions associated with building operations and transportation activities within the Planning Area, thereby also reducing operational GHG emissions. Implementation of Mitigation Measure 4.5-1b (Mitigation Measure 4.3-1) would substantially reduce VMT directly and indirectly, and mobile sources are the largest part of the City’s existing inventory and future forecast GHG emissions. Implementation of Mitigation Measure 4.5-1c would require implementation of all

feasible measures and design features to minimize GHG emissions associated with area, energy, land use and transportation, water and waste emissions sources.

Implementation of these mitigations measures during future improvements associated with buildout of the General Plan, for both existing and new development, would result in a reduction of GHG emissions compared to the estimated emissions shown in Table 4.5-5. However, the precise effectiveness of these measures cannot be determined, and GHG emissions could still exceed the significance threshold. As detailed in Section 4.5.4.2, “Thresholds of Significance,” this threshold was identified as the local GHG efficiency rate that would be required in the year 2035, the planning horizon for the General Plan, to align with statewide emissions reduction legislation and applicable executive orders for the target year and ensure that the City meets its share of the State’s GHG reduction mandates, considering the types of projects to be implemented under the General Plan and the specific location of the Planning Area. Therefore, implementation of the proposed General Plan Update could generate GHG emissions, either directly or indirectly, that may conflict with applicable State plans, policies, and regulations adopted for the purpose of reducing the emissions of GHGs and could contribute substantially to the cumulatively considerable impact climate change on the environment. There are no additional feasible mitigation measures available to address this impact. This impact is **significant and unavoidable**.