

## 4.7 CLIMATE CHANGE

This section includes a discussion of existing climate conditions, the science of climate change, and greenhouse gas (GHG) emissions sources in California and Yuba County; a summary of applicable regulations; and a description of potential impacts of the 2030 General Plan (also called “the project”) related to climate change.

GHG emissions have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Global climate change has the potential to result in sea level rise (resulting in flooding of low-lying areas), to affect rainfall and snowfall (leading to changes in water supply), to affect temperatures and habitats (affecting biological resources), and to result in many other adverse effects.

The proper context for addressing this issue in an EIR is within an assessment of cumulative impacts. Although it is unlikely that development projects that could occur under the 2030 Yuba County General Plan will, by themselves, contribute significantly to global climate change, cumulative emissions from many projects under many such plans could impact global GHG concentrations and the climate system. Cumulative impacts are the collective impacts of one or more past, present, and future projects that, when combined, result in adverse changes to the environment.

In determining the significance of a proposed project’s contribution to anticipated adverse future conditions, a lead agency should generally undertake a two-step analysis. The first step is to determine whether the combined effects from both the proposed project and other projects would be cumulatively significant. If the agency answers this inquiry in the affirmative, the second question is whether “the proposed project’s incremental effects are cumulatively considerable” and thus significant in and of themselves.

Legislation and executive orders on the subject of climate change in California have established a statewide context for analyzing GHG emissions and climate change, despite the global nature of this issue. The statewide context was established by Assembly Bill (AB) 32 (2006), California Global Warming Solutions Act of 2006, which requires reduction of statewide GHG emissions to 1990 levels by 2020.<sup>1</sup>

In September 2006, Governor Schwarzenegger signed AB 32 (Chapter 488, Statutes of 2006), which enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs the California Air Resources Board (ARB) to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if vehicle emissions regulations cannot be implemented, then ARB should develop new regulations to control GHG emissions from vehicles under the authorization of AB 32.

Greenhouse gases are typically analyzed by “sector” or type of activity that results in GHG emissions. Land use development projects are not their own GHG emissions sectors because these projects involve multiple activities that directly result in GHG emissions (such as transportation, electricity use, and waste generation). These activities are the sectors analyzed for their contribution to GHG and are described in more detail below.

Land use decisions and development projects can affect the generation of GHG emissions from multiple sectors that result from their implementation. Development projects can result in direct or indirect GHG emissions that would occur on- or off-site. For example, people who reside in and visitors to a development project would drive

---

<sup>1</sup> This level of emissions is tied to concentrations needed to avoid dangerous climate change. “Avoiding Dangerous Climate Change” means: “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.” In order to stabilize at a global equilibrium temperature of 2-2.4°C above pre-industrial levels, CO<sub>2</sub> concentrations must stabilize at 350–400 ppm. Ambient global CO<sub>2</sub> concentrations in 1990 were approximately 353 ppm (UNFCCC 2009).

vehicles that generate on- and off-site GHG emissions, which are associated with the transportation sector. Electricity consumed in structures within a project would indirectly cause GHGs to be emitted at a utility provider.

Some major GHG emission sectors can be affected by local government actions, while others cannot. The California Air Resources Board Climate Change Scoping Plan (see below for more information) identifies the main GHG emission sectors that account for the majority of GHG emissions generated within California. GHG emission sectors include:

- ▶ **Transportation:** This is the largest sector of GHG emissions in California. This sector represents the GHG emissions associated with on-road motor vehicles, recreational vehicles, aviation, ships, and rail.
- ▶ **Electricity:** This sector represents the GHG emissions associated with use and production of electrical energy. Approximately 25% 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, refineries). Industrial sources are predominately comprised of stationary sources (e.g., boilers, 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 global warming potential GHGs. Examples of high global warming potential GHG sources include refrigerants, and electrical insulation. Although these GHGs are typically generated in much smaller quantities than CO<sub>2</sub>, their high global warming potential results in considerable CO<sub>2</sub>e.
- ▶ **Recycling and Waste:** This sector represents the GHG emissions associated with waste management facilities and landfills.

The GHG emission sectors described above are subject to varying degrees of state regulation that will reduce GHG emissions on a statewide level (see description of state regulations below). For example, legislation already in effect will achieve statewide reductions of GHG emissions associated with electricity production, industry, vehicle miles traveled (VMT), and motor vehicles. It is anticipated that future legislation and regulations at the state and federal levels would further reduce GHG emissions, with different reduction potential available for each sector. In addition, GHG emission sectors such as transportation and electricity will be regulated by the implementation of statewide emission reduction programs (e.g., vehicle emissions standards, renewable energy portfolio standards). Depending on the type of state standard and the GHG emission sector targeted by a standard, the ability of local government actions to achieve further significant GHG reduction could be limited to varying degrees.

Land use and building patterns resulting from local government development policies can affect VMT, water use, wastewater generation, solid waste generation, and building energy use. However, local governments do not have control over vehicle emissions technology, fuel economy standards, or building code standards. Nonetheless, local governments, such as the County, will play a role in achieving statewide emission reduction goals (see “Regulatory Setting” below for more information). The ability to influence land use decisions and reduce VMT, provide services to its population (e.g., recycling service, waste management, and waste water treatment), and

provide public education and incentives (e.g., energy and water conservation) to its citizens are options for local governments to reduce GHG emissions generated in their jurisdictions.

## **4.7.1 REGULATORY SETTING**

### **GREENHOUSE GAS EMISSIONS**

#### **Federal Plans, Policies, Regulations, and Laws**

##### ***Supreme Court Ruling***

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for implementing the Federal Clean Air Act (CAA). The Supreme Court of the United States ruled on April 2, 2007 that CO<sub>2</sub> is an air pollutant as defined under the CAA, and that EPA has the authority to regulate GHG emissions (Massachusetts v. Environmental Protection Agency, 549 U.S. 497 [2007]). However, there are no federal regulations or policies related to GHG emissions or climate change adaptation that are applicable to the project as of the writing of this document. Please refer to the information under the heading, “AB 1493,” for further information on the California Clean Air Act (CCAA) Waiver.

##### ***Energy and Independence Security Act of 2007 and Corporate Average Fuel Economy Standards***

The Energy and Independence Security Act of 2007 (EISA) amended the Energy Policy and Conservation Act (EPCA) to further reduce fuel consumption and expand production of renewable fuels. The EISA’s most significant amendment includes a statutory mandate for the National Highway Traffic Safety Administration (NHTSA) to set passenger car corporate average fuel economy (CAFE) standards for each model year (MY) at the maximum feasible level. This statutory mandate also eliminates the old default CAFE standard of 27.5 miles per gallon (mpg). The EISA requires that CAFE standards for MY 2011-2020 be set sufficiently high to achieve the goal of an industry-wide passenger car and light-duty truck average CAFE standard of 35 mpg. The rule making for this goal, has been divided into two separate parts. The first part, which was published in the Federal Register in March 2009, includes CAFE standards for MY 2011 in order to meet the statutory deadline (i.e., March 30, 2009). The second part of the rulemaking applies to MY 2012 and subsequent years. These would be the maximum CAFE standards feasible under the limits of the EPCA and EISA. The NHTSA and the EPA are currently working in coordination to develop a national program targeting MY 2012–2016 passenger cars and light trucks.

##### ***EPA Actions***

In response to the mounting issue of climate change, EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

##### ***Mandatory Greenhouse Gas Reporting Rule***

On September 22, 2009, EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons (MT) or more of CO<sub>2</sub> per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective emissions reduction strategies. An estimated 85% of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

## ***National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Cars and Trucks***

On September 15, 2009, EPA and NHTSA proposed a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the United States. EPA proposed the first-ever national GHG emissions standards under the CAA, and NHTSA proposed CAFÉ standards under the EPCA. This proposed national program would allow automobile manufacturers to build a single light-duty national fleet that satisfies all requirements under both federal programs and the standards of California and other states.

## ***Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act***

On April 23, 2009, EPA published their Proposed Endangerment and Cause or Contribute Findings for GHGs under the CCA (Endangerment Finding) in the Federal Register. The Endangerment Finding is based on Section 202(a) of the CAA, which states that the EPA Administrator should regulate and develop standards for “emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.” The proposed rule addresses Section 202(a) in two distinct findings. The first addresses whether or not the concentrations of the six key GHGs (i.e., CO<sub>2</sub>, methane [CH<sub>4</sub>], nitrous oxide [N<sub>2</sub>O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF<sub>6</sub>]) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether or not the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The EPA Administrator proposed the finding that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in “high atmospheric levels” of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The EPA Administrator also proposed the finding that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. The proposed finding cites that in 2006, motor vehicles were the second largest contributor to domestic GHG emissions (24% of total) behind electricity generation (nationwide). Furthermore, in 2005, the U.S. was responsible for 18% of global GHG emissions. Therefore, GHG emissions from motor vehicles and motor vehicle engines were found to contribute to air pollution that endangers public health and welfare.

## **State Plans, Policies, Regulations, and Laws**

Various statewide and local initiatives to reduce the state’s contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is underway, and that there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

## **Statutes**

### **Assembly Bill 1493 (2002)**

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that the ARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state.”

To meet the requirements of AB 1493, in 2004 ARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California’s existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1) require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the 2009 model year.

In December 2004, a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of 13 CCR Sections 1900 and 1961 as amended by AB 1493 and 13 CCR 1961.1 (*Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon, in Her Official Capacity as Executive Director of the California Air Resources Board, et al.*). The auto-makers’ suit in the U.S. District Court for the Eastern District of California, contended California’s implementation of regulations that, in effect, regulate vehicle fuel economy violates various federal laws, regulations, and policies.

On December 12, 2007, the Court found that if California receives appropriate authorization from EPA (the last remaining factor in enforcing the standard), these regulations would be consistent with, and have the force of federal law, thus, rejecting the automakers’ claim. This authorization to implement more stringent standards in California was requested in the form of a CAA Section 209, subsection (b) waiver in 2005. Since that time, EPA failed to act on granting California authorization to implement the standards. Governor Schwarzenegger and Attorney General Edmund G. Brown filed suit against EPA for the delay. In December 2007, EPA Administrator Stephen Johnson denied California’s request for the waiver to implement AB 1493. Johnson cited the need for a national approach to reducing GHG emissions, the lack of a “need to meet compelling and extraordinary conditions”, and the emissions reductions that would be achieved through the EISA as the reasoning for the denial (Office of the White House 2009).

The state of California filed suit against EPA for its decision to deny the CAA waiver. The recent change in presidential administration directed EPA to reexamine its position for denial of California’s CAA waiver and for its past opposition to GHG emissions regulation. California received the waiver from EPA on June 30, 2009.

### **Renewable Energy Portfolio Standards (Senate Bills 1078 and 107 and Executive Orders S-14-08 and S-21-09)**

Senate Bill (SB) 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20% of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

In November 2008 Governor Schwarzenegger signed Executive Order S-14-08, which expands the state’s Renewable Energy Standard to 33% renewable power by 2020. On September 15, 2009, Governor Schwarzenegger signed Executive Order S-21-09 directing ARB to adopt regulations increasing California’s Renewable Portfolio Standard to 33% by 2020.

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

In September 2006, Governor Schwarzenegger signed AB 32 (Chapter 488, Statutes of 2006), which enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires reduction of statewide GHG emissions to 1990 levels by 2020 (an approximately 15% reduction from existing statewide GHG emissions). This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control GHG emissions from vehicles under the authorization of AB 32.

AB 32 requires ARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.<sup>2</sup>

### Climate Change Scoping Plan

In December 2008, ARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 169 million metric tons (MMT) of CO<sub>2</sub>e, or approximately 30% from the state's projected 2020 emission level of 596 MMT of CO<sub>2</sub>e under a business-as-usual scenario (this is a reduction of 42 MMT CO<sub>2</sub>e, or almost 10%, from average emissions between 2002 and 2004). The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- ▶ improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO<sub>2</sub>e),
- ▶ the Low-Carbon Fuel Standard (15.0 MMT CO<sub>2</sub>e),
- ▶ energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO<sub>2</sub>e), and
- ▶ a renewable portfolio standard for electricity production (21.3 MMT CO<sub>2</sub>e).

ARB has not yet determined what amount of GHG reductions it recommends from local government operations; however, the *Scoping Plan* does state that land use planning and urban growth decisions will play an important role in the state's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions.

---

<sup>2</sup> According to Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC), “Avoiding Dangerous Climate Change” means: “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.” Dangerous climate change was defined based on several key indicators including the potential for severe degradation of coral reef systems, disintegration of the West Antarctic Ice Sheet, and shut down of the large-scale, salinity- and thermally-driven circulation of the oceans. “Avoiding dangerous climate change” is expected to be achieved by stabilizing global average temperatures at a minimum of 2°C above pre-industrial levels. In order to stabilize at a global equilibrium temperature of 2-2.4°C above pre-industrial levels, CO<sub>2</sub> concentrations must stabilize at 350–400 ppm. Ambient global CO<sub>2</sub> concentrations in 1990 were approximately 353 ppm (UNFCCC 2009).

