

## 4.4 Energy and Climate Change

### Introduction

This section of the DEIR addresses potential impacts to a variety of energy and climate change issues specific to the County of Plumas. The regulatory setting provides a description of applicable Federal, State and local regulatory policies. The environmental setting provides a description of existing conditions in the County. A description of the potential impacts of the proposed project is also provided.

The closely-related topics associated with air quality emissions are addressed in Section 4.3 “Air Quality” of this DEIR.

### Summary of NOP Comments

No specific comments related to energy or climate change issues were received as part of the public and agency comments received during the NOP scoping period.

### Summary of Impact Conclusions

A summary of the energy and climate change impacts described in this section are provided below in **Table 4.4-1**.

**TABLE 4.4-1  
SUMMARY OF ENERGY AND CLIMATE CHANGE IMPACTS**

| Impact Number | Impact Topic                                       | Impact Conclusion     | Impact After Mitigation |
|---------------|--|-----------------------|-------------------------|
| Impact 4.4-1  | Contribution to Global Climate Change              | Less than Significant | Less than Significant   |
| Impact 4.4-2  | Adverse Effects of Climate Change on Plumas County | Less than Significant | Less than Significant   |
| Impact 4.4-3  | Energy Consumption                                 | Less than Significant | Less than Significant   |

### Regulatory Setting

The following sections provide Federal, State and local regulations for energy as well as regulations for greenhouse gases (GHGs) and global climate change. These agencies work jointly, as well as individually, to understand and regulate the effects of greenhouse gas (GHG) emissions and resulting climate change through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies and programs focused on global climate change are discussed below.

### Federal Regulations

#### *Energy Policies and Programs*

On the Federal level, the U.S. Department of Transportation, U.S. Department of Energy, and U.S. Environmental Protection Agency (U.S. EPA) are three agencies with substantial influence

over energy policies and programs. Generally, federal agencies influence transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy-related research and development projects, and through funding for transportation infrastructure projects.

The National Energy Policy, developed in May 2001, proposes recommendations on energy use and on the repair and expansion of the nation's energy infrastructure. The policy is based on the finding that growth in U.S. energy consumption is outpacing the current rate of production. Based on this policy document, during the years 2000 to 2020, the growth in the consumption of oil is predicted to increase by 33%, natural gas by over 50% and electricity by 45%. While federal policy promotes further improvements in energy use through conservation, it focuses on increased development of domestic oil, gas, and coal and the use of hydroelectric and nuclear power resources. To address the over-reliance on natural gas for new electric power plants, the federal policy proposes research in clean coal technology and expanding the generation of energy to include energy derived from landfill gas, wind, and biomass sources.

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

On September 22, 2009, U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required U.S. EPA to develop "... mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy...." The Reporting Rule will apply to most entities that emit 25,000 metric tons of CO<sub>2</sub>e or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for U.S. EPA to verify annual GHG emissions reports. Under this rule, these facilities are defined as any type of land use (in particular industrial, but may also include landfill, large scale dairy, etc.) that directly emits 25,000 metric tons of CO<sub>2</sub>e or more per year. The rule also provides categories for facilities with stationary emission sources, fossil fuel suppliers (a facility that produces, imports, or exports fossil fuels), or industrial GHG suppliers (facility that produces, imports, or exports Industrial GHGs).

### ***U.S. Environmental Protection Agency Endangerment and Cause and Contribute Findings***

On December 7, 2009, the Administrator signed two distinct findings regarding GHGs under section 202(a) of the Federal Clean Air Act (CAA):

- **Endangerment Finding:** the current and projected concentrations of the six key well-mixed GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

## **State Regulations**

### ***California Public Utilities Commission and California Energy Commission***

On the State level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are two agencies with authority over different aspects of energy. The CPUC regulates privately owned utilities in the energy, rail, telecommunications, and water fields. The CEC collects and analyzes energy-related data, prepares State-wide energy policy recommendations and plans, promotes and funds energy efficiency programs, and regulates the power plant siting process.

The California Constitution vests in the CPUC, the exclusive power and sole authority to regulate privately owned or investor-owned public utilities. This exclusive power extends to all aspects of the location, design, construction, maintenance, and operation of public utility facilities. Nevertheless, the CPUC has provisions for regulated utilities to work closely with local governments and give due consideration to their concerns.

### **Assembly Bill 1890 - The Electric Utility Industry Restructuring Act**

The Electric Utility Industry Restructuring Act (Assembly Bill (AB) 1890) made the generation of electricity competitive in California. The legislation became law on September 23, 1996. Before restructuring, a single utility provided each customer with generation, transmission, distribution, and metering and billing of electricity. As of March 31, 1998, the new structure allowed customers in most, but not all, existing electric utility service areas to choose their electric generation supplier.

Restructuring also brought changes to the transmission of electricity. Previously restricted transmission facilities were opened to power generators on a fair and equitable basis, overseen by a new organization, the Independent System Operator. The Independent System Operator has been given the responsibility for assuring reliability of the high voltage transmission system. Local utilities continue to distribute electricity.

### **Title 24 of the California Code of Regulations**

The State of California regulates energy consumption under Title 24 of the California Code of Regulations. The Title 24 Building Energy Efficiency Standards were developed by the CEC and apply to energy consumed for heating, cooling, ventilation, water heating, and lighting in new residential and non-residential buildings. The CEC updates these standards periodically. The current standards (2008 Standards) became effective on January 1, 2010. Under Assembly Bill 970, signed September 2000, the CEC will update and implement its appliance and building efficient standards to make “maximum feasible” reduction in unnecessary energy consumption.

### ***California Environmental Quality Act and Climate Change***

CEQA requires lead agencies to consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to raise sea levels, affect rainfall and snowfall, and affect habitat.

### ***Assembly Bill 1493***

In 2002, then-Governor Gray Davis signed AB 1493, which required ARB to develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of GHGs 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, the ARB approved amendments to the California Code of Regulations (CCR) in 2004, 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 of less than 10,000 pounds and which is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37% lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a gross vehicle weight of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24% between 2009 and 2016. Because the Pavley standards (named for the bill’s author, state Senator Fran Pavley) would impose stricter standards than those under the Federal CAA, California applied to the U.S. EPA for a waiver under the Federal CAA; this waiver was denied in 2008. In 2009, however, the U.S. EPA granted the waiver.

