4.11 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

This section includes a discussion of the current state of climate change science and greenhouse gas (GHG) emission sources in California; a summary of applicable federal, state, and local regulations; and an analysis of GHG- and climate change–related impacts that could occur with implementation of the alternatives.

4.11.1 Affected Environment

4.11.1.1 ENVIRONMENTAL SETTING

Attributing Climate Change—The Physical Scientific Basis

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (Intergovernmental Panel on Climate Change [IPCC] 2014:3, 5).

Climate change is a global problem and GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1,000 to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remain stored in the atmosphere (IPCC 2013:467).

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say, the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or microclimates. From the standpoint of NEPA or CEQA impact analysis, GHG impacts to global climate change are inherently cumulative.

Greenhouse Gas Emission Sources

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural

emissions sectors (California Air Resources Board [CARB] 2017a). In the United States, the main source of GHG emissions is electricity generation, followed by transportation. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB 2017a). According to the Nevada Division of Environmental Protection (NDEP), the transportation sector in Nevada contributes 33 percent of the GHG emissions in the state (NDEP 2016).

Emissions of CO_2 are byproducts of fossil fuel combustion. Methane, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. Nitrous oxide is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water), respectively, two of the most common processes for removing CO_2 from the atmosphere.

Effects of Climate Change on the Environment

The IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to provide the world with a scientific view on climate change and its potential effects. According to the IPCC global average temperature is expected to increase relative to the 1986–2005 period by 0.3 to 4.8 degrees Celsius (°C) (0.5 to 8.6 degrees Fahrenheit [°F]) by the end of the 21st century (2081–2100), depending on future GHG emission scenarios (IPCC 2014:SPM-8). According to the California Natural Resources Agency, temperatures in California are projected to increase 2.7°F above 2000 averages by 2050 and, depending on emission levels, 4.1 to 8.6°F by 2100 (California Natural Resources Agency [CNRA] 2012:2).

Physical conditions beyond average temperatures could be indirectly affected by the accumulation of GHG emissions. For example, changes in weather patterns resulting from increases in global average temperature are expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Based upon historical data and modeling, the California Department of Water Resources projects that the Sierra snowpack will experience a 25–40 percent reduction from its historic average by 2050 (DWR 2008:4). An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events (CNRA 2012:5). This scenario would place more pressure on California's levee/flood control system.

Alpine settings may be more susceptible to mass wasting (i.e., rock slides) during heavy rain events where soil saturation and erosive forces are more likely to mobilize the downhill movement of rock and other material. Therefore, if more precipitation falls as rain rather than snow as a result of climate change, there could be an increased risk of rock slide.

Another outcome of global climate change is sea level rise. Sea level rose approximately 7 inches during the last century and, assuming that sea level changes along the California coast continue to track global trends, sea level along the state's coastline in 2050 could be 10–18 inches higher than in 2000 and 31–55 inches higher by the end of this century (CNRA 2012:9).

Changes in precipitation patterns and increased temperatures are expected to alter the distribution and character of natural vegetation and associated moisture content of plants and soils. An increase in frequency of extreme heat events and drought are also expected. These changes are expected to lead to increased frequency and intensity of large wildfires (CNRA 2012:11).

Existing Squaw Valley and Alpine Meadows GHG Emissions Reduction Measures

The Squaw Valley Ski Area (Squaw Valley) and Alpine Meadows Ski Area (Alpine Meadows) have taken voluntary actions to reduce GHG emissions associated with its existing operations. The resort published the *Environmental & Community Report 2014* outlining actions it has undertaken to reduce GHG emissions (Squaw Valley | Alpine Meadows 2014). All data shown below (including estimated annual reduction in CO_2 emissions) are provided in the resort's report but have not been independently verified in this Draft EIS/EIR

and are not used in the GHG emissions modelling. The data is provided for general informational purposes. Squaw Valley and Alpine Meadows (both operated by Squaw Valley Ski Holdings) generated between 9,722 and 13,765 metric tons of CO_2 (equivalent) annually in the years 2010–2013. Actions voluntarily implemented to reduce GHG emissions include:

- upgrade to boiler system and replacement of older heating units at the Village at Squaw Valley (39-ton CO_2 reduction);
- installation of automated heating controls to reduce temperature fluctuations at High Camp (447-metric-ton CO_2 reduction);
- replacement of incandescent and other older bulbs with more efficient bulbs, including LED bulbs (82-metric-ton CO_2 reduction);
- installation of four electric car charging stations (no reduction estimate provided); and
- shuttle buses between Squaw Valley and Alpine Meadows resorts (85-ton CO_2 reduction).

A number of other actions have been implemented by the resort, and several more are planned (e.g., replacement of heating systems, more efficient thermostats, installation of solar panels, payment of fees for carbon-offsetting projects). The resort has previously committed to a 10-percent emissions reduction from 2014 levels by 2020 through the *Sustainable Slopes Initiative* (National Ski Areas Association 2017). In addition, in January 2018, Squaw Valley Ski Holdings (SVSH) signed a memorandum of understanding (MOU) with Liberty Utilities, the local electrical utility that serves Squaw Valley and Alpine Meadows, to provide 100% of the electricity to Squaw Valley and Alpine Meadows from renewable sources. The intent of the MOU is to achieve this objective by December 1, 2018. However, authorizations from the California Public Utilities Commission (CPUC) and other regulatory and technical steps must be completed before the goal of 100% renewable electricity deliveries can be reached. Therefore, at the time of writing this Draft EIS/EIR, it is not considered a certainty that the MOU's target date of December 1, 2018 can be achieved.

4.11.1.2 REGULATORY SETTING

Federal

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for implementing the federal Clean Air Act (CAA) and its amendments. The Supreme Court of the United States ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA and that EPA has the authority to regulate emissions of GHGs. As a result of the ruling, EPA is taking steps to regulate GHG emissions and lending support to state and local agencies' efforts to reduce GHG emissions.

The Forest Service's Fiscal Year 2015–2020 Strategic Plan provides a framework for considering climate change. The first objective under the goal of sustaining national forests and grasslands is to "foster resilient adaptive ecosystems to mitigate climate change." Our landscapes face a range of growing environmental stressors, including fire, drought, insect and disease infestations, extreme weather events, increasing temperatures, and changes in soil health. Responding to climate change, therefore, is complicated by the enormity, complexity, and interconnectedness of these impacts. Given the importance of forest ecosystems in providing CO_2 sequestration, various plans, policies, and rules (e.g., the 2012 Planning Rule) direct the Forest Service to consider carbon stocks and carbon sequestration in its planning and activities.

National Program to Cut GHG Emissions and Improve Fuel Economy for Cars and Trucks

On August 28, 2014, EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) finalized a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the U.S. (White House Archives 2012). EPA proposed the first national GHG emissions standards under the CAA, and NHTSA proposed Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act. This proposed national program allows automobile

manufacturers to build a single light-duty national fleet that satisfies all requirements under both federal programs and the standards of California and other states. While this program will increase fuel economy to the equivalent of 54.5 miles per gallon for cars and light-duty trucks by Model Year 2025, additional phases are being developed by NHTSA and EPA that address GHG emission standards for new medium- and heavy-duty trucks (White House Archives 2014). This standard is under midterm evaluation by EPA (EPA 2017).

State

Plans, policies, regulations, and laws established by state agencies are generally presented in the order they were established.