(Meanwhile, ARB is also developing an additional protocol for community emissions.) ARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Scoping Plan states that the ultimate GHG reduction assignment to local government operations is to be determined (ARB 2008).

### Senate Bill 1368 (2006)

SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for base-load generation from investor-owned utilities by February 1, 2007. Similarly, the California Energy Commission (CEC) was tasked with establishing a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a base-load, combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, be generated from plants that meet the standards set by CPUC and CEC. In January 2007, CPUC adopted an interim GHG Emissions Performance Standard, which requires that all new long-term commitments for base-load generation entered into by investor-owned utilities have emissions no greater than a combined-cycle gas turbine plant (i.e., 1,100 pounds [lb] of CO<sub>2</sub> per megawatt-hour). A “new long-term commitment” refers to new plant investments (new construction), new or renewal contracts with a term of five years or more, or major investments by the utility in its existing base-load power plants.

In May 2007, CEC approved regulations that prohibit the state’s publicly owned utilities from entering into long-term financial commitments with plants that exceed the standard adopted by CPUC of 1,100 lb of CO<sub>2</sub> per megawatt-hour.

### Senate Bill 97 (2007)

SB 97, signed August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under the California Environmental Quality Act (CEQA). This bill directs the California Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA by July 1, 2009. The California Natural Resources Agency adopted those guidelines on December 30, 2009, and the guidelines became effective March 18, 2010.

This bill also removes inadequate CEQA analysis of effects of GHG emissions from projects (retroactive and future) funded by the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or the Disaster Preparedness and Flood Protection Bond Act of 2006 (Proposition 1B or 1E) as a legitimate cause of action. This provision will be repealed on January 1, 2010, wherein inadequate CEQA analysis for those projects could then become a legitimate cause of action. This bill would only protect a handful of public agencies from CEQA challenges on certain types of projects for a few years.

### Senate Bill 375 (2008)

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and fair-share housing allocations under state housing law. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) to address GHG reduction targets in the context of that MPO’s Regional Transportation Plan (RTP). ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years, but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO’s SCS or APS for

consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation (RNHA) cycle to create a closer match with the timelines for revising RTPs (for the Metropolitan Planning Organizations affected by the bill). The RHNA is used to guide the amount of housing to be accommodated for the full range of household incomes in mandatory local housing plans (Housing Elements).

City or County land use policies (including general plan updates) are not required to be revised to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would create streamlining for certain projects that are consistent with an approved SCS or APS. Residential or mixed-use projects that are consistent with the SCS/APS and incorporate mitigation measures from relevant prior CEQA document/s are not required to reference, describe, or discuss growth-inducing impacts or impacts of cars and light-duty truck trips on climate change or on the regional transportation network. "Transit priority projects," as defined in this legislation, and future RTPs would be exempt from CEQA review. Transit priority projects that do not qualify for a complete exemption could be subject to environmental review under a Sustainable Communities Environmental Assessment (SCEA), which is envisioned to be similar to the process under CEQA for a negative declaration.

The GHG reduction target for the Sacramento Area Council of Governments (SACOG) Area, of which Yuba County is a part, is 7% percent per capita by 2020 and 16 percent per capita by 2035. Both targets are expressed as percent per capita below 2005 levels. These reduction targets will be updated every eight years, but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets.

### ***Executive Orders***

#### **Executive Order S-3-05 (2005)**

Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the executive order established targets for total GHG emissions. Specifically, emissions are to be reduced to the 2000 level by 2010, to the 1990 level by 2020, and to 80% below the 1990 level by 2050.

The Executive Order directed the secretary of the California Environmental Protection Agency to coordinate a multiagency effort to reduce GHG emissions to the target levels. The secretary will also submit biannual reports to the governor and legislature describing progress made toward reaching the emission targets; impacts of global warming on California's resources; and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the Secretary of the California Environmental Protection Agency created the California Climate Action Team, made up of members of various state agencies and commissions. The California Climate Action Team released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses and actions by local governments and communities, as well as through state incentive and regulatory programs.

#### **Executive Order S-1-07 (2007)**

Executive Order S-1-07, signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at over 40% of statewide emissions. It establishes a goal that carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10% by 2020. This order also directed ARB to determine if this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early action measure pursuant to meeting the mandates in AB 32.

## Regional and Local Plans, Policies, Regulations, and Ordinances

There are currently no regional or local policies, regulations, or laws specifically pertaining to GHG emissions.

### 4.7.2 ENVIRONMENTAL SETTING

#### CLIMATE

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place (Ahrens 2003). Yuba County is located in a climatic zone characterized as dry-summer subtropical or Mediterranean in the Köppen climate classification system. The Köppen system's classifications are based primarily on annual and monthly averages of temperature and precipitation.

The Northern Sacramento Valley Air Basin (NSVAB), which includes Yuba County, is relatively flat, bordered by mountains to the east, west, and north. The climate is characterized by hot, dry summers and cool, rainy winters. Periods of dense and persistent low-level fog that are most prevalent between storms are characteristic of winter weather in the NSVAB. The extreme summer aridity of the Mediterranean climate is caused by sinking air of subtropical high-pressure regions. The ocean has less influence in the NSVAB than in the coastal areas, giving the interior Mediterranean climate more seasonal temperature variation (Ahrens 2003).

Summer conditions in the NSVAB are typically characterized by high temperatures and low humidity, with prevailing winds from the south. Summer temperatures average approximately 90°F during the day and 50°F at night (FRAQMD 2010). Winter conditions in the NSVAB are characterized by occasional rainstorms interspersed with stagnant and foggy weather. Winter temperatures average in the low 50s (°F), and nighttime temperatures average in the upper 30s. Rainfall occurs mainly from late October to early May, averaging 17.2 inches per year, but this varies significantly from year to year. During winter, north winds are frequent, but winds from the south predominate (FRAQMD 2010). The predominant wind direction and speed is from the south at 8.0 miles per hour (mph) (ARB 1994).

#### ATTRIBUTING CLIMATE CHANGE—GREENHOUSE GASES

##### 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 back toward space. The absorbed radiation is then emitted from the earth, not as high-frequency solar radiation, but lower frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency (longer wavelength) radiation. Most solar radiation passes through GHGs; however, infrared radiation is selectively absorbed by GHGs. 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. Without the greenhouse effect, Earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and high global warming potential (high-GWP) GHGs. High-GWP GHGs include ozone depleting substances (ODSs), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and halons, in addition to their replacements, hydrofluorocarbons (HFCs). Other high-GWP GHGs include perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). Anthropogenic emissions of these GHGs leading to atmospheric levels in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of

unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (IPCC 2007:665). CO<sub>2</sub> emissions associated with fossil fuel combustion are the primary contributors to human-induced climate change (EPA 2010a). Following CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions associated with human activities are the next largest contributors to climate change (IPCC 2007; EPA 2010b).

According to overwhelming scientific consensus, climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO<sub>2</sub> is currently emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO<sub>2</sub> emissions, approximately 54% is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46% of human-caused CO<sub>2</sub> emissions remains stored in the atmosphere (Seinfeld and Pandis 1998).

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and TACs. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known, although the quantity would be enormous, and no single project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climate.

## **Greenhouse Gas Emissions Sources and Inventory**

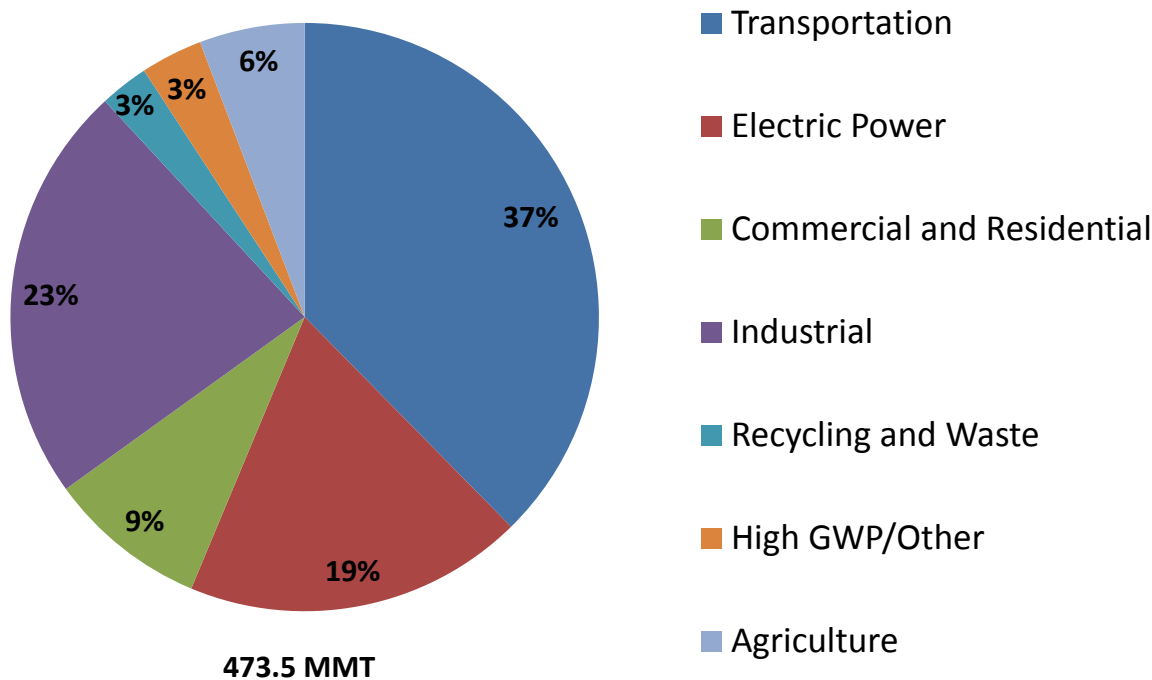
### ***California***

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial and agricultural sectors (ARB 2009f). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB 2009f). See Exhibit 4.7-1 for California's GHG emissions inventory sectors.

Emissions of CO<sub>2</sub> are byproducts of fossil fuel combustion. CH<sub>4</sub>, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) is largely associated with agricultural practices and landfills. N<sub>2</sub>O is also largely attributable to agricultural practices and soil management. CO<sub>2</sub> sinks, or reservoirs, include vegetation and the ocean, which absorb CO<sub>2</sub> through sequestration and dissolution, respectively, two of the most common processes of CO<sub>2</sub> sequestration.

California is the 12th to 16th largest emitter of CO<sub>2</sub> in the world (CEC 2006a). California produced 484 million gross metric tons of CO<sub>2</sub>e in 2004 (ARB 2009f). CO<sub>2</sub>e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, "Calculation References," of the General Reporting Protocol of the California Climate Action Registry (CCAR 2009), 1 ton of CH<sub>4</sub> has the same contribution to the greenhouse effect as approximately 23 tons of CO<sub>2</sub>. Therefore, CH<sub>4</sub> is a much more potent GHG than CO<sub>2</sub>. Expressing emissions in CO<sub>2</sub>e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO<sub>2</sub> were being emitted.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 38% of total GHG emissions in the state (ARB 2008). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (22%) and the industrial sector (20%) (ARB 2008).



Notes: GWP = global warming potential; MMT = Million metric tons.

Source: ARB 2008

**California's Greenhouse Gas Emissions by Economic Sector (2002–2004 Average)**

**Exhibit 4.7-1**

**CLIMATE CHANGE VULNERABILITIES AND ADAPTATION**

Global average ambient concentrations of CO<sub>2</sub> have increased dramatically since preindustrial times, from approximately 280 parts per million (ppm) to approximately 353 ppm in 1990 and approximately 380 ppm in 2000. Global average temperature has risen approximately 0.76°C since 1850; if global CO<sub>2</sub> emissions were to be curbed today, it would continue to rise an additional 0.5°C by the end of this century. This phenomenon is caused by the inertia of the climate system and time scale of the main sequestration mechanism in the carbon cycle—the ocean. In other words, global climate is committed to an additional 0.5°C of warming associated with human activities that have already occurred. Because GHG emissions associated with fossil fuel combustion, population growth, technological advances, and current standards of living will continue to occur, a more likely range of scenarios for global average temperature rise would be 1.8–4.0°C by the end of the century, depending on the global emissions scenario that ultimately occurs. (For example, the IPCC's B1 scenario—low population growth, clean technologies, and low emissions—is the best-case scenario; its A2 scenario—high population growth, fossil-fuel dependence, and high emissions—is the worst-case scenario; and its A1B scenario is a moderate scenario.)