On September 15, 2009, USEPA and the Department of Transportation’s National Highway Safety Administration (NHTSA) proposed a national program to reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States. The combined USEPA and NHTSA standards that make up the proposed national program would apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO<sub>2</sub> level solely through fuel economy improvements. Under the proposed national program, automobile manufacturers would be able to build a single light-duty national fleet that satisfies all requirements under both the national program and the standards of California and other states, while ensuring that consumers still have a full range of vehicle choices. In order to promote the adoption of the national program, ARB has adopted amendments to the GHG emissions standards for new passenger vehicles from 2009 through 2016. All mobile sources would be required to comply with these regulations as they are phased in.

### ***Executive Order S-3-05***

In 2005, in recognition of California’s vulnerability to the effects of climate change, former Governor Arnold Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide GHG emissions would be progressively reduced. The goals and target dates of the executive order are as follows: by 2010, reduce GHG emissions to 2000

levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80% below 1990 levels.

### ***Assembly Bill 32 and the California Climate Change Scoping Plan***

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a 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 vehicle GHG emissions 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 arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. According to ARB's *Climate Change Scoping Plan* (ARB, 2008), the 2020 target of 427 million metric tons (MMT) of CO<sub>2</sub>e requires the reduction of 169 MMTCO<sub>2</sub>e, or approximately 28.3 percent, from the state's projected 2020 business-as-usual (BAU) emissions level of 596 MMTCO<sub>2</sub>e. However, ARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. In August 2011, the Scoping Plan was re-approved by the Board and includes the *Final Supplement to the Scoping Plan Functional Equivalent Document* (ARB, 2011). This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 BAU estimate of 507 MMTCO<sub>2</sub>e, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020 (ARB, 2011).

ARB's *Scoping Plan* breaks down the amount of GHG emissions reductions ARB recommends for each emissions sector of the state's GHG inventory. ARB's *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 LCFS (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 identified a GHG reduction target of 5 MMT (of the 174 MMT total) for local land use changes (Table 2 of ARB’s Scoping Plan), by Implementation of Reduction Strategy T-3 regarding Regional Transportation-Related GHG Targets. Additional land use reductions may be achieved as SB 375 is implemented. ARB’s Scoping Plan states that successful implementation of the plan relies on local governments’ land use, planning, and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. ARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. ARB’s *Scoping Plan* does not include any direct discussion about GHG emissions generated by construction activity.

ARB’s *Scoping Plan* expands the list of nine Discrete Early Action Measures to a list of 39 Recommended Actions contained in Appendices C and E of ARB’s *Scoping Plan*. These measures are presented in **Table 4.4-2**.

**TABLE 4.4-2  
RECOMMENDED ACTIONS FROM ARB CLIMATE CHANGE SCOPING PLAN**

| ID # | Sector                      | Strategy Name  |
|------|-----------------------------|--|
| T-1  | Transportation              | Pavley I and II – Light-Duty Vehicle GHG Standards   |
| T-2  | Transportation              | LCFS (Discrete Early Action)   |
| T-3  | Transportation              | Regional Transportation-Related GHG Targets  |
| T-4  | Transportation              | Vehicle Efficiency Measures  |
| T-5  | Transportation              | Ship Electrification at Ports (Discrete Early Action)  |
| T-6  | Transportation              | Goods-movement Efficiency Measures   |
| T-7  | Transportation              | Heavy Duty Vehicle GHG Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action) |
| T-8  | Transportation              | Medium and Heavy-Duty Vehicle Hybridization  |
| T-9  | Transportation              | High Speed Rail  |
| E-1  | Electricity and Natural Gas | Increased Utility Energy efficiency programs<br>More stringent Building and Appliance Standards    |
| E-2  | Electricity and Natural Gas | Increase Combined Heat and Power Use by 30,000GWh  |
| E-3  | Electricity and Natural Gas | Renewables Portfolio Standard  |
| E-4  | Electricity and Natural Gas | Million Solar Roofs  |
| CR-1 | Electricity and Natural Gas | Energy Efficiency  |
| CR-2 | Electricity and Natural Gas | Solar Water Heating  |
| GB-1 | Green Buildings             | Green Buildings  |
| W-1  | Water                       | Water Use Efficiency   |
| W-2  | Water                       | Water Recycling  |
| W-3  | Water                       | Water System Energy Efficiency   |
| W-4  | Water                       | Reuse Urban Runoff   |
| W-5  | Water                       | Increase Renewable Energy Production   |

**TABLE 4.4-2 (continued)  
RECOMMENDED ACTIONS FROM ARB CLIMATE CHANGE SCOPING PLAN**

| ID # | Sector                         | Strategy Name  |
|------|--------------------------------|--|
| W-6  | Water                          | Public Goods Charge (Water)  |
| I-1  | Industry                       | Energy Efficiency and Co-benefits Audits for Large Industrial Sources                            |
| I-2  | Industry                       | Oil and Gas Extraction GHG Emission Reduction  |
| I-3  | Industry                       | GHG Leak Reduction from Oil and Gas Transmission   |
| I-4  | Industry                       | Refinery Flare Recovery Process Improvements   |
| I-5  | Industry                       | Removal of CH <sub>4</sub> Exemption from Existing Refinery Regulations                          |
| RW-1 | Recycling and Waste Management | Landfill CH <sub>4</sub> Control (Discrete Early Action)   |
| RW-2 | Recycling and Waste Management | Additional Reductions in Landfill CH <sub>4</sub> – Capture Improvements                         |
| RW-3 | Recycling and Waste Management | High Recycling/Zero Waste  |
| F-1  | Forestry                       | Sustainable Forest Target  |
| H-1  | High GWP Gases                 | Motor Vehicle Air Conditioning Systems (Discrete Early Action)                                   |
| H-2  | High GWP Gases                 | SF <sub>6</sub> Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action) |
| H-3  | High GWP Gases                 | Reduction in Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)             |
| H-4  | High GWP Gases                 | Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)               |
| H-5  | High GWP Gases                 | High GWP Reductions from Mobile Sources  |
| H-6  | High GWP Gases                 | High GWP Reductions from Stationary Sources  |
| H-7  | High GWP Gases                 | Mitigation Fee on High GWP Gases   |
| A-1  | Agriculture                    | CH <sub>4</sub> Capture at Large Dairies   |

SOURCE: ARB, 2008.

