# 5.6 Greenhouse Gas Emissions

# 5.6 GREENHOUSE GAS EMISSIONS

This section evaluates greenhouse gas (GHG) emissions associated with the proposed project and analyzes compliance with applicable regulations. Consideration of the project's consistency with applicable plans, policies, and regulations, as well as the introduction of new sources of GHGs, is included in this section. GHG technical data is included in Appendix 11.4, *Air Quality and Greenhouse Gas Data*.

## 5.6.1 EXISTING SETTING

The Town of Mammoth Lakes (Town) is located in the Great Basin Valley Air Basin (Basin), which is bounded by the Sierra Nevada mountain range to the west, the White, Inyo, and Coso ranges to the east, Mono Lake to the north, and Little Lake to the south. The Basin includes Mono County, where the project site is located, as well as Alpine and Inyo Counties.

The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the Basin.

### SCOPE OF ANALYSIS FOR CLIMATE CHANGE

The study area for climate change and the analysis of GHG emissions is broad as climate change is influenced by world-wide emissions and their global effects. However, the study area is also limited by the CEQA Guidelines (Section 15064[d]), which directs lead agencies to consider an "indirect physical change" only if that change is a reasonably foreseeable impact which may be caused by the project.

The baseline against which to compare potential impacts of the project includes the natural and anthropogenic drivers of global climate change, including world-wide GHG emissions from human activities that have grown more than 70 percent between 1970 and 2004. The State of California is leading the nation in managing GHG emissions. Accordingly, the impact analysis for this project relies on guidelines, analyses, policy, and plans for reducing GHG emissions established by the California Air Resources Board (CARB).

### GLOBAL CLIMATE CHANGE – GREENHOUSE GASES

The natural process through which heat is retained in the troposphere is called the "greenhouse effect."[1] The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long wave radiation; and GHG in the upper atmosphere absorb this long wave radiation and emit this long wave radiation into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

[1] The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.

The most abundant GHGs are water vapor and carbon dioxide ($CO_2$). Many other trace gases have greater ability to absorb and re-radiate long wave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-radiate long wave radiation. GHGs normally associated with the proposed project include the following:[2]

- *Water Vapor ($H_2O$).* Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Natural processes, such as evaporation from oceans and rivers, and transpiration from plants, contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively. The primary human related source of water vapor comes from fuel combustion in motor vehicles; however, this is not believed to contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor. The Intergovernmental Panel on Climate Change (IPCC) has not determined a GWP for water vapor.

- *Carbon Dioxide ($CO_2$).* $CO_2$ is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, the concentration of $CO_2$ in the atmosphere has increased 40 percent.[3] $CO_2$ is the most widely emitted GHG and is the reference gas (GWP of 1) for determining GWPs for other GHGs.

- *Methane ($CH_4$).* $CH_4$ is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of $CH_4$ are landfills, natural gas systems, and enteric fermentation. $CH_4$ is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of $CH_4$ is 21.

- *Nitrous Oxide ($N_2O$).* $N_2O$ is produced by both natural and human related sources. Primary human related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of $N_2O$ is 310.

- *Hydrofluorocarbons (HFCs).* HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing, as the continued phase out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs range from 140 for HFC-152a to 11,700 for HFC-23.[4]

[2] All Global Warming Potentials are given as 100 year GWP. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. Climate Change (Intergovernmental Panel on Climate Change, *Climate Change, The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC*, 1996).

[3] U.S. Environmental Protection Agency, *Inventory of United States Greenhouse Gas Emissions and Sinks 1990 to 2012*, April 2014.

[4] U.S. Environmental Protection Agency, *Overview of Greenhouse Gas Emissions – Emissions of Fluorinated Gases,* dated April 17, 2014. http://epa.gov/climatechange/ghgemissions/gases/fgases.html, accessed on May 15, 2014.

- *Perfluorocarbons (PFCs)*. PFCs are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. PFCs are potent GHGs with a GWP several thousand times that of $CO_2$, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).[5] The GWP of PFCs range from 6,500 to 9,200.

- *Sulfur hexafluoride ($SF_6$)*. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the IPCC with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio compared to $CO_2$ (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm], respectively).[6]

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds have the potential to contribute to the greenhouse effect. Some of these substances were previously identified as stratospheric ozone ($O_3$) depletors; therefore, their gradual phase out is currently in effect. The following is a listing of these compounds:

- *Hydrochlorofluorocarbons (HCFCs)*. HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. As part of the Montreal Protocol, all developed countries that adhere to the Montreal Protocol are subject to a consumption cap and gradual phase out of HCFCs. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The GWP of HCFCs range from 93 for HCFC-123 to 2,000 for HCFC-142b.[7]

- *1,1,1 trichloroethane*. 1,1,1 trichloroethane or methyl chloroform is a solvent and degreasing agent commonly used by manufacturers. The GWP of methyl chloroform is 110 times that of $CO_2$.[8]