Impacts associated with the incremental increase in global temperature have already begun to occur. Such impacts are projected to occur in numerous forms: sea level rise, reduction in the extent of polar and sea ice, changes to ecosystems, changes in precipitation patterns, reduced snowpack, agricultural disruption, increased intensity and frequency of storms and temperature extremes, increased risk of floods and wildfires, increased frequency and severity of drought, effects on human health from vector borne disease, species extinction, and acidification of the ocean.

It is accepted that some level of climate change impacts will occur as a result of human-caused climate change. However, international treaties on the subject of climate change attempt to avoid “dangerous” climate change—in other words, to manage the risk of foreseeable impacts to a “tolerable” level of climate change that would avoid most catastrophic impacts. For this to occur, CO<sub>2</sub> concentrations should be stabilized at 350–400 ppm, with an associated global average temperature increase of no more than 2°C–2.4°C above preindustrial times. Timing is also a key issue, because of the very long lifetimes of GHGs. To avoid “dangerous” climate change, global CO<sub>2</sub> emissions would be required to peak during the 2000–2015 period (IPCC 2007).

Climate change has the potential to affect environmental conditions in California through a variety of mechanisms. Resource areas other than air quality and atmospheric temperature could be indirectly affected by the accumulation of GHG emissions. For example, an increase in the global average temperature is expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. According to the CEC (2006b), the snowpack portion of the water supply could potentially decline by 30–90% by the end of the 21st century.

A study cited in a report by the California Department of Water Resources (DWR) projects that approximately 50% of the statewide snowpack will be lost by the end of the century (Knowles and Cayan 2002). Although current forecasts are uncertain, it is evident that this phenomenon could lead to significant challenges in securing an adequate water supply for a growing population. An increase in precipitation falling as rain rather than snow could also lead to increased potential for floods because water that would normally be held in the Sierra Nevada snowpack until spring could flow into the Central Valley concurrently with winter storm events. This scenario would place more pressure on California’s levee/flood control system (DWR 2006a).

Another mechanism for indirect impacts on the environment in California is sea level rise. Sea level rose worldwide approximately 7 inches during the last century (CEC 2006b), and it is predicted to rise an additional 7 to 22 inches by 2100, depending on the future levels of GHG emissions (IPCC 2007).

The Governor-appointed Delta Vision Blue Ribbon Task Force has recommended the State plan for a scenario of 16 inches of sea level rise by 2050, and 55 inches by 2100 (California Natural Resources Agency 2008). Resultant effects of sea level rise could include increased coastal flooding, saltwater intrusion (especially a concern in the low-lying Sacramento–San Joaquin River Delta, where pumps delivering potable water could be threatened), and disruption of wetlands (CEC 2006b). Some low-lying populated areas throughout the Central Valley and Sacramento-San Joaquin River Delta inundated by sea level rise could experience population displacement and economic disruption.

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available. Additional concerns associated with climate change are a reduction in the snowpack, leading to less overall water storage in the mountains, the largest “reservoir” in the state, and increased risk of wildfire caused by changes in rainfall patterns and plant communities.

## **Impacts on California and Yuba County**

### ***Historical Trends and Future Predictions***

#### **Temperature**

Climate change projections can be developed on a regional basis using techniques to downscale from the results of global models (although increased uncertainty results from the downscaling). Based on the results of a variety of regional climate models, it is reasonably foreseeable that some increase in annual average temperatures will occur in California during the next 100 years. Although a temperature increase is expected, the amount and timing

of the increase is uncertain. In general, predictions put an increase in the range of 2 to 5°C (3.6 to 9°F) over the next 50–100 years (IPCC 2007, Kim et al. 2002, Snyder et al. 2002, Dettinger 2005). Temperature increases are expected to be greater in the summer compared to the winter and more pronounced for inland areas compared to coastal areas (Cayan et al 2009). There are direct public-health related effects associated with increased temperatures and increased periods of temperature extremes, including heat stroke, heat exhaustion, and the exacerbation of existing medical conditions, with particular problems for the elderly, infants, those with pre-existing illnesses, and those that lack access to air conditioning or cooling spaces (California Natural Resources Agency 2009).

Indirect effects of increased temperature include changes in precipitation patterns, runoff, snowpack, sea level, water supply, agriculture, wildfire, extreme events (e.g., flooding and drought), biological resources, and public health in California. Effects on precipitation and snowpack would affect runoff and surface water, and would have potential to affect the physical conditions of the Delta. These topic areas are also discussed below.

An increase in annual average temperature is a reasonably foreseeable effect of future climate change, but this environmental change alone is independent of the proposed project. Indirect effects associated with warmer temperatures are evaluated further in the following sections.

## Precipitation

The earth's changing climate has far reaching consequences that as of now are still unknown. The changes to the climate are impacting weather systems and altering the distribution and intensity of precipitation events. Former State Climatologist James Goodridge compiled an extensive collection of longer-term precipitation records from throughout California. These data sets were used to evaluate whether there has been a changing trend in precipitation in the State over the past century (DWR 2006a). Long-term runoff records in selected watersheds in the State were also examined. Based on a linear regression of the data, the long-term historical trend for statewide average annual precipitation appears to be relatively flat (no increase or decrease) over the entire record. However, it appears that there might be an upward trend in precipitation toward the latter portion of the record.

When these same precipitation data are sorted into three regions—Northern, Central, and Southern California—trends show that precipitation in the northern portion of the State appears to have increased slightly from 1890 to 2002, and precipitation in the central and southern portions of the state show slightly decreasing trends. All changes were in the range of 1–3 inches annually (DWR 2006a).

Although existing data indicate some level of change in precipitation trends in California, more analysis is likely needed to determine whether changes in California's regional annual precipitation totals have occurred as the result of climate change or other factors (DWR 2006a).

The changes discussed above may not yet be fully understood, but any change to the state's precipitation has direct effects on the state's fire season. In addition drought stressed plants are more susceptible to disease and attack from parasites. It is currently anticipated that longer fire seasons with a greater probability of intense fires in western forests are inevitable. For years the practice of suppressing all fires has caused a buildup of vegetative materials (fuel) within forests throughout the state. With the drought type conditions and excess fuel the forests in California and the west present prime conditions for increased flammability over a longer period of the year, resulting in an active burning period that starts earlier and lasts longer than historical patterns.

## Snowpack

California's annual snowpack, on average, has the greatest accumulations from November through the end of March. The snowpack typically melts from April through July. California's reservoir managers (including State Water Project [SWP] and Central Valley Project [CVP] facilities) use snowmelt to help fill reservoirs once the threat of large winter and early spring storms and related flooding risks have passed.

An analysis of the effect of rising temperatures on snowpack conducted by DWR (2006) shows that a 3°C (5.4°F) rise in average annual temperature would likely cause snowlines to rise approximately 1,500 feet. This would result in an annual loss of approximately 5 million acre-feet (af) of water storage in snowpack. Released and/or purchased waters stored in upstream reservoirs, will largely depend on regional annual average precipitation accumulations. Greater management of upstream reservoirs would be required to account for seasonal variations in precipitation type and intensity, and to maintain the same level of flood protection currently enjoyed.

Rainfall and winter snowpack in the Sierra Nevada provide Yuba County with significant surface water flows and associated groundwater recharge as surface water traverses the county (DWR 2006b). Reduced groundwater recharge from smaller snowpack has the potential to reduce the available water supply in aquifers, eventually affecting the County's water supply.

## Runoff

Runoff is directly affected by changes in precipitation and snowpack. Changes in both the amount of runoff and the seasonality of the hydrologic cycle have the potential to greatly affect the heavily managed water systems of the western U.S. Hydrology in the Sacramento-San Joaquin Delta is highly dependent on the interaction between Sierra Nevada snowpack, runoff, and management of reservoirs. Runoff patterns in the Delta depend not just on how climatic conditions might change, but also on a wide range of human actions and management decisions.

## Water Supply

Much uncertainty also exists with respect to how climate change will affect future demand on water supply (DWR 2006a). Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in reservoir inflows (Kiparsky and Gleick 2005, Cayan et al. 2006).

It is foreseeable that the SWP and CVP would experience delivery reliability issues as a result of effects on the hydrologic cycle associated with climate change and Delta pumping restrictions (Anderson 2008, DWR 2007). Most water scarcity would be felt by agricultural users in southern California, however, it is expected that southern California urban users will also experience some scarcity. As required by law, Delta water quality standards must be met prior to occurrence of any south-of-Delta water deliveries.

Yuba County water supplies are not dependent on the SWP or CVP. The 2030 General Plan would require an increase in water to serve a larger population, occurring steadily throughout the year, including both wet and dry seasons. As discussed above, climate change may change the precipitation patterns, frequency and severity of rain events and reduce the effectiveness of groundwater recharge. This is discussed also in Impact 4.7-2.

To the extent that available data and projections suggest that climate change will intensify existing wet and dry patterns, resulting in more precipitation during the wet season and less during the dry season, the 2030 General Plan, which will rely on groundwater for potable water supply, could be less affected by these changes than the current agricultural water use regime. However, there is a great deal of uncertainty in respect to impacts of climate change on future water availability in California, in terms of whether and what effects will occur as well as regarding the timing and severity of any such potential effect, making it impossible to draw a conclusion regarding significance without substantial speculation.

## Sea Level Rise

One of the major areas of concern related to global climate change is sea level rise. Rising average sea level over the past century has been attributed primarily to warming of the world's oceans and the related thermal expansion of ocean waters, and the addition of water to the world's oceans from the melting of land-based polar ice (IPCC 2007). Worldwide average sea level appears to have risen about 0.4 to 0.7 foot over the past century based on data collected from tide gauges around the globe, coupled with satellite measurements taken over approximately the

last 15 years (IPCC 2007). Various gauge stations along the coast of California show an increase similar to the global trends. Data specific to the San Francisco tide gauge near the Golden Gate Bridge shows that the 19-year mean tide level (the mean tide level based on 19-year data sets) has increased by approximately 0.5 foot over the past 100 years.

Various global climate models have projected a rise in worldwide average sea level of 0.6–1.9 feet by 2099 (IPCC 2007). Although these projections are on a global scale, the rate of relative sea level rise experienced at many locations along California’s coast is relatively consistent with the worldwide average rate of rise observed over the past century. Therefore, it is reasonable to expect that changes in worldwide average sea level through this century will also be experienced by California’s coast (DWR 2006a). As noted, the Governor-appointed Delta Vision Blue Ribbon Task Force has recommended the State plan for a scenario of 16 inches of sea level rise by 2050, and 55 inches by 2100 (California Natural Resources Agency 2008).

A consistent rise in sea level has been recorded worldwide over the last 100 years. Recorded rises in sea level along the California coast correlate well with the worldwide data. Based on the results of various global climate change models, sea level rise is expected to continue. Based on the consistency in past trends, the consistency of future projections, and the correlation between data collected globally and data specific to California, it is reasonably foreseeable that some amount of sea level rise will occur along the California coast over the next 100 years. Although sea level rise is expected to occur, the amount and timing of the increase is uncertain.

However, it is not expected that any foreseeable sea level rise would directly impact unincorporated Yuba County, which is located approximately 30 feet above mean sea level at the lowest points along the Feather River.

## **Agriculture**

Climate change may reduce the suitability of agricultural lands within Yuba County for traditional crop types. While effects may occur, adaptation could allow farmers and ranchers to minimize any potential negative effect on agricultural incomes. Because the potential effects of global climate change on agricultural production are highly speculative at this time, it is not possible to reach a conclusion regarding which crop types and agricultural operations would be substantially affected and whether there would be significant impacts.

## **Key Findings**

Given the uncertainty associated with projecting the change in hydrology that would occur as a result of the variables described above, it would be too speculative to determine the reasonably foreseeable direct effects of climate change on physical hydrologic conditions in unincorporated Yuba County.

For California’s water quality, the largest effect of sea level rise would likely be in the Delta (DWR 2005). Increased intrusion of salt water from the ocean to the Delta could degrade the quality of the fresh water that is pumped out for municipal, industrial, and agricultural purposes. This could lead to increased releases of water from upstream reservoirs or reduced pumping from the Delta to maintain compliance with water quality standards. Increased demand for stored surface water could affect other surface water supplies within the applicable watershed, until specific changes in demands occur; the effect on regional supplies remains speculative.

While climate change-induced sea level rise is reasonably certain, even the middle- to upper-range projections would not affect unincorporated Yuba County directly, because the area is well above sea level (i.e., elevation of approximately 30 feet above mean sea level at the lowest point). Projected sea-water rise associated with global climate change is in the range of 0.6–1.9 feet or up to 55 inches (4.6 feet) by the year 2099 (IPCC 2007, California Natural Resources Agency 2008).