### ***Executive Order S-1-07***

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in California by at least ten percent by 2020. This order also directs ARB to determine whether this low carbon fuel standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 ARB approved the proposed regulation to implement the LCFS. The LCFS will reduce GHG emissions from the transportation sector in California by about 16 MMT in 2020. The LCFS is designed to reduce California’s dependence on petroleum, create a lasting market for clean transportation technology, and stimulate the production and use of alternative, low-carbon fuels in California. The LCFS is designed to provide a durable framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. One standard is established for gasoline and the alternative fuels that can replace it. A second similar standard is set for diesel fuel and its replacements.

The standards are “back-loaded;” that is, there are more reductions required in the last five years, than the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today’s fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the LCFS will be based on a combination of strategies involving lower carbon fuels and more efficient, advanced-technology vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity are also low carbon fuels and result in significant reductions of GHGs when used in fuel cell or electric vehicles due to significant vehicle power train efficiency improvements over conventionally-fueled vehicles. As such, these fuels are included in the LCFS as low carbon options. Other fuels may be used to meet the standards and are subject to meeting existing requirements for transportation fuels.

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

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 percent 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 Renewables Energy Standard to 33 percent renewable power by 2020. In April 2011, Governor Jerry Brown signed SB 2X, that created a legislative mandate codifying the 33 percent Renewables Portfolio Standard into law.

### ***Senate Bill 1368***

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the CPUC to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The CEC) was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

### ***Senate Bill 97***

SB 97, signed August 2007 (Chapter 185, Statutes of 2007; PRC Sections 21083.05 and 21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. The bill directed the California 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 Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the *CEQA Guidelines* for GHG emissions, as required by SB 97. On February 16, 2010, the Office of



Administrative Law approved the amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The amendments became effective on March 18, 2010.

## Local Regulations

The Northern Sierra Air Quality Management District (NSAQMD) presently has no guidance concerning CEQA evaluation of GHG emissions and no regulatory requirements.

Plumas County is currently implementing the following programs and initiatives that will, in part, help to reduce GHG emissions from municipal operations and other sources:

- **Greenhouse Gas Emission Inventory.** Working with the Pacific Gas and Electric Company's (PG&E) Green Communities Program, the County has recently completed a GHG emission inventory which will serve as the basis for future climate change work in the County. Information from the GHG emission inventory is summarized below in the "Environmental Setting" section.
- **Lighting Retrofit.** The Plumas County Department of Facility Services is currently undergoing a lighting retrofit for several County facilities. Upon completion of the lighting retrofit, the County is projected to save 15 to 25% of the electricity currently used annually for County facility interior and exterior lighting.
- **Fire Safe Program.** The Plumas County Fire Safe Council is leading an initiative to reduce the risks (including GHG emissions) of wildfires in the County.

## Environmental Setting

### Greenhouse Gases

Global warming is the term given to the increase in the average temperature of the Earth's near-surface air and oceans since the mid-20th century and its projected continuation. According to the Intergovernmental Panel on Climate Change (IPCC), warming of the climate system is now considered to be unequivocal with global surface temperature increasing approximately 1.33 °F over the last one hundred years (IPCC, 2007). Continued warming is projected to increase global average temperature between 2 and 11 °F over the next one hundred years.

The causes of this warming have been identified as both natural processes and as the result of human actions. The IPCC concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. However, after 1950, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the Earth's atmosphere are thought to be the main cause of human induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the Earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last hundred years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

The principal GHGs of concern are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), perfluorocarbons (PFC), and hydrofluorocarbons (HFC). Each of the principal GHGs has a long atmospheric lifetime (one year to several thousand years). In addition, the potential heat trapping ability of each of these gases vary significantly from one another. CH<sub>4</sub> is 23 times as potent as CO<sub>2</sub>, while SF<sub>6</sub> is 22,200 times more potent than CO<sub>2</sub>. Conventionally, GHGs have been reported as CO<sub>2</sub> equivalents (CO<sub>2</sub>e). CO<sub>2</sub>e takes into account the relative potency of non-CO<sub>2</sub> GHGs and converts their quantities to an equivalent amount of CO<sub>2</sub> so that all emissions can be reported as a single quantity.

The primary human-made processes that release these gases include: burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release CH<sub>4</sub> such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high global warming potential gases such as SF<sub>6</sub>, PFCs, and HFCs. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing the Earth's capacity to remove CO<sub>2</sub> from the air and altering the Earth's albedo or surface reflectance, allowing more solar radiation to be absorbed.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors) and toxic air contaminants (TACs), which are pollutants of regional and local concern.

## **Global Climate Trends and Associated Impacts**

The rate of increase in global average surface temperature over the last hundred years has not been consistent; the last three decades have warmed at a much faster rate – on average 0.32 °F per decade. Eleven of the twelve years from 1995 to 2006, rank among the twelve warmest years in the instrumental record of global average surface temperature (going back to 1850) (IPCC, 2007).

During the same period over which this increased global warming has occurred, many other changes have occurred in other natural systems. Sea levels have risen on average 1.8 millimeter per year (mm/yr); precipitation patterns throughout the world have shifted, with some areas becoming wetter and others drier; tropical cyclone activity in the North Atlantic has increased; peak runoff timing of many glacial and snow fed rivers has shifted earlier; as well as numerous other observed conditions. Though it is difficult to prove a definitive cause and effect relationship between global warming and other observed changes to natural systems, there is high confidence in the scientific community that these changes are a direct result of increased global temperatures (IPCC, 2007).

## California Climate Trends and Associated Impacts

Climate change could affect the natural environment in California and Plumas County (in some cases) in the following ways:

- Rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta due to ocean expansion;
- Extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- An increase in heat-related human deaths, infection diseases and a higher risk of respiratory problems caused by deteriorating air quality;
- Reduced snow pack and stream flow in the Sierra Nevada Mountains, affecting winter recreation and water supplies;
- Potential increase in the severity of winter storms, affecting peak stream flows and flooding;
- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and
- Changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

Maximum (daytime) and minimum (nighttime) temperatures are increasing almost everywhere in California, but at different rates. The annual minimum temperature averaged over all of California has increased 0.33°F per decade during the period 1920 to 2003, while the average annual maximum temperature has increased 0.1°F per decade (Moser et al., 2009).