- *Chlorofluorocarbons (CFCs)*. CFCs are used as refrigerants, cleaning solvents, and aerosols spray propellants. CFCs were also part of the U.S. Environmental Protection Agency's (EPA) Final Rule (57 FR 3374) for the phase out of $O_3$ depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere contributing to the greenhouse effect. CFCs are potent GHGs with a GWP ranging from 4,600 for CFC 11 to 14,000 for CFC 13.[9]

[5] U.S. Environmental Protection Agency, *Overview of Greenhouse Gas Emissions – Emissions of Fluorinated Gases,* dated April 17, 2014. http://epa.gov/climatechange/ghgemissions/gases/fgases.html, accessed on May 15, 2014.

[6] Ibid.

[7] U.S. Environmental Protection Agency, *Protection of Stratospheric Ozone: Listing of Global Warming Potential for Ozone Depleting Substances*, dated October 29, 2009. http://www.epa.gov/EPA-AIR/1996/January/Day-19/pr-372.html, accessed on May 15, 2014.

[8] Ibid.

[9] U.S. Environmental Protection Agency, *Class I Ozone Depleting Substances*, dated June 21, 2013. http://www.epa.gov/ozone/science/ods/classone.html, accessed on May 15, 2014.

# 5.6.2 REGULATORY FRAMEWORK

## FEDERAL

The Federal government is extensively engaged in international climate change activities in areas such as science, mitigation, and environmental monitoring. The EPA actively participates in multilateral and bilateral activities by establishing partnerships and providing leadership and technical expertise. Multilaterally, the United States is a strong supporter of activities under the United Nations Framework Convention on Climate Change (UNFCCC) and the IPCC.

In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus around the evidence that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

In December 2007, Congress passed the first increase in corporate average fleet fuel economy (CAFE) standards. The new CAFE standards represent an increase to 35 miles per gallon (mpg) by 2020. In March 2009, the Obama Administration announced that for the 2011 model year, the standard for cars and light trucks will be 27.3 mpg, the standard for cars will be 30.2 mpg; and standard for trucks would be 24.1 mpg. Additionally, in May 2009 President Barack Obama announced plans for a national fuel-economy and GHG emissions standard that would significantly increase mileage requirements for cars and trucks by 2016. The new requirements represent an average standard of 39 mpg for cars and 30 mpg for trucks by 2016.

In May 2010, EPA and Department of Transportation's National Highway Traffic Safety Administration (NHTSA) issued a joint Final Rule to establish a National Program comprised of new standards for light-duty vehicles that will reduce GHG emissions and improve fuel economy. In October 2012, the EPA and NHTSA issued final rules to extend the National Program standards to further decrease GHG emissions and increase fuel economy for light-duty vehicles for model years 2017-2025. NHTSA is finalizing CAFE standards for model years 2017-2012 while issuing augural standards for 2022-2025 model years under the Energy and Security Act. EPA is finalizing GHG emission standards for 2017-2025 model years under the Federal Clean Air Act (FCAA) and modifying changes to the regulations applicable to model years 2012-2016 in regards to air conditions performance, $N_2O$ measurement, off-cycle technology credits, and police and emergency vehicles.

In September 2009, the EPA finalized a GHG reporting and monitoring system that began on January 1, 2010. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons (MT) or more of $CO_2$ per year. This publicly 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. This new program covers approximately 85 percent of the nation's GHG emissions and applies to approximately 10,000 facilities. The reporting system is intended to provide a better understanding

of where GHGs are coming from and will guide development of the best possible policies and programs to reduce emissions.

In December 2009, the EPA signed two endangerment and cause or contribute findings for GHG emissions under Section 202(a) of the FCAA. The EPA concluded that current and projected concentrations of the six key well-mixed GHGs ($CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, and $SF_6$) in the atmosphere threaten the public health and welfare of current and future generations. In addition, the EPA determined 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. These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite for implementing GHG standards for vehicles.

Currently, the EPA is proposing the 2014 Renewable Fuel Standard Program (RFS2) to establish the volume requirements and associated percentage standards for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuels that apply to gasoline and diesel produced or imported in the year 2014. EPA is also proposing the 2015 Biomass-Based Diesel Volume to determine the applicable national volume of biomass-based diesel that will be required in 2015. As required by the Energy Independence and Security Act of 2007, the proposed standards would ensure that transportation fuel sold in the United State contains a minimum volume of renewable fuel.

## STATE

Various statewide and local initiatives to reduce California'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 occurring, and that there is a real potential for severe adverse environmental, social, and economic effects in the long term. Every nation emits GHGs and as a result makes an incremental cumulative contribution to global climate change; therefore, global cooperation will be required to reduce the rate of GHG emissions enough to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

Executive Order S-1-07. Executive Order S-1-07 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 CARB 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.