In addition, current water quality conditions in regional surface waters depend in large part on human activities, and this would continue into the future. The effects of climate change on water quality could be alleviated by, exacerbated by, or overwhelmed by effects directly related to localized human actions.

Impacts that would occur on the proposed project that would result from climate change will be evaluated further in Impact 4.7-2, below.

### **4.7.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

#### **METHODOLOGY**

There are several agencies in the State of California that have adopted methodologies for evaluating GHG emissions from new developments. CO<sub>2</sub> emissions associated with construction and operations were modeled using the Urban Emissions (URBEMIS) 2007 computer model, Version 9.2.4. Greenhouse gas emissions from increased load on public infrastructure (including electricity, water, waste etc.) were estimated using methodologies from CCAR and assumptions from the CEC. See Appendix C for detailed GHG calculations and inputs.

It is important to note that CO<sub>2</sub> emissions consistent with buildout of the 2030 General Plan are not necessarily “new” emissions, given that the General Plan itself does not create “new” emitters (e.g., people) of GHGs. In other words, the 2030 General Plan would not create new people, and would not necessarily accommodate new activities. Rather, the 2030 General Plan would accommodate movement in people, jobs, and activities from one location to another. Therefore, instead of reducing the total mass of community-generated GHG emissions, it is important to increase the *GHG efficiency* of the community, or the *rate* of GHG emissions per capita and per employee. The 2030 General Plan would need to accommodate population in a way that allows for a lower *rate* of GHG generation to achieve the state’s goals for GHG emissions, as described in the text of AB 32 and directed by S-3-05. An example of such required rates are described below.

#### **THRESHOLDS OF SIGNIFICANCE**

An impact related to global climate change is considered significant if the proposed project 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.

With regard to emissions of GHGs, the Feather River Air Quality Management District (FRAQMD) has not adopted a significance threshold for analyzing project-generated emissions from plans or development projects or a methodology for analyzing impacts related to global warming, as of the writing of this document.

However, by adopting AB 32, the California Legislature has indicated that global climate change is a serious environmental issue and has identified a statewide GHG emissions target. To meet the goals of AB 32, California would need to generate fewer GHGs than current levels. It is recognized, however, that for most development projects, there is no simple metric available to determine whether the individual project would substantially increase or decrease overall emission levels of GHGs.

The legislation dealing with climate change in California (as well as international treaties and agreements on the subject) identifies goals for the rate of emissions of GHGs, relative to specific benchmark years. In the case of California, AB 32 requires 1990 GHG emission levels to be achieved by the year 2020, or about a 28% reduction from current emissions levels (ARB 2008). Neither state legislation nor executive order suggests that California intends to limit population growth to reduce the state’s GHG emission levels. Therefore, the intent is to

accommodate population growth in California, but achieve a lower *rate* of GHGs despite this larger population. In other words, California jurisdictions must become more *GHG efficient*.

With a statewide context for GHG emissions reductions established, GHG efficiency can be viewed independently from the jurisdiction in which the project or plan is located. In order to provide a meaningful basis to assess the GHG-related effects of a project or plan, the mass emission from land use-related sectors can be normalized. Dividing mass emissions by the population and or amount of employment allows an assessment of GHG efficiency of a plan or project. Normalizing this projected mass of emissions from land use-related emissions sectors (i.e., transportation, electricity, natural gas, wastewater) by unit related to what the plan itself is accommodating (e.g., population and employment) allows decision makers to consider the GHG efficiency of a project, and evaluate the project's consistency with AB 32 (and other relevant targets). Limiting the analysis to the land use-related sectors helps to maintain focus on what the lead agency is approving – in this case, long-range physical development of the County, with an emphasis on management of land use change.

For the purposes of this analysis, the sum of the number of jobs and the number of residents at a point in time is termed the “service population” (SP). GHG efficiency metrics were developed for the emissions rates at the state level that would accommodate estimated population and employment growth, and the emission rates needed to accommodate growth while allowing for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020). These emission rates show how GHG-efficient new development and existing development must be in order to achieve AB 32 targets for land use-related sectors.

When analyzing long-range plans, such as general plan updates, it is important to note that the planning horizon will often surpass the 2020 timeframe for implementation of AB 32. Executive Order S-3-05 establishes a more aggressive emissions reduction goal for the year 2050 of 80% below 1990 emissions levels. The year 2020 can be viewed as a milestone, and is the only year discussed in AB 32 with respect to an emissions target. However, communities may need also to consider planning in a way that does not preclude a trajectory toward the 2050 goal established in Executive Order S-3-05.

A 2030 interim benchmark was developed for the purposes of this analysis since this would better coincide with the planning horizon of Yuba County's 2030 General Plan. The 2030 GHG efficiency benchmarks were estimated based on future expected growth in the state's population and economy, the mass emissions target mandated at the statewide level by AB 32 for the year 2020, and a linear interpolation for a 2030 mass emissions reduction target based on the GHG target for the year 2050 that is derived from the goal of Executive Order S-3-05 (i.e., 80% below the 1990 GHG emissions level by 2050). Assumptions were also made about which emissions sectors of the statewide GHG emissions inventory are affected by land use planning and development design decisions (Table 4.7-1). For instance, GHG emissions produced by the manufacturing industry sector and agriculture are not accounted for in the metrics presented in Table 4.7-2 since the policy framework of the County's 2030 General Plan does not propose substantial changes to the agricultural sector and since the County cannot predict the specific industries that may locate in the County between present and buildout of the General Plan. In addition, large stationary sources of GHG emissions, such as industrial sources, will be separately regulated. This is consistent with the recommendations of OPR in its Technical Advisory *CEQA and Climate Change* (OPR 2008). These and other detailed assumptions and calculations used to estimate this benchmark are presented in Appendix C.

**Table 4.7-1  
California's Greenhouse Gas Emissions Inventory, 1990 Emissions Limit, Base Year, and  
2020 Projections from Land Use-Related Sectors**

Sector	1990 Emissions (MMT CO <sub>2</sub> e/yr)	2002-2004 Average (MMT CO <sub>2</sub> e /yr)	2020 Emissions Projections (MMT CO <sub>2</sub> e/yr)
<b>Transportation</b>	<b>137.992</b>	<b>168.657</b>	<b>209.101</b>
On-Road Passenger Vehicles	108.945	133.947	160.783
On-Road Heavy Duty	29.047	34.710	48.318
<b>Electric Power</b>	<b>95.385</b>	<b>88.970</b>	<b>107.401</b>
In-State Generation	33.808	32.152	55.039
Imported Electricity	61.577	56.818	52.362
<b>Commercial and Residential</b>	<b>44.220</b>	<b>41.579</b>	<b>47.970</b>
Residential Fuel Use	29.657	28.515	32.100
Commercial Fuel Use	13.462	11.704	13.755
Commercial Combined Heat and Power	1.101	1.360	2.115
<b>Recycling and Waste<sup>1</sup></b>	<b>2.833</b>	<b>3.390</b>	<b>4.190</b>
Domestic Waste Water Treatment	2.833	3.390	4.190
<b>Total Gross Emissions</b>	<b>280.430</b>	<b>302.596</b>	<b>368.662</b>

Notes: MMT CO<sub>2</sub>e /yr = million metric tons of carbon dioxide equivalent emissions per year.

<sup>1</sup> Landfills not included.

Please refer to Appendix C for detailed calculations.

Sources: Data compiled AECOM 2010, ARB 2008, ARB 2009f, ARB 2009g.

**Table 4.7-2  
California Greenhouse Gas Emissions, Population Projections, and  
Greenhouse Gas Efficiency Thresholds**

	1990	2002-2004 Average	2020	2030 (Interpolated) <sup>2</sup>
Population	29,758,213	36,199,342	44,135,923	49,240,891
Employment	14,294,100	16,413,400	20,194,661	22,592,387
California Service Population (Population + Employment)	44,052,313	52,612,742	64,330,584	71,833,278
Projected GHG emissions(metric tons CO <sub>2</sub> e)/capita <sup>1</sup>	9.42	8.36	8.35	-
Projected GHG emissions (metric tons CO <sub>2</sub> e)/SP <sup>1</sup>	6.37	5.75	5.73	-
AB 32, S-3-05 Goal GHG emissions (metric tons CO <sub>2</sub> e)/ capita <sup>1</sup>	9.42	7.75	6.35	<b>5.37</b>
AB 32, S-3-05 Goal GHG emissions (metric tons CO <sub>2</sub> e)/ SP <sup>1</sup>	6.37	5.33	4.36	<b>3.68</b>

Notes: AB = Assembly Bill; CO<sub>2</sub>e = carbon dioxide equivalent; GHG = greenhouse gas; SP = service population; "-" = no data.

<sup>1</sup> Greenhouse gas efficiency levels were calculated using only the "land use-related" sectors of ARB's emissions inventory. See Table 4.7-1.

<sup>2</sup> 2030 GHG/capita and GHG/SP goals were calculated based on a linear interpolation between the AB 32 GHG goal (i.e., 1990 mass emissions level achieved by year 2020) and the S-3-05 target (i.e., 80% below 1990 mass emission levels by year 2050).

Please refer to Appendix C for detailed calculations.

Sources: Data compiled by AECOM 2010, ARB 2008, ARB 2009f, DOF 2009, EDD 2009.

To meet the requirements of AB 32 in the emissions sectors that are related to land use (e.g., on-road passenger and heavy-duty motor vehicles, commercial and residential area sources [i.e., natural gas], electricity generation/consumption, waste water treatment, and water consumption), 2020 projected population and employment would need to fit within the 1990 mass emissions limits. Table 4.7-1 summarizes 1990, present (2002–2004 average baseline), and projected 2020 GHG emissions from relevant emissions sectors from land use development projects. AB 32 has established the 1990 emissions limit as the legislative context for assessing future emissions. The 1990 emissions limit from these sectors is treated as 280 MMT CO<sub>2</sub>e. As noted, ARB developed 2020 GHG emissions estimates based on population increase, demographic changes, economic development, and a wide variety of other factors, classified as the “business as usual” scenario. The business as usual estimate for land use-related GHG emissions sectors (i.e., transportation, electricity, natural gas, and wastewater) in California is approximately 370 MMT CO<sub>2</sub>e in 2020.

Table 4.7-2 summarizes projected population and employment estimates for the state, and allocates the GHG emissions limit (i.e., 280 MMT CO<sub>2</sub>e) from Table 4.7-1 to the projected population and projected SP in the year 2020. The per-capita target is 6.35 metric tons (MT) CO<sub>2</sub>e and the target per SP (persons + jobs) is between 4.36 MT CO<sub>2</sub>e and 4.6 MT CO<sub>2</sub>e per SP. If “co-generation” is included as a type of electricity generation, the per-service-population target would be approximately 4.6 MT CO<sub>2</sub>e per service population. This is the GHG efficiency target used by the Bay Area Air Quality Management District in their June 2010 California Environmental Quality Act Air Quality Guidelines for projects (BAAQMD 2010). Other GHG efficiency metrics can be designed to examine the efficiency of plans and projects that address other combinations of GHG emissions sectors. One could attempt to remove future employment in agriculture and industry from the forecast 2020 service population, which would create a somewhat less rigorous standard. Electricity used in industrial processing could be removed from the 1990 emissions inventory, which would lead to a more aggressive GHG efficiency target.

By meeting these AB 32-derived GHG efficiency targets, the County would be able to demonstrate that the 2030 General Plan would accommodate growth in a manner that would not hinder the state’s ability to achieve its fair share of GHG reduction targets adopted for the purpose of preventing dangerous climate change.

Since the 2030 General Plan planning horizon extends beyond 2020, GHG efficiency metrics were also calculated for year 2030 based on a linear interpolation between the AB 32 and S-3-05 GHG reduction targets and benchmark years. In addition to the GHG efficiency (per capita + employment) needed to achieve AB 32 targets by 2030, the County is also considering GHG efficiency needed in the year 2030 (either 5.4 MT CO<sub>2</sub>e/capita or 3.7 MT CO<sub>2</sub>e/SP), to achieve the reduction targets identified by Executive Order S-3-05.

## IMPACT ANALYSIS

**IMPACT 4.7-1** **Increase in Greenhouse Gas Emissions.** *The 2030 General Plan would accommodate land use change that would increase GHG emissions. Buildout of the 2030 General Plan Update would result in substantially higher GHG emissions compared with existing levels. Climate change attributable to human-caused GHG emissions is a significant cumulative impact. 2030 General Plan GHG mass emissions could be cumulatively considerable when compared to existing mass emissions in. For this reason, this impact is considered potentially significant.*

Long-term growth anticipated under the 2030 General Plan would generate emissions of GHGs from area and mobile sources, and indirect stationary-source GHG emissions associated with off-site electricity production and natural gas production and use.