With respect to California's water resources, the most significant impacts of global warming have been changes to the water cycle and sea level rise. Over the past century, the precipitation mix between snow and rain has shifted in favor of more rainfall and less snow (Mote et al., 2005; Knowles et al., 2006) and snow pack in the Sierra Nevada is melting earlier in the spring (Kapnick and Hall, 2009). The average early spring snowpack in the Sierra Nevada has decreased by about 10% during the last century, a loss of 1.5 million acre-feet of snowpack storage (DWR, 2008). These changes have significant implications for water supply, flooding, aquatic ecosystems, energy generation, and recreation throughout the state. During the same period, sea levels along California's coast rose seven inches (DWR, 2008). Sea level rise associated with global warming will continue to threaten coastal lands and infrastructure, increase flooding at the mouths of rivers, place additional stress on levees in the Sacramento-San Joaquin Delta, and will intensify the difficulty of managing the Sacramento-San Joaquin Delta as the heart of the state's water supply system.

In 2004, California emitted approximately 550 million tons of CO<sub>2</sub>e, or about 6% of the U.S. emissions. This large number is due primarily to the sheer size of California compared to other

states. By contrast, California has one of the fourth lowest per capita GHG emission rates in the country, due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise (CEC, 2007). Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The California Environmental Protection Agency (Cal EPA) Climate Action Team stated in its March 2006 report that the composition of gross climate change pollutant emissions in California in 2002 (expressed in terms of CO<sub>2</sub> equivalence) were as follows:

- Carbon dioxide (CO<sub>2</sub>) accounted for 83.3%;
- Methane (CH<sub>4</sub>) accounted for 6.4%;
- Nitrous oxide (N<sub>2</sub>O) accounted for 6.8%; and
- Fluorinated gases (HFCs, PFC, and SF<sub>6</sub>) accounted for 3.5% (CalEPA, 2006).

The CEC found that transportation is the source of approximately 41% of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23%, and industrial sources at 20%. Agriculture and forestry is the source of approximately 8.3%, as is the source categorized as "other," which includes residential and commercial activities (CEC, 2007).

## Plumas County Emissions

As previously described, the County has completed a GHG inventory. The results of the GHG inventory are summarized below, with a full version of the inventory provided in **Appendix E** of this DEIR. As more fully described in the appendix, the GHG inventory uses a base year of 2005, which represents a commonly used baseline year in California and is consistent with the reference year outlined in Executive Order S-3-05. As part of the inventory, baseline emissions are categorized into sectors based on their source, as follows:

- *Residential Uses:* Residential land uses consume electricity and other fuels (propane, fuel oil, wood, etc.) for daily operations and heating / cooling. This estimate was calculated using 2005 electricity consumption data provided by PG&E, Plumas-Sierra Rural Electric Cooperative, and NV Energy, as well as estimates of propane, fuel oil/kerosene and wood home fuel use based on census and weather data.
- *Commercial/Industrial Uses:* These stationary sources are fixed emitters of air pollutants and include generators and power plants using propane and diesel fuels. Primary stationary sources in Plumas County include the Sierra Pacific Industries Quincy Sawmill and Cogeneration Facility, Collins Pine Sawmill and Cogeneration Facility, Sierra Aggregates, and Feather River Rock.
- *Transportation:* On-road and off-road vehicle use results in combustion of fossil fuels, which emit greenhouse gases into the atmosphere. These emissions are considered "mobile."

- *Solid Waste and Wastewater:* Emissions in this sector are the result of operation of the various wastewater treatment plants (Quincy Community Service District, Grizzly Ranch Community Service District, etc.). Additionally, the transport and disposal of solid waste in landfills results in the emission of greenhouse gases, which are captured in this category.
- *Agriculture:* Farming results in emissions of greenhouse gases from livestock (methane) and machinery operation.

As shown in **Table 4.4-3**, activities within Plumas County emitted approximately 403,280 metric tons (MT) of carbon dioxide equivalents (CO<sub>2</sub>e) in 2005.

In reviewing the information provided in Table 4.4-3, it is important to note that the GHG emissions inventory focused on key land uses or activities (i.e., transportation emissions) that generate GHG emissions in Plumas County. Additional sources may include GHG emissions resulting from large-scale construction projects or those associated with wildfires. Wildfires can generate significant amounts of GHG emissions depending on a number of factors (including the density of vegetation and the size of the wildfire). For example, recent studies looking at the GHG emissions potential from the Angora, Fountain, Moonlight, and Star fires estimated that these types of wildfires can release an average of about 63 tons per acre, over the course of both combustion and post-fire decay periods (Bonnicksen, 2008).

**TABLE 4.4-3  
COUNTY OF PLUMAS GREENHOUSE GAS EMISSIONS BY SECTOR IN 2005**

| Sector                     | Emission Sources                                       | CO <sub>2</sub> Equivalents (metric tons) | Percent     | Energy (MMBtu)    |
|----------------------------|--|---|-------------|-------------------|
| Residential                | Electricity, Propane, Fuel Oil/Kerosene, Wood          | 51,768                                    | 13%         | 746,973           |
| Commercial/Industrial      | Electricity, Propane, and Diesel                       | 30,809                                    | 8%          | 6,153,746         |
| Transportation             | Gasoline and Diesel                                    | 266,717                                   | 66%         | 3,231,583         |
| Solid Waste and Wastewater | Landfills, Transportation, Lagoons, and Septic Systems | 19,798                                    | 5%          | 0                 |
| Agriculture                | Fertilizer Application, Livestock Manure Management    | 34,188                                    | 8%          | 0                 |
| <b>Total</b>               |  | <b>403,280</b>                            | <b>100%</b> | <b>10,132,302</b> |

SOURCE: Sierra Business Council, 2012

### ***Construction Emissions***

New development can also create GHG emissions in its construction and demolition phases including the use of fuels in construction equipment, creation and decomposition of building materials, vegetation clearing, electrical usage, and transportation.

However, it is important to acknowledge that new development does not necessarily create entirely new GHG emissions. Since most of the persons who will visit or occupy new development will come from other locations where they were already causing such GHG emissions, new development tends to redistribute the location of emissions sources. Further, it has

not been demonstrated that new GHG emissions caused by a local development project can affect global climate change, or that a project's net increase in GHG emissions, if any, when combined with other activities in the region, would be cumulatively considerable.