Executive Order S-3-05

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

This executive order was the subject of a California Appellate Court decision, *Cleveland National Forest Foundation v. San Diego Association of Governments* (SANDAG) (November 24, 2014) 231 Cal.App.4th 1056, which was reviewed by the California Supreme Court in January 2017. The case addressed the adequacy of the GHG analysis in the EIR SANDAG prepared for its 2011 Regional Transportation Plan. The Supreme Court decided a singular question in its decision, which was released on July 13, 2017. The California Supreme Court ruled that SANDAG did not abuse its discretion by declining "to adopt the 2050 goal as a measure of significance in light of the fact that the Executive Order does not specify any plan or implementation measures to achieve its goal."

In addition to concluding that an EIR need not use this executive order's goal for determining significance, the court described several principles relevant to CEQA review of GHG impacts, including: (1) EIRs should "reasonably evaluate" the "long-range GHG emission impacts for the year 2050," and (2) the 2050 target is "grounded in sound science" in that it is "based on the scientifically supported level of emissions reduction needed to avoid significant disruption of the climate." The court also ruled that "an EIR's designation of a particular adverse environmental effect as 'significant' does not excuse the EIR's failure to reasonably describe the nature and magnitude of the adverse effect." The court also recognized that the 40-percent reduction in 1990 GHG levels by 2030 is "widely acknowledged" as a "necessary interim target to ensure that California meets its longer-range goal of reducing greenhouse gas emission 80 percent below 1990 levels by the year 2050." Senate Bill (SB) 32 has since defined the 2030 goal in statute (discussed below).

Assembly Bill 32, California Global Warming Solutions Act of 2006

In September 2006, Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006, Assembly Bill (AB) 32. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also states: "(a) The statewide greenhouse gas emissions limit shall remain in effect unless otherwise amended or repealed. (b) It is the intent of the Legislature that the statewide greenhouse gas emissions limit continue in existence and be used to maintain and continue reductions in emissions of greenhouse gases beyond 2020. (c) The state board [CARB] shall make recommendations to the Governor and the Legislature on how to continue reductions of greenhouse gas emissions beyond 2020" (California Health and Safety Code, Division 25.5, Part 3, Section 38551).

Low Carbon Fuel Standard

In January 2007, Executive Order S-01-07 established a Low Carbon Fuel Standard (LCFS). The Order calls for a statewide goal to be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and that a LCFS for transportation fuels be established for California. The LCFS

applies to all refiners, blenders, producers, or importers ("Providers") of transportation fuels in California, including fuels used by off-road construction equipment (Wade pers. comm. 2017). The LCFS is measured on a full fuels cycle basis and may be met through market-based methods by which providers exceeding the performance required by an LCFS receive credits that may be applied to future obligations or traded to Providers not meeting LCFS.

In June 2007, CARB adopted the LCFS as a Discrete Early Action item under AB 32 pursuant to Health and Safety Code Section38560.5, and, in April 2009, CARB approved the new rules and carbon intensity reference values with new regulatory requirements taking effect in January 2011. The standards require providers of transportation fuels to report on the mix of fuels they provide and demonstrate they meet the LCFS intensity standards annually. This is accomplished by ensuring that the number of "credits" earned by providing fuels with a lower carbon intensity than the established baseline (or obtained from another party) is equal to or greater than the "deficits" earned from selling higher intensity fuels.

After some disputes in the courts, CARB re-adopted the LCFS regulation in September 2015, and the LCFS went into effect on January 1, 2016.

Senate Bill 375

SB 375, signed by the governor in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to develop a sustainable communities strategy (SCS) or alternative planning strategy, showing prescribed land use allocation in each MPO's regional transportation plan. CARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035.