Mobile-source emissions of GHGs would include vehicle trips associated with employee commutes, errands, recreation, and other trips in passenger vehicles of future residents of and visitors to the County. Such emissions

would also include commercial trucking activity associated with moving goods to and from proposed commercial and industrial uses.

Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, and distribution of natural gas to heat spaces and water and provide cooking fuel. Increases in stationary-source emissions could occur at off-site utility providers that would supply electricity to the proposed uses within the County.

GHG emissions would be predominantly in the form of CO<sub>2</sub>. CO<sub>2</sub> emissions persist in the atmosphere for a much longer period of time than emissions of criteria air pollutants such as ozone and particulate matter. Although emissions of other GHGs, such as CH<sub>4</sub> and N<sub>2</sub>O, are important with respect to global climate change, emissions levels of other GHGs are less dependent on the land use and circulation patterns associated with the 2030 General Plan than are levels of CO<sub>2</sub>.

A primary focus of any general plan is on long-term physical development and conservation within the community. Although a general plan can also influence energy efficiency to some extent (e.g., site planning for proper solar orientation), the County does not have control over the sources of electricity used in buildings. General plan are by their nature less focused on the details of building construction and architecture and are more focused on overall physical development patterns and land uses.

GHG emissions attributable to the 2030 General Plan were analyzed and are presented in this section at a programmatic level of detail. The County cannot estimate the GHG reduction benefit of its various land use, transportation, and design policies. Various land use, community design, conservation, and circulation policies noted below, “Relevant Policies and Actions of the 2030 General Plan,” would promote increased GHG efficiency during buildout of the 2030 General Plan. Due to the nature of general plan policy, the fact that the County’s policies and actions would be incorporated in a variety of land use changes and County actions over a long period of time, and because the County cannot predict the degree to which policies and programs would be incorporated into projects during buildout of the General Plan, the precise effect of these policies and actions is not knowable as of the writing of this document.

The main influences available to the County on community-generated GHG emissions relate to land use planning, transportation planning, and community design approaches that reduce local VMT. The County, through the 2030 General Plan, can influence density, land use mix, community design, the balance between jobs and housing, and other important factors that affect travel behavior. Mobile-source GHG emissions (vehicle trips) would be the primary source of GHG emissions attributable to implementation of the 2030 General Plan. Transportation is also the largest source of GHG emissions in California, representing approximately 36.5% of annual CO<sub>2</sub> emissions generated in the state (ARB 2008). VMT is the most direct indicator of CO<sub>2</sub> emissions for most land use plans and development projects, and the 2030 General Plan is no exception. CO<sub>2</sub> emissions are the best indicator of total GHG emissions for most types of development projects and plans. Buildout of the 2030 General Plan is estimated to add approximately 6,726,862 new VMT per day to the region. These trips would be the primary source of GHG emissions attributable to General Plan implementation.

However, the estimated VMT associated with General Plan implementation is likely overestimated. This is because the VMT calculations were derived from a traditional travel demand model, which does not consider a number of factors incorporated into this General Plan that tend to reduce VMT including: shifts in travel to transit; bike, and walk modes; improved local street connectivity; and mixed-use projects with “balanced land uses.” Policies and actions in the 2030 General Plan related to travel demand management, increased density, shared parking, and workforce housing would also reduce VMT. Extensive research has shown that the above planning techniques can reduce vehicle trips, increase non-automobile mode share, reduce trip lengths, and reduce VMT. Increases in density and development intensity are correlated with reduced vehicle travel (on a per unit or square foot basis). Mixing complementary land uses in a neighborhood setting increases internal trip “capture.” Many different urban design approaches are used to increase transportation connectivity and provide high-quality

bicycle, pedestrian, and transit facilities, increasing the attractiveness of non-automobile modes of travel. Access to regional destinations involves the strategic placement of land uses near regional attractions. A wide array of 2030 General Plan policies and actions incorporate these concepts. The 2030 General Plan includes extensive policies and actions that will reduce VMT, but they are difficult to quantify with the travel demand model that was developed to support this General Plan and EIR. As such, the VMT analysis in this section is conservative because it does not account for local, neighborhood, and communitywide VMT reduction benefits. VMT attributable to the 2030 General Plan is also overestimated since some of the trips included in VMT estimates would originate or end in Marysville or Wheatland. Half of the VMT for trips originating or ending outside the County were deducted from the VMT estimates for this General Plan and EIR, but the same approach was not applied to trips that originate or end in the cities but pass through unincorporated County areas.

Construction-related activities are anticipated to result in a maximum of 172,698 tons of CO<sub>2</sub> per year if the 2030 General Plan were to fully buildout by 2030. Because operational emissions would occur for the lifetime of the built out community, these sources (rather than those attributable to construction) are much more important to understanding the General Plan’s overall GHG emissions profile. Full buildout of the 2030 General Plan is estimated to generate an additional 1,518,426 of CO<sub>2</sub>e operational emissions annually, including agricultural operations, considering GHG emissions associated both with existing development plus new development (see Table 4.7-3).

<b>Table 4.7-3 Summary of Modeled Emissions of Greenhouse Gases</b>	
Source	Emissions (MT/yr CO <sub>2</sub> e)
<b>Existing, On-the-Ground Development</b>	
Electricity	85,182
Natural Gas	43,634
Wastewater	2,687
Waste	18,579
Transportation	343,868
Agriculture	103,235
<b>Total Unmitigated Operational Emissions</b>	<b>597,185</b>
<b>Total Unmitigated Operational Emissions without Agriculture</b>	<b>493,950</b>
<b>GHG Emissions Efficiency of Existing Development</b>	<b>7.14 MT/capita/yr, 5.62 MT/SP/yr</b>
<b>Full Buildout of the 2030 General Plan</b>	
Electricity	116,916
Natural Gas	52,087
Wastewater	7,719
Waste	53,365
Transportation	1,199,820
Agriculture	88,520
<b>Total Unmitigated Operational Emissions</b>	<b>1,518,426</b>
<b>Total Unmitigated Operational Emissions without Agriculture</b>	<b>1,429,906</b>
<b>Total Operational GHG Emissions Efficiency at buildout of 2030 General Plan</b>	<b>8.47 MT/capita/yr, 5.67 MT/SP/yr</b>
<b>GHG Emissions Efficiency of New Land Use under 2030 General Plan (2030 GP Buildout Minus Existing)</b>	<b>9.40 MT/capita/yr, 5.69 MT/SP/yr</b>
Notes: CO <sub>2</sub> e = carbon dioxide equivalent; GP = 2030 General Plan; MT/yr = metric tons per year; SP = service population; "-" = no data. Emissions modeled using the URBEMIS 2007 (Version 9.2.4) computer model, based on trip generation rates obtained from the analysis prepared for the General Plan. Trip generation rates and VMT estimates provided by Fehr & Peers 2010. Refer to Appendix C for detailed assumptions and modeling output files. *Totals may not add exactly due to rounding. Source: Modeled by AECOM in 2010	

According to the AB 32 Scoping Plan, to achieve the goal stated in AB 32 of 1990 emission levels by the year 2020, while accounting for population growth between now and 2020, California would need to reduce projected emissions by approximately 28%. To achieve 1990 emissions levels by 2020 from the emissions sectors related to land use (e.g., transportation, electricity, natural gas, waste, and wastewater) would need to be reduced by approximately 24% compared to ARB estimates for 2020 under “business-as-usual” assumptions. As noted previously, in order to achieve 1990 emissions levels, both new and existing development in California will need to be more GHG efficient.

The 2030 General Plan could accommodate as many as 100,000 new residents and up to 65,000 new local jobs in unincorporated areas of the County at full buildout. If the *new* operational CO<sub>2</sub>e emissions were distributed evenly on a per-unit basis, the 2030 General Plan would generate GHG emissions at an average rate of approximately 9.40 MT of CO<sub>2</sub>e per person per year. New development under the 2030 General Plan is estimated to generate 5.69 MT of CO<sub>2</sub>e per SP per year. As noted earlier, since the transportation analysis for the General Plan did not account for the many VMT-reducing elements of 2030 General Plan policies and actions, and since the transportation analysis did not subtract out any VMT for trips originating or ending in Wheatland or Marysville, the GHG emissions estimates presented here are conservative (erring on the high side).

Considering GHG emissions from both existing and new development, the annual operational CO<sub>2</sub>e emissions per capita at full buildout of the General Plan is estimated to be 8.47 MT of CO<sub>2</sub>e per year per capita and 5.67 MT of CO<sub>2</sub>e per year per SP.

Based on these estimate, land use change accommodated under the 2030 General Plan would not meet the GHG-per-SP benchmarks derived for the year 2020 (between 4.36 and 4.6 MT of CO<sub>2</sub>e per SP). Therefore, new development accommodated under the 2030 General Plan would not accomplish Yuba County’s “fair share” of GHG emissions reductions needed statewide to achieve California’s 2020 GHG target established under AB 32. As noted previously, achieving 1990 emissions by 2020, as mandated under AB 32, is a goal tied to global GHG concentrations needed to stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous human interference with the global climate. It is not yet clear what the net GHG emissions would actually be under the buildout of the 2030 General Plan, given the uncertainty of future legislative and regulatory actions. Market, demographic, and economic factors could affect the density and mix of land uses actually constructed. Therefore, actual CO<sub>2</sub> emission rates, as computed on a project-by-project basis, could vary. Many factors that would be used to calculate the net change in GHG emissions attributable to individual projects under the 2030 General Plan are either unknown at this time or outside the control of the County.

The impact is considered **significant**. In addition, the County cannot demonstrate at this time that the 2030 General Plan would meet the more aggressive GHG reduction goals described in the Governor’s Executive Order S-3-05 for 2050.

### **Relevant Policies and Actions of the 2030 General Plan**

As noted, the 2030 General Plan includes a variety of narrative and diagrammatic policies, as well as actions aimed at addressing GHG emissions. The proposed Land Use Diagram supports and enables the implementation of these proposed policies and actions. Specifically, the 2030 General Plan balances residential land uses with destination land uses and provides the opportunity for local employment (although the County cannot guarantee that a majority of residents will work locally). The General Plan calls for development of complete neighborhoods and diversity of land uses, including destination land uses within close proximity to residents. This type of development would enable residents to have easy access to daily amenities by walking, bicycle, or public transit instead of the need for a car. Table 4.7-4 summarizes the climate change-related policies and actions contained in the 2030 General Plan.

**Table 4.7-4  
2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County**

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
<b>Community Development</b>		
Policy CD1.1	Urban and suburban development in the unincorporated County not related to agriculture, mining, or some natural or cultural resource-oriented purpose is prohibited in valley areas outside the Valley Growth Boundary.	Transportation
Policy CD1.3	General Plan land use designation/s will not be assigned within the Planning Reserve area unless the County determines that these lands are needed to fulfill either the County’s regional housing needs allocation or accommodate job-generating developments needed to achieve the County’s jobs-housing goals.	Transportation
Policy CD1.4	Projects will not be approved within the Planning Reserve area until the County assigns the appropriate General Plan land use designation/s and approves zoning and development standards consistent with the Community Development Element.	Transportation
Policy CD2.1	The County will encourage infill development and redevelopment of vacant and underutilized properties within existing unincorporated communities.	Transportation
Policy CD2.2	The County will support specific plans, redevelopment plans, corridor plans, and community plans that promote infill development and reinvestment.	Transportation
Policy CD2.3	The County will support reinvestment in Linda and Olivehurst that increases local shopping, job, and housing opportunities.	Transportation
Policy CD2.4	The County will maintain flexible development standards and impact fees that promote infill development and promote lot consolidation for redevelopment, where necessary.	Transportation
Policy CD2.5	The County will direct public spending on infrastructure to infill areas in order to induce reinvestment, remove blight, and reduce poverty.	Transportation
Policy CD2.6	The County will support public/private partnerships that encourage infill development consistent with the General Plan.	Transportation
Policy CD2.7	The County will actively promote vacant industrial sites in the Linda and Olivehurst areas for employment development.	Transportation
Policy CD4.1	Employment and Commercial Centers shall be developed in coordination with local transit provider/s to ensure proper placement and design of transit stops and accommodate public transit for both employees and patrons.	Transportation
Policy CD4.2	Employment and Commercial Centers shall be designed to provide convenient and safe pedestrian and bicycle access from surrounding developed and planned neighborhoods.	Transportation
Policy CD4.6	The County will encourage development of workforce housing around Employment Centers that is ancillary to, and supportive of employment-generating land uses.	Transportation
Policy CD5.1	Valley Neighborhoods should provide for most daily and weekly destinations, including a mix of commercial retail and services, schools, parks, and other civic uses.	Transportation
Policy CD5.2	Valley Neighborhoods should provide compact development patterns that conserve land and place homes in close proximity to destinations.	Transportation
Policy CD5.3	Valley residential development in existing and planned Valley Neighborhoods should provide for the full range of housing types and densities.	Transportation
Policy CD5.4	New developments within the Valley Growth Boundary shall provide a highly connected travel network that supports all local travel modes.	Transportation
Policy CD5.5	The County’s development standards will allow narrow lots, narrow driveways, alleyway access, zero lot line housing, and other compact housing configurations in Valley Neighborhoods.	Transportation