## **Energy**

In Plumas County, electricity is provided by PG&E, PSREC, and Sierra-Pacific Power. PG&E provides electricity to the western portion of the County. PSREC serves the eastern portion of the County. Sierra Pacific Power provides electricity to a small portion of the southeastern portion of the County. Many residents and businesses in the County also rely on propane gas provided by a number of local franchises, such as Amerigas and Suburban Propane, as an energy source.

The abundance of rivers and streams located in Plumas County not only provide water supply they have also functioned as locations for the generation of hydroelectric power. PG&E operates ten hydroelectric plants on the Feather River. The East Branch North Fork Feather River serves over four million electrical customers through its hydroelectric facilities. Hydroelectric power generated at these facilities is distributed directly to the power grid.

### ***Energy Conservation***

PG&E sponsors several energy conservation programs that include education, solar energy incentives, florescent lighting business program and a weatherization program for low income families. These services are intended to reduce energy consumption in homes through the replacement of inefficient appliances and minor housing repairs, making the home more energy efficient. Consumers also receive valuable educational materials that provide useful energy saving tips and information.

Additional conservation measures can be encouraged through programs and policies that address areas within the County that can potentially reduce energy consumption by reducing wasteful energy consumption practices and habits.

## **Impacts and Mitigation Measures**

### **Methodology**

As noted above, the increased concentration of GHGs in the atmosphere has been linked to global warming, which can lead to climate change. Development of the proposed project would incrementally contribute to GHG emissions along with past, present and future activities. As such, impacts of GHG emissions are analyzed here on a cumulative basis (Impact 4.4-1). The NSAQMD has not yet set significant thresholds for GHGs, and it is unknown at this time whether such thresholds would exist in future years during proposed project implementation. Given that ARB has yet to officially adopt a GHG threshold and in the absence of any industry-wide accepted standards, the project would be considered to have a significant impact if it would conflict with the AB 32 state goals for reducing GHG emissions. It is assumed that AB 32 will be successful in reducing GHG emissions and reducing the cumulative GHG emissions statewide by 2020. It is important that the state has taken these measures, because no project individually could have a major

impact (either positively or negatively) on the global concentration of GHG. The geographic scope of potential cumulative GHG impacts encompasses NSAQMD's jurisdictional areas, statewide, national, and international boundaries. However, for purposes of practicality and reasonableness (see CEQA Guidelines §15130(b)), this analysis focuses on the state as a reasonable geographic boundary, including considerations related to effects on the attainment of state global climate change policies. The temporal scope includes operations of 2035 General Plan development. GHG emission-related impacts are by their nature exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA, 2008). Thus, the analysis and conclusions provided below also are the cumulative effects analysis of GHG emissions.

Adverse effects of climate change (Impact 4.4-2) and energy consumption (Impact 4.4-3) impacts are evaluated in this DEIR on a qualitative, programmatic basis based on proposed development assumed to occur under the proposed project and the implementation of established policies under the proposed project.

### **Significance Criteria**

The significance criteria for this analysis were developed from criteria presented in Appendix G, "Environmental Checklist Form", of the CEQA Guidelines and based on the professional judgment of the County of Plumas and its consultants. The proposed project would result in a significant impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, with consideration of the following:
  - The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
  - Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG; or
- Result in inefficient, wasteful and unnecessary consumption of energy by residential, commercial, industrial, or public uses associated with increased demand due to anticipated development in the County.

### Impact 4.4-1: Contribution to Global Climate Change

|            |   |
|------------|---|
| <b>LTS</b> | <b>The proposed project could contribute considerably to cumulative GHG emissions and global climate change</b> |
|            | <b>Level of Significance Before Mitigation:</b> <i>Less than Significant</i>                                    |
|            | <b>Required Additional Mitigating Policies and Implementation Measures:</b> <i>None</i>                         |
|            | <b>Resultant Level of Significance:</b> <i>Less than Significant</i>  |

The 2035 General Plan Update has been reviewed to assess whether it would conflict with the goals of AB 32 through the following four criteria:

- A. Any potential conflicts with the ARB’s 39 recommended actions in California’s AB 32 Climate Change Scoping Plan.
- B. The relative size of the project. Since the NSAQMD does not have significance thresholds for GHGs, the proposed project’s cumulative GHG emissions will be compared to the size of major facilities that are required to report GHG emissions (25,000 metric tons/year of CO<sub>2</sub>e) to the state. This threshold is typically applied to individual facilities, but is applied to this analysis to establish a level of substantial GHG emissions associated with development operations.
- C. The basic energy efficiency parameters of a project to determine whether its design is inherently energy efficient.
- D. Any potential conflicts with applicable plans, policies, or regulations of Plumas County that have been adopted for the purpose of reducing the emissions of GHGs.

With regard to Criterion A, development under the proposed project does not pose any apparent conflict with the most recent list of the ARB early action strategies (see Table 4.4-2 above).

In regards to Criterion B, implementation of the proposed project will allow development to occur within the County. While the exact timing of full build-out under the proposed project is unknown and will ultimately be market driven, this analysis is based on the amount of growth projected to occur by the year 2035 (see Chapter 3 “Project Description” of this DEIR) for modeling purposes and emissions were estimated for this planning horizon. Operational emissions were calculated by using California Emissions Estimator Model (CalEEMod) version 2011.1.1. CalEEMod is a computer program that can be used to estimate anticipated emissions associated with land development projects in California. CalEEMod has separate databases for specific counties and air districts. The Plumas County database was used for the proposed project. The model calculates GHG emissions. Operational inputs to CalEEMod include (1) the specific year for project operations, (2) vehicle trip generation rates, (3) fireplace types and quantities, and (4) project criteria for energy use. Model default values for trip distances and trip rates were adjusted to match information provided by LSC Transportation Consultants for the baseline 2010 and build-out 2035 conditions. Output operational GHG emissions data are separated into energy use, area sources, mobile sources, solid waste, and water conveyance. The area sources are



fireplaces and landscape maintenance equipment. Mobile sources are the on-road vehicles used in the County. For this analysis (summarized below in **Table 4.4-4**), the results are expressed as metric tons CO<sub>2</sub>e per year and are compared with the 25,000 metric ton per year threshold to determine impact significance. As depicted in Table 4.4-4, long-term operational GHG emissions associated with projected development under the proposed project would not exceed the applied threshold used to classify major emitters.