Executive Order S-3-05. Executive Order S-3-05 set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, 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 percent below 1990 levels.

The Executive Order directed the secretary of the California Environmental Protection Agency (Cal/EPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The secretary will also submit biannual reports to the governor and California Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the secretary of Cal/EPA created the California Climate Action Team (CAT), made up of members from various State agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of California businesses, local governments, and communities and through State incentive and regulatory programs.

Executive Order S-13-08. Executive Order S-13-08 seeks to enhance the State's management of climate impacts including sea level rise, increased temperatures, shifting precipitation, and extreme weather events by facilitating the development of State's first climate adaptation strategy. This will result in consistent guidance from experts on how to address climate change impacts in the State of California.

Executive Order S-14-08. Executive Order S-14-08 expands the State's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, Executive Order S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. CARB adopted the "Renewable Electricity Standard" on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

Executive Order S-20-04. Executive Order S-20-04, the California Green Building Initiative, (signed into law on December 14, 2004), establishes a goal of reducing energy use in State-owned buildings by 20 percent from a 2003 baseline by 2015. It also encourages the private commercial sector to set the same goal. The initiative places the California Energy Commission (CEC) in charge of developing a building efficiency benchmarking system, commissioning and retro-commissioning (commissioning for existing commercial buildings) guidelines, and developing and refining building energy efficiency standards under Title 24 to meet this goal.

Executive Order S-21-09. Executive Order S-21-09, 33 percent Renewable Energy for California, directs CARB to adopt regulations to increase California's Renewable Portfolio Standard (RPS) to 33 percent by 2020. This builds upon SB 1078 (2002) which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006) which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

Assembly Bill 32 (California Global Warming Solutions Act of 2006). California passed the California Global Warming Solutions Act of 2006 (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. 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 CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Assembly Bill 1493. AB 1493 (also known as the Pavley Bill) requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHG emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) in 2004 by adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 and adoption of 13 CCR Section 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 weight classes for passenger vehicles (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily to transport people), beginning with the 2009 model year. Emissions limits are reduced further in each model year through 2016. When fully phased in, the near-term standards will result in a reduction of about 22 percent in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term standards will result in a reduction of about 30 percent.

Assembly Bill 3018. AB 3018 established the Green Collar Jobs Council (GCJC) under the California Workforce Investment Board (CWIB). The GCJC will develop a comprehensive approach to address California's emerging workforce needs associated with the emerging green economy. This bill will ignite the development of job training programs in the clean and green technology sectors.

Senate Bill 97. SB 97, signed in 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. This bill directs the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions (or the effects of GHG emissions), as required by CEQA.

OPR published a technical advisory recommending that CEQA lead agencies make a good-faith effort to estimate the quantity of GHG emissions that would be generated by a proposed project. Specifically, based on available information, CEQA lead agencies should estimate the emissions associated with project-related vehicular traffic, energy consumption, water usage, and construction activities to determine whether project-level or cumulative impacts could occur, and should mitigate the impacts where feasible. OPR requested CARB technical staff to recommend a method for setting CEQA thresholds of significance as described in CEQA Guidelines Section 15064.7 that will encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the State.

The Natural Resources Agency adopted the CEQA Guidelines Amendments prepared by OPR, as directed by SB 97. On February 16, 2010, the Office of Administration Law approved the CEQA Guidelines Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The CEQA Guidelines Amendments became effective on March 18, 2010.

Senate Bill 375. SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a sustainable

communities strategy (SCS) or alternative planning strategy (APS) that will prescribe land use allocation in that MPOs regional transportation plan. CARB, 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. CARB 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 may not be eligible for funding programmed after January 1, 2012.

Senate Bills 1078 and 107. 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.

Senate Bill 1368. SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed into law in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007. SB 1368 also required the CEC to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas fired plant. Furthermore, the legislation states that all electricity provided to California, including imported electricity, must be generated by plants that meet the standards set by CPUC and CEC.

## CARB Scoping Plan

On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's Scoping Plan contains the main strategies California will implement to reduce $CO_2eq$[10] emissions by 174 million MT, or approximately 30 percent, from the State's projected 2020 emissions level of 596 million $MTCO_2eq$ under a business as usual (BAU)[11] scenario. This is a reduction of 42 million $MTCO_2eq$, or almost ten percent, from 2002 to 2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.