**Table 4.7-4  
2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County**

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Action CD5.1	Update Zoning Ordinance. Following the General Plan adoption, the County will review and revise the Zoning Ordinance, consistent with the updated General Plan. As a part of the revisions, the County will ensure the updated Zoning Ordinance accommodates compact growth patterns, consistent with the General Plan, while continuing to provide for the public health and safety. The County will consider provisions in the Zoning Ordinance that focus more on building form, function, and placement and the relationship of buildings to the public realm (streets, plazas, public parks, etc.) and less on regulating specific land uses. To ensure land use compatibility while also encouraging a mix of land uses, the County will base performance standards in the Zoning Ordinance on General Plan policies for such topics as noise, vibration, light, glare, air pollution, and traffic. Such performance standards could be used to ensure compatibility in situations where nonresidential uses are located close to residential uses.	Transportation
Policy CD6.1	Valley Neighborhoods shall contain one or more Neighborhood Center, where medium- and higher-density residences, neighborhood commercial, and public services are focused.	Transportation
Policy CD6.2	Neighborhood Center activities, retail, and services should serve roughly 3,000 to 5,000 existing or planned residents in the surrounding neighborhood.	Transportation
Policy CD6.3	Neighborhood centers should be developed on approximately 4 to 15 acres of land and sized according to the needs of the surrounding neighborhood.	Transportation
Policy CD6.5	Neighborhood Centers will have a pedestrian-friendly mix of uses and a palette of housing types to meet the needs of the County’s diverse households.	Transportation
Policy CD6.6	Neighborhood Centers shall be located and designed to provide convenient and safe bicycle, pedestrian, and transit access to and from surrounding neighborhoods.	Transportation
Policy CD7.3	The County will encourage – through entitlement, streamlining, flexibility in development standards, fee structures, and other incentives – infill development in vacant or underutilized sections of Mixed-Use Corridors.	Transportation
Policy CD7.4	Developments in Mixed-Use Corridors should have pedestrian-friendly property frontages with buildings built close to the street frontage.	Transportation
Policy CD7.6	The County will promote public plazas, outdoor dining, awnings, large windows, and other elements along property frontages that enhance pedestrian attractiveness and activity in Mixed-Use Corridors.	Transportation
Policy CD7.7	The County will seek funding to add drainage, bicycle, pedestrian, and transit facilities along Mixed-Use Corridors.	Transportation
Policy CD7.8	The County will seek funding to add street trees along Mixed-Use Corridors, particularly in areas that would shade sidewalks, parking areas, transit stops, and any public gathering places.	Transportation
Action CD7.1	Corridor Planning. The County will seek funding to support corridor planning efforts for McGowan Parkway, Olivehurst Avenue, Lindhurst Avenue, North Beale Road, the northern section of Feather River Boulevard, and surrounding areas. The County may also identify other Mixed-Use Corridors to address during buildout of the General Plan. Mixed-Use Corridor Plans would be designed to (Exhibit Community Development-10): Guide mixed-use, infill development consistent with the applicable land use designation/s and zoning district/s; Identify multimodal transportation improvements to support development; Describe public infrastructure and facilities needed to encourage private investment; and Identify incentives and streamlining that would induce private investment in these areas. The Plans would be structured to provide a mix and density of development with adequate transportation facilities such that walking, bicycling, or taking transit is viable for daily needs of the residents of surrounding neighborhoods. The County will pursue grant funding and regional partnerships to revitalize its Mixed-Use Corridors. The County will plan and fund infrastructure designed to support increased density and intensity around future transit stops, near planned bicycle/pedestrian facilities, and in other targeted reinvestment areas.	Transportation
Policy CD8.1	New developments should be designed to provide direct and convenient access to nearby parks, trails, commercial and public services, and transit stops.	Transportation
Policy CD8.2	Valley Neighborhood developments shall provide relatively short block lengths and continuity of streets in order to facilitate convenient pedestrian, bicycle, and vehicle movement (Exhibit Community Development-11).	Transportation

**Table 4.7-4  
2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County**

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Policy CD8.3	New cul-de-sacs are allowed within the Valley Neighborhoods only where they would not create a barrier for pedestrian and bicycle access or circulation between homes and destinations. Cul-de-sacs may be allowed around the edges neighborhoods, in areas adjacent to ongoing agricultural operations, in areas adjacent to existing large volume roadways, or where connectivity is limited by existing physical conditions.	Transportation
Policy CD8.11	Multi-family housing developments should be well connected to the surrounding neighborhood. Parking areas should be sized and broken up to avoid creating barriers to pedestrian and bicycle circulation.	Transportation
Policy CD9.6	The County will support planning for Rural Centers in foothill and mountain portions of the County that would provide a variety of activities and services needed or anticipated to be needed by the local population.	Transportation
Policy CD9.9	Rural Communities can provide clusters of housing constructed at the upper end of allowable density ranges near Rural Centers, but in general should provide larger lots at the edges of the community that transition to the surrounding open space areas.	Transportation
Policy CD9.11	Rural Centers should be focused on County collector and arterial roads and highways, and particularly at “crossroads” locations central to the surrounding rural communities.	Transportation
Policy CD9.12	Rural Centers should be located along existing or planned future transit routes.	Transportation
Policy CD10.1	The County will encourage development that improves the balance between local jobs and housing, including new commercial, industrial, and other development that generates net revenues for the County and produces local jobs.	Transportation
Policy CD10.3	The County will phase growth with efficient infrastructure planning to keep fees as low as possible and coordinate with service providers to ensure the savings of this efficient infrastructure planning is passed on to occupants of employment-generating developments.	Energy
Policy CD10.5	The County will support community and specific planning efforts following General Plan adoption that identify employment-generating uses and the housing and infrastructure that is needed to support the local workforce.	Transportation
Policy CD10.6	The County should encourage residential development that is priced, sized, and located to serve the needs of local employers and workers and discourage overproduction of housing that is sized, priced, and located for residents working outside Yuba County.	Transportation
Policy CD10.7	Large residential development projects shall be phased or timed to occur concurrently with development projects that will provide employment in the County.	Transportation
Action CD10.2	Land Use Monitoring. The County will monitor progress toward the jobs-housing goal and, as necessary, amend the General Plan, Zoning Ordinance, Specific Plans, Community Plans, and other relevant plans and codes, as appropriate. Any amendments shall address imbalances between job and population growth, and may include revisions to allowable land uses or development standards, financial/regulatory incentives to accelerate the development of job-generating uses, and other actions.	Transportation
Policy CD11.6	The County will encourage rail spur development and increased use of local railroad routes for freight and passenger service, as well as conversion to trails or roadways, where appropriate.	Transportation
Policy CD13.1	Growth shall be phased from developed areas and existing infrastructure outward in a logical, efficient manner, and in a way that avoids premature conversion of agricultural lands, changes in rural character, and unnecessary loss of other land-based natural resources.	Transportation
Policy CD13.2	The County will not induce growth by providing services or infrastructure in areas not planned for development.	Transportation
Policy CD13.3	Unincorporated County development between present and 2030 shall be focused within the Valley Growth Boundary and Rural Communities.	

**Table 4.7-4  
2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County**

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Policy CD13.5	For areas designated Planning Reserve, allowable land use will be regulated according to the underlying land use designation unless 4 of 5 members of the Board of Supervisors approve the following findings: The subject project or plan proposed within the Planning Reserve Area promotes the goals and is consistent with the polices of the Community Development Element, Natural Resources Element, Housing Element, and Public Health & Safety Element of the General Plan; and The subject project or plan proposed within the Planning Reserve Area will directly provide substantial basic (exporting) employment development potential; or The subject project or plan proposed within the Planning Reserve Area will construct water, wastewater, and drainage infrastructure that will serve future employment development, with the understanding that project applicants are repaid on a fair-share basis for the cost of providing off-site infrastructure to employment centers.	Transportation
Policy CD14.5	The County will coordinate its land use planning with local school districts to ensure adequate educational facilities with safe and convenient pedestrian and bicycle access to and from surrounding neighborhoods.	Transportation
Policy CD14.6	The County will support joint-use facilities, shared maintenance, and projects with other local service agencies and districts that are coordinated to provide enhanced public levels of service and/or long-term cost savings.	Transportation
Policy CD14.7	The County will support and encourage joint-use parks for school and community use, joint-use parks for recreational and drainage conveyance and detention, joint-use libraries for school and community use, and other appropriate joint-use facilities.	Transportation
Policy CD15.4	The County's impact fees will be revised to consider cost efficiencies associated with compact, mixed-use, and infill development.	Transportation
Policy CD15.5	New developments should incorporate water conservation techniques to reduce water demand, including the use of reclaimed water for landscaping and irrigation.	Water Conservation
Policy CD15.9	The County will require that new developments include safe and convenient access to nearby schools and work with the local school districts to ensure safe access.	Transportation
Policy CD15.10	The County will locate its own administrative facilities in downtown areas, along Mixed-Use corridors, or in Neighborhood Centers, whenever possible.	Transportation
Action CD15.1	Revise Impact Fees. The County will have prepared a Nexus Fee Study following the 2030 General Plan update to support revised development impact fees. One focus of this updated effort would be to ensure that compact development that makes efficient use of land has lower fees, where this approach to development is shown to have lower costs. The County will consider basing fees on an equivalent dwelling unit (EDU) basis, a per-capita basis, or per-acre basis, depending on the type of fee. The per-EDU, per-capita, or per-acre approach would be considered rather than presenting fees on a flat-rate, per unit basis. Different types of dwelling units have different demands for services and different associated costs. The County will also consider reduced fees for infill development that has access to existing infrastructure with adequate capacity to serve that development.	Transportation
Policy CD16.1	The County will maintain roadway levels of service that recognize differences between urban and rural environments and consider other social, economic, and environmental policies of the County.	Transportation
Policy CD16.5	Where a new development would exceed the County's Level of Service policies, applicants shall first consider feasible revisions to the proposed development that would increase connectivity, enhance bicycle/pedestrian/transit access, provide additional travel demand management measures, and/or provide other revisions that would help to meet LOS standards by reducing vehicle miles traveled on roads exceeding the target LOS, prior to consideration of adding capacity to roadways and intersections.	Transportation
Policy CD16.10	The County will not use traffic Level of Service policies to analyze and mitigate CEQA impacts of new developments, but instead will use its Level of Service policies to assess fair-share funding of transportation facilities necessary to serve new projects.	Transportation
Policy CD16.11	The County will analyze and mitigate transportation impacts in CEQA documents according to their relative increase in vehicular travel demand.	Transportation

**Table 4.7-4**

**2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County**

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Action CD16.2	Traffic Impact Fees. Following adoption of the General Plan, the County will revise its Countywide Traffic Mitigation Fee Program based on a nexus study meeting state law requirements. The County will continue to require specific plans to identify funding for transportation facilities needed to serve development within each subject specific plan. The countywide program would focus on improvements needed to serve development within the unincorporated County not within a specific plan. The County’s impact fee programs will be sensitive to elements of proposed projects that reduce their per-unit and per-employee trip generation rates. Centrally located projects, projects with high densities and employment intensities, located in areas with good transit service, located in mixed-use environments, for example, would be expected to have lower per-unit fees. Commercial traffic impact fees should take into account whether the commercial project is designed to attract drivers or oriented toward providing services to neighborhoods.	Transportation
Policy CD17.1	New developments shall be designed to facilitate safe and convenient travel by pedestrians, bicyclists, transit users, and drivers.	Transportation
Policy CD17.2	The County will coordinate approval of projects and plans with local transit providers to ensure that transit service is provided for work, shopping, school, and other types of trips within the Valley Growth Boundary.	Transportation
Policy CD17.3	The County will coordinate with Yuba College to provide housing and commercial services within walking and bicycling distance of the Linda campus and plan for convenient and safe pedestrian, bicycle, and transit options for students attending Yuba College.	Transportation
Policy CD17.4	The County will provide incentives to businesses that sponsor transit routes or create their own travel demand management programs, which may include, but are not limited, to streamlined permitting, and reduction of parking requirements.	Transportation
Policy CD17.5	The County will review and condition large employment generating projects, defined as new projects that could accommodate more than 50 full-time equivalent employees, according to the provisions of a County Travel Demand Management Ordinance.	Transportation
Policy CD17.6	New developments and specific plans shall analyze and mitigate related to increased travel demand, as feasible and consistent with County General Plan policy.	Transportation
Action CD17.1	Travel Demand Management Ordinance. The County will develop a Travel Demand Management ordinance that requires large employers to provide incentives for employees to commute via transit, bicycle, on foot, or by carpool, rather than the single-occupant vehicular commute.	Transportation
Policy CD18.8	The County will coordinate with Caltrans to implement context-sensitive improvements to state facilities that are keyed to local multi-modal transportation needs.	Transportation
Policy CD19.1	The County will promote mixed-use, infill development and redevelopment in order to reduce dependence on the private automobile.	Transportation
Policy CD19.2	New developments and specific plans with a buildout population greater than 2,000 dwelling units shall designate Neighborhood Centers, consistent with the policies of the General Plan.	Transportation
Policy CD19.3	New developments and specific plans shall be phased or timed to occur concurrently with development that will provide employment in the County.	Transportation
Policy CD19.4	New developments in the Valley Growth Boundary shall provide focused nodes of population and employment density around transit stops, planned in coordination with Yuba-Sutter Transit, with a target of 9 units per acre of residential development, 20 employees per acre for nonresidential development, or 20 or more persons plus employees per acre for mixed-use development within ¼ mile of existing and planned transit stops.	Transportation
Policy CD19.5	The County will plan its investments and condition new developments to provide pedestrian, bicycle, and transit facilities designed to provide multi-modal connections within neighborhoods, within unincorporated communities, and between communities and cities in the County.	Transportation
Policy CD19.6	New developments shall include the construction or pro-rata funding of transportation infrastructure that includes a connected and integrated system of bicycle and pedestrian facilities.	Transportation