**TABLE 4.4-4  
2035 PLUMAS COUNTY GENERAL PLAN OPERATIONAL GHG EMISSIONS**

| Source   | Emissions <sup>a</sup><br>(metric tons CO <sub>2</sub> e per year) |
|--|--|
| Countywide Motor Vehicle Trips – Year 2010             | 146,696.4  |
| Countywide Motor Vehicle Trips – Year 2035             | 135,222.3  |
| Incremental Increase - On-road Sources                 | (11,474.1)   |
| Energy – Incremental Increase in GHGs                  | 16,205.6   |
| Area Sources – Incremental Increase in GHGs            | 11,414.9   |
| Waste – Incremental Increase in GHGs                   | 1,208.5  |
| Water – Incremental Increase in GHGs                   | 967.6  |
| <hr/>  |  |
| Total Incremental Increase - Operational GHG Emissions | 18,322.5   |
| <i>Threshold</i>                                       | 25,000   |
| <i>Significant (Yes or No)?</i>                        | <i>No</i>  |

<sup>a</sup> CalEEMod analysis is based on build out of the 2035 General Plan, as well as traffic trips and associated vehicle-miles traveled (VMT) information provided by LSC Transportation Consultants for the 2010 and 2035 analysis years. Notably, values in (parentheses) indicate a reduction in emissions for the build out versus existing scenario. Additional model assumptions and output data are provided in Appendix D of this DEIR.

With respect to GHG analysis Criterion C, policies and associated implementation measures that minimize this impact are included as part of the Conservation and Open Space, Circulation, Economics, and Land Use Elements as shown in **Table 4.4-5** (see below). For example, the proposed project includes a number of policies designed to reduce vehicle miles travelled within Plumas County by supporting land use patterns that cluster development within Planning Areas and support a variety of alternative forms of transportation (including bicycles, pedestrian trails, off-road trails, and transit service). Additionally, to minimize vehicle trips associated with new employment and economic development opportunities, the County will encourage telecommuting (Policy ECON-5.9.8) and ridesharing (Policy CIR-4.3.4) programs. The County will also support and participate in a variety of climate change management programs including the preparation and monitoring of GHG emission inventories (Policy COS-7.10.1), the development of a climate change strategy appropriate for the County’s rural character (Policy COS-7.10.2), and the continued support for open space and healthy forest practices that contribute to carbon sequestration and biomass energy production (see Policy COS-7.10.4). Additionally, both the Economics and Conservation/Open Space Elements include a number of policies designed to conserve energy resources (see Policies COS-7.11.1 through COS-7.11.8).

Finally, with regard to Criterion D, Plumas County has not established GHG reduction plans. However, a variety of GHG reducing goals, policies, and implementation measures are included

as part of the proposed project (see Table 4.4-5, below) and the proposed project is considered internally consistent with these objectives. Therefore, the 2035 General Plan Update would not conflict with any local regulations pertaining to GHGs.

Based upon the analysis of Criteria A, B, C and D presented above, the proposed project would not result in a cumulatively considerable increase in GHG emissions and would not impair the state’s ability to implement AB 32.

**TABLE 4.4-5  
MITIGATING POLICIES**

| <b>Conservation and Open Space (COS), Circulation (CIR), Economics (ECON), and Land Use (LU) Elements</b>   |   |               |   |
|---|---|---------------|---|
| Policies designed to reduce vehicular travel by encouraging land use patterns that cluster new development near existing community areas include the following: |   |               |   |
| LU-1.1.1  | Future Development  | ECON- 5.9.2   | Land Use Density  |
| LU-1.1.2  | Infill Development  | ECON- 5.9.3   | Mixed-Use Development   |
| LU-1.1.3  | Increased Housing Density   | ECON- 5.9.4   | Transit-Oriented Development  |
| LU-1.1.5  | Community Plans   | ECON- 5.9.5   | Incentives for Use of Existing Infrastructure                             |
| LU-1.5.1  | Use of Existing Infrastructure  | ECON- 5.9.8   | Telecommuting   |
| LU-1.5.2  | Cost Effective Land Use Pattern   |               |   |
| Policies designed to promote the continued use and expansion of transit, bicycle, and pedestrian facilities include the following:                              |   |               |   |
| COS-7.9.4   | Vehicle Trip Reduction Measures   | CIR-4.3.4     | Ridesharing   |
| COS-7.9.5   | Street Design   | CIR-4.4.1     | Bicycle and Pedestrian Facility Network                                   |
| COS-7.9.7   | Purchase of Low Emission/Alternative Fuel Vehicles  | CIR-4.4.2     | Bicycle and Pedestrian Facilities in New Development                      |
| COS-7.9.8   | Public Education  | CIR-4.4.3     | Inclusion of Bicycle and Pedestrian Access in New Transportation Projects |
| CIR-4.2.2   | Support of Multimodal Projects  | CIR-4.6.3     | GHG Reductions  |
| CIR-4.3.1   | Enhancement of Transit Service  | ECON- 5.9.6   | Reduction in Single-Occupant Vehicular Travel                             |
| CIR-4.3.2   | Expansion of Transit Service to Urban Areas   | ECON- 5.9.7   | Encouragement of Pedestrian and Bicycle Traffic                           |
| CIR-4.3.3   | Improvement of Bus Stops  |               |   |
| Policies designed to manage the effects of climate change locally by participating in programs that reduce GHG emissions include the following:                 |   |               |   |
| COS-7.10.1  | Inventory and Monitor GHG Emissions   | COS-7.10.5    | Sustainable Business Practices  |
| COS-7.10.2  | Develop a Climate Change Strategy   | COS-7.10.6    | Sustainable Agricultural Practices  |
| COS-7.10.3  | Support Statewide Climate Change Solutions  | COS-7.10.7    | Public Awareness and Education  |
| COS-7.10.4  | Forest Sequestration and Biomass Energy   |               |   |
| Policies designed to conserve energy include the following:   |   |               |   |
| ECON - 5.9.9  | Telecommuting   | ECON - 5.14.4 | Maximize Use of Existing Transmission Facilities                          |
| ECON - 5.11.2   | Energy Efficiency in Economic Development Efforts   | ECON - 5.14.7 | Protect Natural Resource Areas  |
| ECON - 5.13.1   | Identify Renewable Energy Resource Potentials   | COS-7.11.1    | Alternative Energy Design   |
| ECON - 5.13.2   | Develop of Renewable Resources  | COS-7.11.2    | Local Energy Alternatives   |
| ECON - 5.13.5   | Protect Future Opportunities for Biomass Utilization  | COS-7.11.3    | Energy Efficient Appliances   |
| ECON - 5.14.1   | Establish Thresholds and Define Processes for Consideration (of energy facility applications) | COS-7.11.4    | Solar Energy  |
|   |   | COS-7.11.5    | Landscape Practices   |
|   |   | COS-7.11.7    | Utility Transmission Lines  |
|   |   | COS-7.11.8    | Electric Vehicle Support  |

**Significance Determination**

A certain amount of environmental change is inevitable due to current and unavoidable future increases in GHG emissions worldwide. However, implementation of the policies provided under

the proposed project would minimize the GHG contribution to global climate change associated with new development under the 2035 General Plan Update. This impact is considered *less than significant*. No additional mitigation measures are required.