CARB's Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (e.g., transportation, electrical power, commercial and residential, industrial, etc.). CARB used three-year average emissions, by sector, for 2002 to 2004 to forecast emissions to 2020. At the time CARB's Scoping Plan process was initiated, 2004 was the most recent year for which actual data was available. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32. On February 10, 2014, CARB released the draft proposed first update. The appendices to the report, including the

[10] Carbon Dioxide Equivalent ($CO_2eq$) - A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

[11] "Business as Usual" refers to emissions that would be expected to occur in the absence of GHG reductions. See http://www.arb.ca.gov/cc/inventory/data/forecast.htm. Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition." It is broad enough to allow for design features to be counted as reductions.

environmental analysis will be released at a later date. On February 20, 2014, CARB will have a Board meeting discussion that will include additional opportunities for stakeholder feedback and public comment. In late-Spring 2014, CARB will hold a Board Hearing to consider the Final Scoping Plan Update and Environmental Analysis.

# LOCAL

## Great Basin Unified Air Pollution Control District

The Great Basin Unified Air Pollution Control District (GBUAPCD) has jurisdiction over the counties of Mono, Alpine, and Inyo and is primarily responsible for comprehensive air pollution control in the Basin. However, GBUAPCD lacks the authority to directly regulate factors leading to global climate change or GHG emission issues associated with plans and new development projects throughout the Basin.

## Town of Mammoth Lakes

### TOWN OF MAMMOTH LAKES 2007 GENERAL PLAN

The Town does not have any plans, policies, regulations, significance thresholds, or laws addressing climate change at this time. The Resources Management and Conservation Element of the *Town of Mammoth Lakes General Plan 2007* (2007 General Plan) includes goals and policies addressing energy resources, energy conservation, green technology, and air quality. The 2007 General Plan states that energy demands and consumption can be reduced through education, energy audits, incentives, and innovative measures. In addition, green building technology, renewable energy resources, and conservation of existing energy sources are encouraged through education, research, cost-benefit analysis, and establishing regulatory framework and implementation standards. The Town also promotes reduction of GHG emissions by supporting the objectives of the U.S. Mayors Climate Protection Agreement, AB 32, and Executive Order S-3-05. The Resources Management and Conservation Element policies that are relevant to the proposed project are as follows:

- Reduce energy demand by promoting energy efficiency in all sectors of the community (R.6.A).
- Encourage energy efficiency in new building and retrofit construction, as well as resource conservation and use of recycled materials (R.6.C).
- Reduce the use of fossil fuels and energy consumption of Town fleet through innovative measures (R.6.D).
- Use green building practices to greatest extent possible in all construction projects (R.7.A).
- Encourage development of housing close to work, commercial services, recreation areas and transit routes to reduce fuel consumption (R.7.B).

- Educate community, both residents and visitors, on economic and environmental benefits of energy efficiency, use of renewable resources and potential cost savings with energy efficient retrofits and remodels (R.8.A).

- Educate building industry professionals on value of energy efficient building construction and use of renewable resource heating and power systems both in new and retrofit construction (R.8.B).

- Research and facilitate cost-benefit analysis for energy and resource conservation in new and existing building systems (R.8.C).

- Encourage use of renewable fuels such as biodiesel (R.8.D).

- Support development of a geothermal heating district for the town including seeking grant-funding sources for geothermal heating projects (R.8.E).

- Encourage building design and orientation for passive solar heating (R.8.F).

- Encourage use of decentralized solar electric power production systems (R.8.G).

**Mobility Element**

The Town is currently preparing the Mobility Element that will serve as the community's comprehensive transportation plan, updating the existing Circulation Element of the 2007 General Plan. The Mobility Element establishes the goals, policies, actions, and infrastructure necessary to achieve a progressive and complete multimodal transportation system that serves the needs of all users by implementing "feet-first," sustainability, and smart-growth oriented principles. The Mobility Element policies that are relevant to the proposed project are as follows:

- Reduce automobile trips by promoting and facilitating pedestrian, bicycle, transit and parking management strategies and programs through the following:

    - Implementation of compact pedestrian-oriented development that provides a mix of land uses within walking or biking distance that meet the daily needs of residents and visitors,
    - Encouraging clustered and infill development,
    - Encouraging and developing land use policies that focus development potential in locations best served by transit and other alternative transportation, and
    - Implementing parking strategies that encourage the "park-once" concept (M.16.1).

- Require new development to implement Transportation Demand Management (TDM) measures (M.16.2).

- Encourage the school district, ski resort and other major public and private traffic generators to develop and implement measures to change travel behavior (M.16.3).

- Regularly update the TDM requirements for new development (M.17.1).

**Eastern Sierra Energy Initiative**

The Eastern Sierra Council of Governments (Eastern Sierra Council Council), representing the Town of Mammoth Lakes, Bishop, Inyo County, and Mono County, launched the Eastern Sierra Energy Initiative (ESEI), a multi-agency, local energy partnership between Southern California Edison (SCE) and the Eastern Sierra Council. The initiative will be a rurally oriented partnership covering over 13,000 square miles and serving a total population of about 25,000. ESEI's scope and objective is to reduce energy use and demand by focusing on three key areas: (1) establishing a "culture" of energy efficiency; (2) working closely with SCE to more effectively implement existing programs; and (3) seeking innovative approaches to energy efficiency in our alpine environment.