<b>Table 4.7-4 2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County</b>		
Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Policy CD19.7	New development shall accommodate safe and frequent crosswalks along roadways, with more frequent crossings in areas expected to have higher pedestrian traffic.	Transportation
Policy CD19.8	New bridge construction and substantial improvements to existing bridges within the Valley Growth Boundary and along designated bike routes in rural areas should be designed to accommodate the needs of bicyclists and pedestrians.	Transportation
Policy CD19.9	The County's improvement standards and street classification system will be designed to accommodate the full range of locally available travel modes.	Transportation
Policy CD19.10	The County will minimize intersection dimensions and turning radii, as appropriate, to preserve pedestrian safety and comfort, while also accommodating vehicular movements.	Transportation
Policy CD19.11	The County will seek funding for and, as feasible, install traffic-calming measures, such as planted medians, landscaped planter strips, landscaped traffic circles, and other designs in areas with excessive or high-speed traffic, as appropriate. The County will not support street closures, half closures, or other measures that limit connectivity as a way to calm traffic.	Transportation
Policy CD19.12	Secure bicycle parking shall be provided at or near public buildings, business districts, parks, playgrounds, shopping centers, schools, transit terminals, bus stops, and other bicycle traffic generators.	Transportation
Policy CD19.13	New developments shall provide attractive streetscapes with street trees and sidewalks, planting strips, transit shelters, benches, and pedestrian-scale lighting, as required by County standards.	Transportation
Policy CD19.14	The County will collaborate with Yuba-Sutter Transit and other regional transit providers to ensure transit stops are accommodated in the context of new development and redevelopment.	Transportation
Policy CD19.15	The County will encourage local businesses to collaborate with transit providers to develop transit incentive programs for local employees.	Transportation
Policy CD19.16	The County will plan for and condition projects to provide for park-and-ride facilities in coordination with Yuba-Sutter Transit.	Transportation
Policy CD19.17	The County supports paratransit and other forms of transit service for those unable to use conventional transit service.	Transportation
Policy CD19.18	The County will support any feasible opportunities to provide intra-county and inter-county passenger rail service for Yuba County residents and businesses.	Transportation
Policy CD19.19	The County supports expansion of AMTRAK passenger service and transit, bicycle, and pedestrian-friendly development around rail and transit stations.	Transportation
Policy CD19.20	The County will support programs to encourage and facilitate County employees' use of pedestrian, bicycle, and transit facilities to reach the workplace.	Transportation
Action CD19.1	Pedestrian and Bikeway Master Planning. The County will collaborate with other agencies during buildout of the General Plan to maintain pedestrian/bicycle master plans designed to meet growth needs. The master plan updates should be designed to improve bicycle and pedestrian connections between each city in the County, cities in adjacent counties, and each unincorporated community. Bicycle/pedestrian master planning efforts should be coordinated with local irrigation districts, special districts, and public agencies with easements and rights-of-way, the railroad, other property owners, and other agencies and interested parties to acquire and/or use existing easements and rights-of-way for development of off-street pedestrian and bicycle pathways. Master plans will focus on improving links between neighborhoods and important destinations, such as schools, shops, commercial services, public services, and recreational opportunities.	Transportation
Action CD19.2	Revise Development Code & Improvement Standards. Following adoption of the 2030 General Plan, the County will revise its development code and improvement standards, where necessary, to encourage a high level of pedestrian, bicycle, and transit-friendliness in new development. In general, the County will consider revisions to its codes and standards to reduce road widths, reduce the amount of paved areas of roadways and parking lots, reduce pedestrian crossing distances, and reduce curb radii at intersections, in consideration of pedestrian and bicycle comfort and safety, while also considering turning templates needed for service and emergency vehicles. The County will consider revisions to its codes and standards that require wider sidewalks in areas where higher pedestrian and bicycle activity would be anticipated.	Transportation

<b>Table 4.7-4</b>		
<b>2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County</b>		
Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Action CD19.3	Transit Planning & Facilities Expansion. During buildout of the General Plan, the County will proactively pursue funding for transit designed to meet the needs of Yuba County children, seniors, persons with disabilities, low-income, and all transit-dependent persons. The County will pursue air quality mitigation efforts that fund transit in coordination with Feather River Air Quality Management District and other interested agencies and nonprofits. The County will plan for, and implement expansion of transit service, as funding is available. Transit projects will be included in the County's capital improvements planning, as appropriate. The County will examine the need for intermodal transit transfer facilities as the transportation system expands. The County will proactively coordinate with Yuba-Sutter Transit on grant funding opportunities to fund transit expansion, consistent with the General Plan, with a focus on transit in areas with at least 20 persons plus employees per acre.	Transportation
Policy CD20.1	New developments shall be designed to discourage concentration of traffic at a few intersections. Multiple points of access shall be provided whenever feasible.	Transportation
Policy CD20.2	New developments in the Valley Growth Boundary shall arrange roads in an interconnected block pattern, so that local pedestrian, bicycle, and automobile traffic do not have to use Arterials to circulate within the neighborhood.	Transportation
Policy CD20.3	The maximum average block length in new subdivisions approved in the Valley Growth Boundary should be approximately 450 feet. Smaller block sizes should be used around Neighborhood Centers, Community Centers, and Employment Centers.	Transportation
Policy CD20.4	New developments shall connect with adjacent roadways and stubbed roads and shall provide frequent stubbed roadways in coordination with future planned development areas.	Transportation
Policy CD20.7	Since gated residential areas discourage connectivity, the County will only allow such developments if multi-modal connectivity and emergency access to and from surrounding areas will not be significantly impaired. The County will not allow gates unless emergency access can be provided consistent with the standards of the relevant fire district.	Transportation
Policy CD20.9	Destination land uses in new developments shall be located and designed so that people may conveniently reach these destinations by foot, bicycle, car, or bus.	Transportation
Policy CD20.10	The County will seek frequent street and trail connections between new residential developments and established Valley Neighborhoods.	Transportation
Policy CD21.1	New development projects should be designed to minimize the amount of on-site land required to meet parking, internal circulation, and delivery/loading needs.	Transportation
Policy CD21.2	New developments shall break up any proposed surface parking with landscaping and provide pedestrian routes from parking areas to building entrances.	Transportation
Policy CD21.3	Land uses with different parking needs that peak at different times of the day shall be encouraged to maximize opportunities to share parking.	Transportation
Policy CD21.6	The County's parking standards will be reduced or eliminated for infill and affordable housing projects in consideration of shared parking, on-street parking, and reduced travel demand attributable to these types of projects.	Transportation
Policy CD21.7	The County will consider adopting parking maximums in areas where high pedestrian and pedestrian activity is expected and in areas around transit stops.	Transportation
Action CD21.1	Revise Development Code & Improvement Standards. Following adoption of the 2030 General Plan, the County will revise its development code and improvement standards. The County will consider reduced surface parking in areas where pedestrians and bicyclists are concentrated and where transit service is planned. The County will consider strategies to optimize parking supply through shared parking; use of on-street parking to meet demand of nearby properties; and other strategies. The County will consider establishing parking maximums, as well as minimums, as part of the development code and improvement standard revisions.	Transportation
Policy NR1.5	New developments shall provide for open space corridors consistent with the County's Parks Master Plan, and as needed to provide naturalized drainage and bike/pedestrian connections to nearby neighborhoods and destinations.	Transportation
Policy NR1.8	Local parks shall be located central to the neighborhood they serve and designed to encourage pedestrian and bicycle access.	Transportation

**Table 4.7-4**

**2030 General Plan Policies and Actions Designed to Reduce Greenhouse Gas Emissions in Yuba County**

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Policy NR1.13	The County will incorporate trails along canals, transmission lines, and other easements and rights-of-way, including trail development atop levees, so long as flood protection facilities are not adversely affected.	Transportation
Policy NR1.14	The County will communicate with neighboring counties and cities to explore connections with Yuba County’s planned regional trail system.	Transportation
Policy NR1.15	Recreational facilities and open space shall be designed to use recycled materials and green building techniques, minimize surface runoff, reduce water demand, provide habitat for native species, and reduce the need for ongoing maintenance, as feasible.	Energy and Material Efficiency
Policy NR2.1	The County will support urban greening projects that are designed to: Improve air and water quality; Protect natural resources; Increase the attractiveness of affordable housing and existing developed areas; Promote public health and the development of a healthy community; Increase access to safe areas for physical activity; Improve access to healthy, local food sources; Improve and use existing infrastructure systems and other community resources; Promote public health; Reduce greenhouse gas emissions; and Adapt to future climate conditions.	Carbon Sequestration
Policy NR2.2	The County will seek funding for urban greening projects to be developed in underserved areas of Linda and Olivehurst, such as tree planting and maintenance, natural drainage systems improvements, ecological restoration, park development, renewable energy development and energy conservation projects, trail development, community gardens, and other appropriate project types.	Carbon Sequestration
Policy NR2.3	Urban greening projects shall be designed to improve access to recreational spaces for existing residents and improve existing developed areas of the County.	Carbon Sequestration
Policy NR2.4	Urban greening projects can also be designed to integrate open spaces in existing developed areas with open spaces designed to connect with planned development areas.	Carbon Sequestration
Policy NR2.5	The County will coordinate with local and regional agencies on the identification of potential urban greening projects.	Carbon Sequestration
Policy NR2.6	The County will invite local service agencies, residents, property owners, and other organizations and individuals to contribute ideas for local urban greening projects.	Carbon Sequestration
Action NR2.1	Urban Greening Projects. During this General Plan time horizon, the County will identify and seek funding for urban greening projects that provide for a range of benefits, such as: Reducing greenhouse gas emissions; Decreasing air and water pollution; Reducing the consumption of natural resources and energy; Increasing the reliability of local water supplies, and/or Increasing adaptability to climate change. The County’s urban greening projects will be designed to promote infill development and social equity, protect environmental resources, including agricultural lands, and encourage efficient development patterns. The County will coordinate with local school districts, local utility providers, cities, and other local and regional agencies, where appropriate, for Urban Greening Projects of mutual benefit. Urban greening projects will be identified that improve air and water quality, increase the attractiveness and availability of affordable housing, improve infrastructure systems or their function, and promote public health.	Carbon Sequestration
Policy NR4.8	The County will support carbon offset programs within Yuba County’s forests, according to established protocols, and will support local carbon sequestration programs as an important aspect of local and regional greenhouse gas reduction requirements.	Carbon Sequestration
Action NR4.1	Carbon Sequestration Programs. The County will proactively coordinate with local and regional agencies to investigate the feasibility of setting up a carbon offset program. The County will coordinate with the U.S. Forest Service, Bureau of Land Management, Yuba County Water Agency and water districts, and private timber companies and nonprofits to encourage local development of state-certified carbon sequestration projects. The County should encourage local application of regional greenhouse gas (GHG) offset fees, if feasible. If the County implements a GHG mitigation program tied to its GHG policies, local GHG fees collected for projects that do not achieve GHG efficiency policies on a per-capita, per-employee, or per-service population basis should be able to mitigate impacts using local, verified, GHG offset programs, if feasible.	Carbon Sequestration
Policy NR7.1	New developments shall address energy conservation in landscaping methods, materials, and design.	Energy