**Significance Conclusion**

Implementation of the proposed project would not result in significant contribution to global climate change and therefore associated impacts would be *less than significant*.

**Impact 4.4-2: Adverse Effects of Climate Change on Plumas County**

|            |   |
|------------|---|
| <b>LTS</b> | <b>The proposed project could result in subject property or persons to otherwise avoidable physical harm in light of inevitable climate change.</b> |
|            | <b>Level of Significance Before Mitigation:</b> <i>Less than Significant</i>  |
|            | <b>Required Additional Mitigating Policies and Implementation Measures:</b> <i>None</i>   |
|            | <b>Resultant Level of Significance:</b> <i>Less than Significant</i>  |

Both existing and proposed development consistent with the proposed project along with the natural environment of Plumas County will be subject to climate change impacts resultant from past, present, and future GHG emissions regardless of the success of local, state, national, or international programs designed to reduce future GHG emissions concentrations. Without further planning and consideration, current requirements may provide inadequate protection against adverse physical impacts resulting from GHG emissions and may not anticipate changed conditions resultant from climate change.

“Scenarios of Climate Change in California: An Overview” (Climate Scenarios report), was published in February 2006 (California Climate Change Center 2006). This report uses a range of emissions scenarios to project a series of potential warming ranges with temperature increases from 3.0 to 10.5 degrees Fahrenheit. The Climate Scenarios report then presents analysis of future climate in California under each warming range. Substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. The description of potential impacts for California from this report were used to generally characterize potential impacts to Plumas County, that would include but are not limited to the following:

**Agriculture and Forestry.** Agriculture, along with forestry, is the sector of the California economy (and specifically Plumas County) that may be most be affected by a change in climate. Regional analyses of climate trends over agricultural regions of California suggest that climate change is already in motion. Over the period 1951 to 2000, the growing season has lengthened by about a day per decade, with much of the increase occurring in the spring. Climate change affects agriculture directly through increasing temperatures and rising CO<sub>2</sub> concentrations, and indirectly through changes in water availability and pests (California Climate Change Center 2006). While some crops may benefit in quality from an increase in CO<sub>2</sub>, other crops and forest resources can be harmed by an increase in CO<sub>2</sub>. Growth rates of weeds, insect pests, and pathogens are also

likely to increase with elevated temperatures, and their ranges may expand (California Climate Change Center 2006).

**Public Health and Safety.** Climate change could affect the health of County residents by increasing the frequency, duration, and intensity of conditions conducive to air pollution formation, heat, and wildfires. The primary concern is not the change in average climate, but rather the projected increase in extreme conditions that are responsible for the most serious health consequences. In addition, climate change has the potential to influence asthma symptoms and the incidence of infectious disease (California Climate Change Center 2006).

**Wildland Fire Risk.** With climate change, the potential for wildland fires may change due to changes in fuel conditions (transitioning forests to chaparral/grasslands for example), precipitation (longer dry seasons, higher extreme temperatures), and wind (affecting potential spread), among other variables. Westerling and Bryant (2006) estimated future statewide wildfire risk from a statistical model based on temperature, precipitation, and simulated hydrologic variables. Projections made for the probabilities of “large fires”—defined as fires that exceed an arbitrary threshold of 200 hectares (approximately 500 acres)—indicate that the risk of large wildfires statewide would rise almost 35% by mid-century and 55% by the end of the century under a medium-high emissions scenario, almost twice that expected under lower emissions scenarios. Estimates of increased damage costs from the increases in fire season severity (Westerling and Bryant 2006) are on the order of 30% above current average annual damage costs.

A second study explored, through a case study in Amador and El Dorado Counties, the effects of projected climate change on fire behavior, fire suppression effort, and wildfire outcomes (Fried et al. 2006). Climate and site-specific data were used in California Department of Forestry and Fire Protection (CDF) standard models to predict wildfire behavior attributes such as rate of spread and burning intensity. The study found an increase in the projected area burned (10%–20%) and number of escaped fires (10%–40%) by the end of century, under the drier climate scenarios. However, the less dry model showed little change.

**Hydrology/Flooding.** Regional (as in on the scale of Northern California as a whole) climate change modeling shows mild (5%-10%) increases and decreases in precipitation depending on the climate change scenarios studied (Anderson 2006). On a broad (California level), there is a potential increase in the severity of winter storms due to climate change (Dettinger 2007). If this were to occur, peak stream flows and flooding may increase the risk of flooding beyond the risk levels currently anticipated in the County.

**Water Supplies.** Much of California (and Plumas County) is dependent on the Sierra Nevada snowpack for its water supply (and the snowpack could be heavily altered by climate change).

**Natural Ecosystems.** Climate changes and increased CO<sub>2</sub> concentrations are expected to alter the extent and character of natural ecosystems. The distribution of species is expected to shift; the risk of climate-related disturbance such as wildfires, disease, and drought is expected to rise; and forest productivity is projected to increase or decrease—depending on species and region. In

Plumas County, these ecological changes could have significant implications for fire suppression, public health, and the sustainability of the County’s natural ecosystems.