**High Sierra Energy Initiative**

On January 18, 2005, the Town Council of Mammoth Lakes passed a resolution supporting an energy partnership between Southern California Edison (SCE) and the Town of Mammoth Lakes. The resolution designates the local nonprofit High Sierra Energy Foundation to implement the High Sierra Energy Initiative (HSEI) mission to "support a commitment to sustainable practices through energy efficiency, and will provide leadership and guidance in promoting, facilitating, and instituting such practices in the community." This partnership is part of $675 million in SCE energy efficiency programs authorized by the California Public Utilities Commission.

## 5.6.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

At this time, there is no absolute consensus in the State of California among CEQA lead agencies regarding the analysis of global climate change and the selection of significance criteria. In fact, numerous organizations, both public and private, have released advisories and guidance with recommendations designed to assist decision-makers in the evaluation of GHG emissions given the current uncertainty regarding when emissions reach the point of significance.

Lead agencies may elect to rely on thresholds of significance recommended or adopted by State or regional agencies with expertise in the field of global climate change (CEQA Guidelines Section 15064.7(c).) CEQA leaves the determination of significance to the reasonable discretion of the lead agency and encourages lead agencies to develop and publish thresholds of significance to use in determining the significance of environmental effects. However, neither the GBUAPCD nor the Town has yet established specific quantitative significance thresholds for GHG emissions for development projects. The GBUAPCD was consulted during the course of this analysis to determine the proper methodology to use for analyzing GHG emissions.

Based on guidance from the GBUAPCD, project-related emissions were quantified and compared to the California Air Pollution Control Officers Association (CAPCOA) numerical thresholds.[12] Projects in the Basin have recently used the numerical thresholds of the CAPCOA in prior CEQA reviews (e.g., the *Trail System Master Plan EIR*, July 2011). In January 2008, the California Air Pollution Control Officers Association (CAPCOA) released a white paper, entitled CEQA and

[12] Telephone conversation with Jan Sudomier from the Great Basin Unified Air Pollution Control District, April 16, 2014.

Climate Change, which examines various threshold approaches available to air districts and lead agencies for determining whether GHG emissions are significant, including a number of "non-zero" thresholds for land use development projects. Therefore, in the absence of promulgated numeric thresholds, the most conservative (lowest) numerical threshold suggested by CAPCOA, 900 metric tons per year ($MTCO_2eq/yr$), are considered adequate to serve and would be utilized for analysis of the proposed project.

## CEQA SIGNIFICANCE CRITERIA

Appendix G of the CEQA Guidelines contains the Modified Initial Study Environmental Checklist form used during preparation of the Modified Initial Study, which is contained in Appendix 11.1 of this SEIR. The Modified Initial Study includes questions relating to GHG emissions. The issues presented in the Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant adverse environmental impact if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (refer to Impact Statement GHG-1).

- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases (refer to Impact Statement GHG-2).

Based on these standards/criteria, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." If a potentially significant impact cannot be reduced to a less than significant level through the application of goals, policies, standards, or mitigation, it is categorized as a significant and unavoidable impact. The standards used to evaluate the significance of impacts are often qualitative rather than quantitative because appropriate quantitative standards are either not available for many types of impacts or are not applicable for some types of projects.

# 5.6.4 OVERVIEW OF PREVIOUS ENVIRONMENTAL ANALYSIS

At the time of the 1999 SPEIR document preparation, the CEQA Guidelines did not expressly address global climate change, and GHG analyses were not required under CEQA. The Town has incorporated the GHG emissions threshold questions from the CEQA Appendix G Checklist into this SEIR. The analysis below considers significance thresholds and addresses whether the project may have potentially significant impacts related to GHG emissions.

# 5.6.5 IMPACTS AND MITIGATION MEASURES

## GREENHOUSE GAS EMISSIONS

### GHG-1 GREENHOUSE GAS EMISSIONS GENERATED BY THE PROJECT WOULD NOT HAVE A SIGNIFICANT IMPACT ON GLOBAL CLIMATE CHANGE.

***Impact Analysis:*** The proposed project's GHG emissions have been calculated and refer to emissions that would be expected to occur in the absence of GHG reduction measures. GHG impacts associated with the proposed project are discussed below.

**Direct Project-Related Sources of Greenhouse Gases**

Direct GHG emissions for project-related conditions include emissions from construction activities, area sources, and mobile sources. Table 5.6-1, *Greenhouse Gas Emissions*, presents the estimated $CO_2$, $CH_4$, and $N_2O$ emissions.