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Policy NR7.2	New buildings shall meet state standards for energy efficiency and should provide for renewable energy development and use, to the greatest extent feasible.	Energy
Policy NR7.3	New developments should be designed to take advantage of passive or natural summer cooling and winter solar access.	Energy
Policy NR7.4	New developments should provide street and lot orientation and lot dimensions that facilitate the use of solar energy.	Energy
Policy NR7.5	New developments within the Valley Growth Boundary should orient the majority of buildings so that the longer axis of the building, also known as the ridge line, is oriented east-to-west, in order to maximize the potential for passive solar heating in the winter and to minimize heat gain from the afternoon summer sun.	Energy
Policy NR7.6	New developments should consider energy conservation in building-site orientation and construction, with articulated windows, roof overhangs, appropriate insulation materials and techniques, and other architectural features that improve passive interior climate control.	Energy
Policy NR7.7	Shade trees or other appropriate plantings should be used in new developments to protect buildings from unwanted solar gain in summer months. Using deciduous trees on the southern side of structures is encouraged to allow cooling in the summer and solar gain in winter. Short front setbacks are encouraged to allow shade trees planted in the public right-of-way to provide summertime shading.	Energy
Policy NR7.8	New buildings should emphasize passive and natural lighting systems in architectural design to conserve electricity.	Energy
Policy NR7.9	New developments proposing parking lots shall incorporate shade trees or shade structures to provide a minimum of 50 percent shading (at maturity, where trees are used).	Energy
Policy NR7.10	The County will seek regional, state, and federal funding for energy efficiency improvements in existing buildings and the public realm.	Energy
Policy NR7.11	The County and Yuba County Water Agency should explore opportunities related to future access to hydroelectric power, energy provision, strategic use of local energy resources for employment development, and other programs that have dual environmental-economic benefits.	Energy
Policy NR7.12	The County will encourage financing programs designed to facilitate the installation of renewable energy systems, including those that establish a benefit district and allow property owners to repay over the long term through a special assessment on the property tax bill.	Energy
Action NR7.13	Energy Efficiency Retrofits in Buildings and the Public Realm. The County will proactively track and apply for regional, state, and federal funding to be used for energy efficiency improvements and renewable energy systems installation in existing buildings and the public realm (public rights-of-way, etc.). The County will seek funding for energy efficient systems, energy-efficient appliances, insulation, energy-efficient doors and windows, and other improvements. The County will also consider the feasibility of using fees or actions required to meet County greenhouse gas efficiency policies on a fair-share basis to fund energy efficiency improvements and renewable energy systems in existing developed buildings and the public realm.	Energy
Policy NR12.4	The County will encourage the use of recycled water for outdoor irrigation, toilet flushing, fire hydrants; commercial and industrial processes, carwashes, concrete batching, laundromats; dust control; parks, golf courses, and other landscaped areas, and other appropriate water-intensive uses.	Water Conservation
Policy NR12.5	New developments shall use climate appropriate landscaping in parks and open space, landscaping within new rights of way, yards, and other appropriate spaces, to the maximum extent feasible.	Water Conservation
Policy NR12.6	New developments shall include water conservation technologies such as low-flow toilets, efficient clothes washers, and efficient water-using industrial equipment, in accordance with state law.	Water Conservation
Policy HS3.17	New developments shall limit construction of new impervious surfaces, such as parking lots, travelways, vehicle waiting areas, and vehicle loading areas to the minimum amount needed to implement the subject project.	Water Conservation

Element and Goal, Policy, or Action		Affected GHG Emissions Sector
Policy HS5.1	The County will guide land use change, direct investments, and apply its fees and programs to encourage more GHG-efficient development patterns.	General GHG Reduction
Policy HS5.2	In evaluating operational emissions of development projects and plans, the County will use a threshold of an annual net increase of 6.4 metric tons of CO <sub>2</sub> equivalent per-capita and 4.4 per metric tons of CO <sub>2</sub> equivalent per service population. This threshold does not apply to agricultural operations or processing, industrial projects, or other types of stationary sources.	General GHG Reduction
Policy HS5.3	The County's regulations, investments, and fee programs should be structured to reduce net greenhouse gas emissions for new development in the unincorporated County consistent with the County's per-capita or per service population greenhouse gas efficiency policy.	General GHG Reduction
Policy HS5.4	Since transportation is the largest sector contributing to GHG emissions both locally and at the statewide level, the County will prioritize land use/transportation projects that manage travel demand by increasing housing/employment density, placing homes in closer proximity with destinations, increasing accessibility to transit, or otherwise decreasing vehicle miles traveled (per household, per capita, and/ or per employee).	General GHG Reduction
Policy HS5.5	The County will apply an efficiency-based standard (per-capita, per-employee) for urban land uses, such as homes, retail, office, and other uses where the location and density is very important to the level of greenhouse gas generation.	Energy
Policy HS5.8	The County will work collaboratively with state agencies and public/private utility providers charged with regulating building efficiency, mobile-source emissions controls, energy sources and uses, and other components of GHG emissions to create the opportunity for more GHG-efficient local development.	General GHG Reduction
Policy HS5.9	The County will actively pursue funding for GHG-efficient transportation systems and other needed infrastructure, building and public realm energy efficiency upgrades, renewable energy production, land use-transportation modeling, and other projects to reduce local greenhouse gas emissions.	Transportation, Energy
Policy HS5.12	Rural Community Plans should address strategies to diversify the local land use mix to meet more resident needs within each community, increase energy efficiency, shorten trips, and encourage non-vehicular travel, as feasible, to increase greenhouse gas efficiency.	Transportation, Energy
Action HS5.1	Greenhouse Gas Reduction Plan. The County will prepare and adopt a plan to reduce greenhouse gas (GHG) emissions.	General GHG Reduction
Action HS5.2	Assist Farmers to Reduce Greenhouse Gas Emissions. The County will meet with local agricultural groups, such as the Yuba-Sutter Farm Bureau, UC Davis Extension representatives, local organic farming groups, and other public and private groups representing farmers to discuss the best available programs to reduce agricultural greenhouse gas (GHG) emissions. Methods to be explored may include, but are not limited to reduction strategies from changes in crop management, animal wastes, energy use, crop residue burning, livestock management, soil management, solid waste management, fertilizers, and off-road equipment. The County will seek funding, through carbon offsets or other sources, to provide incentives that encourage farmers to participate in consensus GHG reduction programs for agriculture.	Area Source GHG Emissions

## Conclusion

Implementation of the policies and actions summarized in Table 4.7-4 that are designed to reduce GHG emissions, would promote consistency with the mandates of AB 32 (i.e., reduce statewide GHG emissions to 1990 levels by 2020). Many of the County's policies will have significant and positive impacts on VMT reduction, which translates to large reductions in GHG emissions, while some will make a smaller contribution. For example, measures to promote carbon sequestration through development of forest area requires at least 10 years to start sequestering appreciable amounts of carbon and after 10 or so years each tree will at most sequester about the same amount of CO<sub>2</sub> emitted from a passenger car traveling 10 miles (USDA 2007).

The County recognizes in the 2030 General Plan that transportation is the largest source of GHGs in Yuba County and California, and that land use and transportation planning to reduce vehicular travel is needed to achieve GHG reduction goals, especially since, given the predominance of transportation as a source of GHG emissions, improvements in building energy efficiency and other GHG emissions sectors can be overwhelmed by increases in VMT. The County also recognizes that effectiveness of a local GHG reduction program for a growing area like Yuba County is contingent on development patterns and transportation systems that reduce emissions from the transportation sector. The County also recognizes that it does not have control over vehicle emissions technology or fuel economy standards, which are factors in calculating greenhouse gas emissions from the transportation sector. The County does not regulate energy generation, renewable energy targets, or other components of electricity related emissions. However, the County can exercise substantial influence on VMT through its land use entitlement authority. Through land use entitlement authority, the County can have a great influence on development patterns, community design, transportation facilities planning, and other factors that closely related to VMT. Land use/transportation strategies to reduce VMT and GHGs are a primary focus of the 2030 General Plan.

### Mitigation Measure

However, because of the large amount of development and potential for simultaneous construction of multiple sites, taken together with modeled emissions, implementation of the 2030 General Plan could result in, or substantially contribute to GHG emissions. Because the 2030 General Plan would generate higher GHG emissions per service population than is needed at the state level to achieve the AB 32 target, and since a substantial quantity of GHG emissions would be generated through buildout of the General Plan, this impact is considered a **cumulatively considerable** contribution to the **significant cumulative impact** of global climate change.

As noted, the framework of the 2030 General Plan is designed to achieve GHG reduction, among other related social, economic, and environmental objectives of the County. All feasible mitigation is included as policy or as an action in the 2030 General Plan. No additional feasible mitigation is available. The impact is considered **significant and unavoidable**.

**IMPACT 4.7-2** **Impacts of Climate Change on Yuba County.** *Climate change is expected to result in a variety of effects that could potentially impact Yuba County: alterations to agricultural production; changes to terrestrial and aquatic ecosystems; increased energy demand; decreased water supply; increased risk of flooding; and increased frequency and intensity of wildfire. Substantial negative effects on residents, resources, structures, and the economy could result. This impact would be **potentially significant**.*

The 2030 General Plan would result in the release of GHGs into the atmosphere. As discussed previously in this chapter, human-induced increases in GHG concentrations in the atmosphere has led to increased global average temperatures (global warming) through the intensification of the greenhouse effect, and associated changes in local, regional, and global average climatic conditions.

Although there is a strong scientific consensus that global climate change is occurring and has been influenced by human activity, there is less certainty as to the timing, severity, and potential consequences of the climate phenomena. Scientists have identified several ways in which global climate change could alter the physical environment in California (IPCC, 2007, CEC, 2006b, and DWR, 2006a). As also discussed previously under the heading “Environmental Setting,” these include:

- ▶ increased average temperatures;
- ▶ modifications to the timing, amount, and form (rain vs. snow) of precipitation;
- ▶ changes in the timing and amount of runoff;
- ▶ reduced water supply;
- ▶ deterioration of water quality; and
- ▶ elevated sea level.

The changes listed above may translate into a variety of other issues and concerns that may affect Yuba County, such as, but not limited to:

- ▶ reduced agricultural production as a result of changing temperatures and precipitation patterns;
- ▶ changes in the composition, health, and distribution of terrestrial and aquatic ecosystems, particularly associated with increased saltwater intrusion into the Sacramento-San Joaquin River Delta;
- ▶ reduced hydroelectric energy production caused by changes in the timing and volume of runoff;
- ▶ increase in vector borne diseases;
- ▶ increased energy demand associated with increased temperatures;
- ▶ water supply conflict;
- ▶ increased risk of flooding and wildfire associated with changes to precipitation patterns; and,
- ▶ inundation of low lying areas associated with rising sea levels.

The types of impacts associated with climate change identified above are projected to occur to some degree with or without the project. However, the potential for increased development in Yuba County would result in the siting of more receptors in areas sensitive to certain impacts, such as flood and wildfire hazards, and water quality and availability issues. Policies identified throughout the various elements of the 2030 General Plan.

In addition, the General Plan Land Use and Open Space Diagrams supports aspects of impact avoidance and adaptation. For example, proposed development is minimized along watercourses and low-lying areas. The land use designations in the 2030 General Plan would minimize conflicts or incompatibilities associated with foreseeable climate change impacts of the next 90 years. However, land use conflicts may still occur. In addition, increased water supply conflicts in Yuba County would exist even without adoption of the 2030 General Plan as a result of climate change, but could be exacerbated further with increased water demand under the 2030 General Plan. Thus, the foreseeable impacts of climate change are **potentially significant**.

Due to the uncertainty in timing and extent of projected impacts to the physical environment as a result of climate change, it remains uncertain whether significant impacts have been substantially avoided or abated under a future condition, which is not fully knowable.

### **Relevant Policies and Actions of the 2030 General Plan**

The 2030 General Plan Update contains many goals, policies, and programs which have the potential to aid the County's adaptation to climate change (reducing energy demand, reducing flood potential, decreasing wildfire risk, ensuring adequate water supply, increasing water conservation, preserving important habitat and open space areas). These policies and actions are shown in Table 4.7-4 and included throughout the 2030 General Plan.

### **Conclusion**

Implementation of the policies and actions proposed in the 2030 General Plan would reduce the extent and severity of climate change-associated impacts by proactively planning for changes in climate and conditions, and providing methods for adapting to these changes. In addition, projections for the above discussed potential impacts of climate change on Yuba County occur over a time span far beyond the buildout of the 2030 General Plan. The 2030 General Plan proposes all feasible mitigation to respond and adapt to foreseeable impacts of climate change in the form of General Plan policies and actions, but the efficacy of the County's policy approach for dealing with the local effects of climate change is unknowable at this time. For the purposes of this EIR, the impact is considered **significant and unavoidable**.