As previously described above under Impact 4.4-1, the proposed project takes a comprehensive approach to addressing GHG and climate change issues by including numerous policies designed to address flooding, water supplies, habitat protection, and environmental health, as described in other sections of this DEIR. More importantly, the Open Space and Conservation Element includes a number of policies designed to integrate climate change considerations into future County planning activities specific to these subject areas. For example (as shown in **Table 4.4-6** below), Plumas County will also support and participate in a variety of climate change management programs including the continued preparation/monitoring of GHG emission inventories (Policy COS-7.10.1), the development of a climate change adaption strategy consistent with the County’s rural character (Policy COS-7.10.2), and the continued support for open space and healthy forest practices that contribute to carbon sequestration and biomass energy production (see policies COS-7.10.4, AG/FOR-8.11.1, and AG/FOR-8.22.1). A recognition that agricultural practices can also assist in mitigate the effects of climate change is reflective in policies COS-7.10.6 and AG/FOR-8.6.7, which support continued agricultural practices that sequester carbon and through the use of farming methods that reduce reliance on fossil fuels and pesticides. Finally, the proposed project includes several policies designed to address the health and safety of County residents and visitors through disaster planning and response from a variety of hazard conditions including those that could be affected by climate change conditions (see policies PHS-6.7.1 through PHS-6.7.6).

**TABLE 4.4-6  
MITIGATING POLICIES**

| <b>Public Health and Safety (PHS), Conservation and Open Space (COS), and Agriculture and Forestry (AG/FOR) Elements</b> |   |                 |   |
|--|---|-----------------|---|
| Policies designed to ensure a coordinated approach to emergency response and evacuation planning include the following:  |   |                 |   |
| PHS-6.3.11   | Regional Cooperation  | PHS-6.7.3       | Maintenance of Emergency Evacuation Plans         |
| PHS-6.7.1  | Emergency Response Services Coordination with Government Agencies | PHS-6.7.5       | Search and Rescue                                 |
| PHS-6.7.2  | Mutual Aid Agreement  | PHS-6.7.6       | Joint Exercises                                   |
| Policies designed to ensure adequate roadway circulation and access include the following:                               |   |                 |   |
| COS-7.10.1   | Inventory and Monitor GHG Emissions                               | COS-7.10.7      | Public Awareness and Education                    |
| COS-7.10.2   | Develop a Climate Change Strategy                                 | AG/FOR-8.6.7    | Agriculture’s Role in Mitigating Climate Change   |
| COS-7.10.3   | Support Statewide Climate Change Solutions                        | AG/FOR-8.11.1   | Forestlands as Locations for Carbon Sequestration |
| COS-7.10.4   | Forest Sequestration and Biomass Energy                           | AG/FOR-8.11.2 G | HG Emissions Mitigation                           |
| COS-7.10.5   | Sustainable Business Practices                                    |                 |   |
| COS-7.10.6   | Sustainable Agricultural Practices                                |                 |   |

**Significance Determination**

A certain amount of environmental change is inevitable due to current and unavoidable future increases in GHG emissions worldwide. With implementation of the policies provided under the proposed project, new development will be ready to address these inevitable changes and would avoid additional physical harm to persons and property resultant from climate change effects. Therefore, climate change effects resulting from implementation of the proposed project would

have a less-than-significant impact on existing and future planned development in Plumas County.

This impact is considered *less than significant*. No additional mitigation measures are required.

**Significance Conclusion**

Implementation of the proposed project would not result in significant climate change effects and therefore associated impacts would be *less than significant*.

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**Impact 4.4-3: Energy Consumption**

|            |   |
|------------|---|
| <b>LTS</b> | <b>The proposed project could result in the wasteful, inefficient, or unnecessary consumption of energy by residential, commercial, industrial, or public uses associated with increased demand due to anticipated development in the County.</b> |
|            | <b>Level of Significance Before Mitigation:</b> <i>Less than Significant</i>  |
|            | <b>Required Additional Mitigating Policies and Implementation Measures:</b> <i>None</i>   |
|            | <b>Resultant Level of Significance:</b> <i>Less than Significant</i>  |

Implementation of the proposed project would result in new development within the various Planning Areas of the County. The development of new land uses consistent with the proposed project will also contribute to the need for additional energy supplies (i.e., propane/heating fuels, electricity, and transportation fuels) and utility infrastructure. Future development subsequent to the proposed project would primarily occur in, adjacent to, or in the vicinity of existing developed Planning Areas. These land use patterns allow for the logical extension and utilization of existing utilities, and public services, and other amenities such as proximity to employment centers, commercial uses, and public transit. Such land use patterns reduce dependence on motor vehicles and allow for stronger public transportation systems and development of pedestrian and bicycle paths.

The proposed project was designed specifically to achieve and promote consistency with the planning documents of other key neighboring land use agencies or other agencies that have jurisdiction over the Planning Area. Policies included as part of the proposed project that would potentially reduce this impact are identified in Table 4.4-5 (above). These policies would help to reduce energy consumption by requiring new development to incorporate measures to reduce construction and operational energy, as well as encouraging new employers to provide incentives for their employees to carpool, telecommute, or use transit. Other policies encourage compact and infill development, as well as additional employment and retail opportunities, to promote walking or biking to destinations consistent with the existing land use patterns of the various Planning Areas within Plumas County. Additional policies require the installation of energy efficient lighting (consistent with current County activities) and appliances, as well as renewable energy systems (i.e., solar, etc.) and to encourage the use of alternative modes of transportation to reduce vehicular travel.

### **Significance Determination**

Implementation of the proposed project would result in the development of new urban uses within the various Planning Areas of the County, which could increase the demand for energy and utility infrastructure. Policies included as part of the proposed project will ensure that new development implement a variety of energy conservation measures and look to reduce vehicle miles travelled as a way to reduce additional demands on a variety of energy sources. Therefore, this impact resulting from implementation of the proposed project would have a less-than-significant impact on energy resources and ensure that the wasteful, inefficient, or unnecessary consumption of energy by residential, commercial, industrial, or public uses is minimized.

Actual physical construction, resource demands, and employee requirements associated with future energy or utility facilities would be addressed in future separate environmental reviews, with site specific mitigation developed and identified as necessary to reduce the magnitude of potential site-specific effects. At the present time, there are no plans that describe the size, location, or operational characteristics of these future facilities. Therefore, their environmental impacts cannot be determined with any certainty and are examined at only a general level of detail. When specific facilities are proposed, they would be subject to CEQA review; mitigation of any significant impacts that may be identified would be required where feasible.

This impact is considered *less than significant*. No additional mitigation measures are required.

### **Significance Conclusion**

Implementation of the proposed project would not result in significant energy or utility issues and therefore associated impacts would be *less than significant*.

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