**Table 5.6-1**
**Greenhouse Gas Emissions**

| Source | $CO_2$ | $CH_4$ | | $N_2O$ | | Total Metric Tons of $CO_2eq$ |
|---|---|---|---|---|---|---|
| | Metric Tons/year[1] | Metric Tons/year[1] | Metric Tons of $CO_2eq$[2] | Metric Tons/year[1] | Metric Tons of $CO_2eq$[2] | |
| **Direct Emissions** | | | | | | |
| ▪ Construction (amortized over 30 years) | 12.21 | 0.00 | 0.05 | 0.00 | 0.00 | 12.26 |
| ▪ Area Source | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ▪ Mobile Source | 336.06 | 0.02 | 0.45 | 0.00 | 0.00 | 336.44 |
| *Total Unmitigated Direct Emissions*[3] | *348.27* | *0.02* | *0.50* | *0.00* | *0.00* | *348.70* |
| **Indirect Emissions** | | | | | | |
| ▪ Energy | 336.53 | 0.01 | 0.34 | 0.00 | 1.4 | 368.24 |
| ▪ Solid Waste | 7.45 | 0.44 | 11 | 0.00 | 0.00 | 16.69 |
| ▪ Water Demand | 3.36 | 0.06 | 1.4 | 0.00 | 0.40 | 4.94 |
| *Total Unmitigated Indirect Emissions*[3] | *347.34* | *0.51* | *12.74* | *0.00* | *1.80* | *389.87* |
| **Total Project-Related Emissions**[3] | **738.57 $MTCO_2eq$/year** | | | | | |

Notes:
1. Emissions calculated using California Emissions Estimator Model (CalEEMod) computer model.
2. $CO_2$ Equivalent values calculated using the EPA Website, *Greenhouse Gas Equivalencies Calculator*, http://www.epa.gov/cleanenergy/energy-resources/calculator.html, accessed April 2014.
3. Totals may be slightly off due to rounding.

Refer to Appendix 11.4, *Air Quality and Greenhouse Gas Data*, for detailed model input/output data.

The California Emissions Estimator Model (CalEEMod) computer model outputs contained within the Appendix 11.4 *Air Quality and Greenhouse Gas Data*, were used to calculate mobile source, area source, and construction-related GHG emissions. Operational GHG estimations are based on energy emissions from natural gas usage and automobile emissions. CalEEMod relies upon construction phasing and project specific land use data to calculate emissions; refer to Appendix 11.4. GHGs associated with area sources and mobile sources would be 0.00 $MTCO_2eq$/year and 336.44 $MTCO_2eq$/year, respectively. GHG emissions from construction would result in 12.26 $MTCO_2eq$ for all construction phases. Construction GHG emissions are typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational

emissions.[13] Total project-related direct operational emissions would result in 348.70 $MTCO_2eq$/year.

**Indirect Project-Related Sources of Greenhouse Gases**

*Energy Consumption*. Energy Consumption emissions were calculated using the CalEEMod model and project-specific land use data. Electricity would be provided to the project site via SCE. The project would indirectly result in 368.24 $MTCO_2eq$/year due to energy consumption; refer to Table 5.6-1.

*Solid Waste*. Solid waste associated with operations of the proposed project would result in 16.69 $MTCO_2eq$/year; refer to Table 5.6-1.

*Water Demand*. The Mammoth Community Water District (MCWD) would be the main water supply provider to the proposed project. The project's water supply would be provided by local surface water, groundwater as well as recycled water sources. Emissions from indirect energy impacts due to water supply would result in 4.94 $MTCO_2eq$/year.

*Total Project-Related Sources of Greenhouse Gases*. As shown in Table 5.6-1, the total amount of project-related GHG emissions from direct and indirect sources combined would total 738.57 $MTCO_2eq$/year.

**Project Design Features**

The proposed project would incorporate several design features that reduce GHG emissions. The proposed project would incorporate sustainable practices which include energy and land use efficiency measures. A list of the proposed project's GHG reducing design features are provided below.

*Energy Saving Measures*

- South facing units feature deep balconies in front of window walls that act as a sun shade in combination with high, operable windows to provide the desired amount of solar gain and stack effect air circulation.

- A super insulated roof system would minimize thermal transfer through the roof with a combination of built-up rigid insulation above the structural deck and an additional layer of batt insulation applied below the deck.

- Dual method wall insulation would provide a high insular value, and a substantial thermal break in the exterior wall, reducing air infiltration and condensation within the wall cavity to create an extremely robust and long-lived thermal envelope.

- Extensive use of light emitting diode (LED) lighting would be used in a variety of lighting fixtures.

[13] The project lifetime is based on the standard 30 year assumption of the South Coast Air Quality Management District (http://www.aqmd.gov/hb/2008/December/081231a.htm).

- Weather-lock vestibule at the proposed pedestrian street entry would be positively pressurized to keep warmed or cooled air inside the building and untreated, unfiltered air out.

- The plaza level circulation and amenity spaces would include operable fenestration and in some areas fully opening wall panels to embrace the summer season's mild climate.

*Land Use*

- A proposed signature street level pedestrian porte cochere would serve as gateway access into the project from Minaret Road, allowing for pedestrian integration and improved circulation.

- Enhanced pedestrian access along Minaret Road would allow ease of access to and from hotel amenities and access between the existing 8050 Buildings A and B and the project (Building C as proposed).

- Deliver a LEED certifiable project consistent with the shared environmental values of the Town and the Applicant.

- Landscaping for the project would include a combination of planting areas. Along the northeast and southeast sides of the building, native plant communities, shrubs, and related groundcover would be utilized. Native trees (including Red Fir, Lodgepole Pine, Mountain Hemlock, Mountain Maple, Mountain Alder, Western Chokecherry, Western Water Birch, and Quaking Aspen) would be installed along the perimeter of the proposed structure.

- A Tree Protection/Preservation Plan would be implemented to preserve and protect existing trees, shrubs, and other plant materials including plants on adjoining properties. Existing Pine trees to be protected-in-place range from 10 to 24 inches at diameter breast height (DBH).

The project design features would further reduce the GHG emissions. However, as shown in Table 5.6-1, the project-related emissions would be 738.57 $MTCO_2eq/yr$, which are below the 900 $MTCO_2eq/yr$ threshold. As such, the GHG reductions resulting from project design features were not applied in CalEEMod due to the threshold not being exceeded.

**Conclusion**

As shown in Table 5.6-1, project-related GHG emissions would be 738.57 $MTCO_2eq/yr$, which are below the 900 $MTCO_2eq/yr$ threshold. The project's design features would further reduce project-related GHG emissions. As the project would not exceed the 900 $MTCO_2eq/yr$ threshold in an unmitigated condition, the proposed project would result in a less than significant impact with regards to GHG emissions.

***Applicable 1999 SPEIR Mitigation Measures:*** At the time of the 1999 SPEIR document preparation, the CEQA Guidelines did not expressly address global climate change, and GHG analyses were not required under CEQA.

***Additional Mitigation Measures:*** No additional mitigation measures are required.

***Level of Significance:*** Less Than Significant Impact.

## CONSISTENCY WITH APPLICABLE GHG PLANS, POLICIES, OR REGULATIONS

### GHG-2 IMPLEMENTATION OF THE PROPOSED PROJECT WOULD NOT CONFLICT WITH AN APPLICABLE GREENHOUSE GAS REDUCTION PLAN, POLICY, OR REGULATION.

***Impact Analysis:*** The Town does not currently have an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. However, the Town is currently updating the Mobility Element of the 2007 General Plan to establish goals, policies, actions, and infrastructure to achieve a progressive and comprehensive multimodal transportation system through implementation of "feet-first," sustainability, and smart-growth oriented principles. In addition, the Town is involved in the Eastern Sierra Energy Initiative (ESEI), created in partnership with SCE and the Eastern Sierra Council, represented by additional jurisdictions including Bishop, Inyo County, and Mono County. ESEI's scope and objective is to reduce energy use and demand by focusing on establishing a "culture" of energy efficiency, working closely with SCE to more effectively implement existing programs, and seeking innovative approaches to energy efficiency in our alpine environment. The Town implemented the High Sierra Energy Initiative (HSEI), in partnership with SCE to support a commitment to sustainable practices through energy efficiency, and will provide leadership and guidance in promoting, facilitating, and instituting such practices in the community.

As concluded in Impact Statement GHG-1 the proposed project would not generate a significant amount of GHGs in an unmitigated condition. GHG emissions would be further reduced with implementation of the proposed project design features. The project would not conflict with or impede implementation of reduction goals identified in AB 32 and other strategies to help reduce GHG emissions. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be less than significant in this regard.

***Applicable 1999 SPEIR Mitigation Measures:*** At the time of the 1999 SPEIR document preparation, the CEQA Guidelines did not expressly address global climate change, and GHG analyses were not required under CEQA.

***Additional Mitigation Measures:*** No additional mitigation measures are required.

***Level of Significance:*** Less Than Significant Impact.

# 5.6.6 CUMULATIVE IMPACTS

Table 4-1, *Cumulative Projects List*, identifies the related projects and other possible development in the area determined as having the potential to interact with the proposed project to the extent that a

significant cumulative effect may occur. The following discussions are included per topic area to determine whether a significant cumulative effect would occur.

## GREENHOUSE GAS EMISSIONS

- **GREENHOUSE GAS EMISSIONS GENERATED BY THE PROJECT AND OTHER RELATED CUMULATIVE PROJECTS, WOULD NOT HAVE A SIGNIFICANT IMPACT ON GLOBAL CLIMATE CHANGE.**

***Impact Analysis:*** As stated above, the 1999 SPEIR did not analyze GHG emission-related impacts. However, the proposed project would not result in a significant impact regarding GHG emissions, as the project would result in 738.57 $MTCO_2eq/yr$ under buildout conditions. Therefore, project related GHG impacts were determined to be less than significant as they were below the 900 $MTCO_2eq$ threshold. The background and formulation of the GHG threshold that was utilized is described under Section 5.6.3, *Impact Thresholds and Significance Criteria*.

On December 30, 2009, the Natural Resources Agency adopted the CEQA Guideline Amendments prepared by Office of Planning and Research (OPR), as directed by SB 97. On February 16, 2010, the Office of Administration Law approved the CEQA Guidelines Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The CEQA Guidelines Amendments became effective on March 18, 2010. The Natural Resources Agency originally proposed to add subdivision (f) to section 15130 to clarify that sections 21083 and 21083.05 of the Public Resources Code do not require a detailed analysis of GHG emissions solely due to the emissions of other projects (i.e., State CEQA Guidelines, Section 15130(a)(1); *Santa Monica Chamber of Commerce v. City of Santa Monica* (2002) 101 Cal.App.4th 786, 799). Rather, the proposed subdivision (f) would have provided that a detailed analysis is required when evidence shows that the incremental contribution of the project's GHG emissions is cumulatively considerable when added to other cumulative projects (i.e., *Communities for a Better Environment v. California Resources Agency* (2002), supra, 103 Cal.App.4th at 119-120). In essence, the proposed addition would be a restatement of law as applied to GHG emissions. Analysis of GHG emissions as a cumulative impact is consistent with case law arising under the National Environmental Policy Act (NEPA) (e.g., *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 538 F.3d 1172, 1215-1217 [9th Cir. 2008]). Other portions of the CEQA Guideline Amendments address how lead agencies may determine whether a project's emissions are cumulatively considerable (e.g., Proposed Sections 1506(h)(3) and 15064.4). However, public comments noted that the new subdivision merely restated the law, and was capable of misinterpretation. The Natural Resources Agency, therefore, determined that because other provisions of the CEQA Guideline Amendments address the analysis of GHG emissions as a cumulative impact, and because the reasoning of those is fully explained in the Initial Statement of Reasons, subdivision (f) should not be added to the CEQA Guidelines. The deletion was reflected in the revisions that were made available for further public review and comment on October 23, 2009, and was not adopted as part of the CEQA Guidelines Amendments that became effective on March 18, 2010.

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG

inventory.[14] GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective.[15] The additive effect of the project's GHG emissions would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the proposed project as well as other cumulative related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As the proposed project would result in a less than significant impact regarding GHG emissions, the project's cumulatively considerable GHG emissions are less than significant.

***Applicable 1999 SPEIR Mitigation Measures:*** At the time of the 1999 SPEIR document preparation, the CEQA Guidelines did not expressly address global climate change, and GHG analyses were not required under CEQA.

***Additional Mitigation Measures:*** No additional mitigation measures are required.

***Level of Significance:*** Less Than Significant Impact.

## CONSISTENCY WITH APPLICABLE GHG PLANS, POLICIES, OR REGULATIONS

- **IMPLEMENTATION OF THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS, WOULD NOT CONFLICT WITH AN APPLICABLE GREENHOUSE GAS REDUCTION PLAN, POLICY, OR REGULATION.**

***Impact Analysis*:** As described above, the 1999 SPEIR was not required to analyze GHG emissions per CEQA. However, the proposed project would not conflict with an adopted plan, policy, or regulation pertaining to GHGs. Additionally, the proposed project and all related cumulative projects would be subject to all applicable regulatory requirements, which would also reduce the GHG emissions of the project. Implementation of required regulatory requirements would ensure that the project would not conflict with or impede implementation of reduction goals identified in AB 32, SB 375, and other strategies to help reduce GHG emissions. Cumulative projects would be required to be consistent with the reduction goals of AB 32, SB 375, and other State and regional strategies to avoid significant GHG impacts. The proposed project would not generate a significant amount of GHG emissions and the proposed project would not result in a cumulatively considerable impact with regard to a conflict with an adopted GHG reduction plan, policy, or regulation. There are no other applicable plans, policies, or regulations that have been adopted by the GBUAPCD or the Town for the purpose of reducing GHG emissions. Therefore, impacts in this regard would be less than significant.

***Applicable 1999 SPEIR Mitigation Measures:*** At the time of the 1999 SPEIR document preparation, the CEQA Guidelines did not expressly address global climate change, and GHG analyses were not required under CEQA.

***Additional Mitigation Measures:*** No additional mitigation measures are required.

[14] California Air Pollution Control Officers Association, *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, 2008.

[15] Ibid.

***Level of Significance:*** Less Than Significant Impact.

## 5.6.7 SIGNIFICANT UNAVOIDABLE IMPACTS

No unavoidable significant impacts related to greenhouse gas emissions have been identified in this section.

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