The Sacramento Area Council of Governments (SACOG) serves as the MPO for Placer, Sacramento, El Dorado, Yuba, Sutter, and Yolo Counties, excluding those lands located in the Lake Tahoe Basin. The project site is located in Placer County (County) and not within the Lake Tahoe Basin. SACOG adopted its Metropolitan Transportation Plan (MTP)/SCS 2035 in 2012 and subsequently adopted the 2020 MTP/SCS Update in February 2016. SACOG was tasked by CARB to achieve a 9-percent per capita reduction compared to 2012 emissions by 2020 and a 16-percent per capita reduction by 2035, which CARB confirmed the region would achieve by implementing its SCS (CARB 2013). The MTP/SCS forecasted land use development by community types: Center and Corridor Communities, Established Communities, Developing Communities, Rural Residential Communities, and Lands Not Identified for Development in the MTP/SCS Planning Period. Olympic Valley, including the project site, is shown in the Lands Not Identified for Development category, which is defined as areas of the region that are not expected to develop to urban levels by 2035. The MTP/SCS acknowledges that some development may occur in these areas and that it is difficult to estimate where growth may occur on a parcel-by-parcel basis. (SACOG 2016).

Assembly Bill 1504 of 2010, Forest Resources: Carbon Sequestration

AB 1504 requires the Board of Forestry and Fire Protection to adopt district forest practice rules and regulations in accordance with specified policies to, among other things, ensure the continuous growing and harvesting of commercial forest tree species (CARB 2017a:4–5). AB 1504 also requires the Board of Forestry and Fire Protection to ensure that its rules and regulations that govern the harvesting of commercial forest tree species consider the capacity of forest resources to sequester CO_2 emissions sufficient to meet or exceed the sequestration target of 5 million metric tons of CO_2 equivalent per year (MT CO_2e/year) (net), as established in the first Climate Change Scoping Plan.

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program, which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of regulatory standards for vehicle model years 2017 through 2025. The new regulations strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric

vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the state. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (CARB 2017b).

Senate Bill X1-2, the California Renewable Energy Resources Act of 2011, and Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011–2013 compliance period, at least 65 percent for the 2014–2016 compliance period, and at least 75 percent for 2016 and beyond. In October 2015, SB 350 was signed by Governor Brown, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from renewable resources by 2030.

Executive Order B-30-15

On April 20, 2015 Governor Brown signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The governor's EO aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 sets the next interim step in the state's continuing efforts to pursue the long-term target expressed under Executive Order S-3-05 to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the United States to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016

SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the state's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050. In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030.

California Building Efficiency Standards of 2016 (Title 24, Part 6)

Buildings in California are required to comply with California's Energy Efficiency Standards for Residential and Nonresidential Buildings established by the California Energy Commission in Title 24, Part 6 of the CCR. These standards were first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption and are updated on an approximately 3-year cycle to allow consideration and possible incorporation of new energy-efficient technologies and methods. All buildings for which an application for a building permit is submitted on or after January 1, 2017, must follow the 2016 standards (CEC 2015). Energy-efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

Climate Change Scoping Plan

In December 2008, CARB adopted its first version of its *Climate Change Scoping Plan*, which contained the main strategies California will implement to achieve the mandate of AB 32 (2006) to reduce statewide GHG emissions to 1990 levels by 2020. In May 2014, CARB released and subsequently adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching the goals of AB 32 (2006) and evaluate the progress made between 2000 and 2012 (CARB 2014). After releasing multiple versions of proposed updates in 2017 CARB adopted the next version titled *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan) in December of that same year (CARB 2017a). The 2017 Scoping Plan indicates that California is on track to achieve the 2020 statewide GHG target mandated by AB 32 of 2006 (CARB 2017a:9). It also lays out the framework for achieving the mandate of SB 32 of 2016 to reduce statewide GHG emissions to at least 40 percent below 1990 levels by the end of 2030 (CARB 2017a). The 2017 Scoping Plan identifies the GHG reductions needed by each emissions sector.

The 2017 Scoping Plan also states that while achieving "no net increase" in GHG emissions is an appropriate overall objective of projects evaluated under CEQA if conformity with an applicable local GHG reduction plan cannot be demonstrated, it may not be appropriate or feasible for every development project to mitigate its GHG emissions to zero and that an increase in GHG emissions due to a project may not necessarily imply a substantial contribution to the cumulatively significant environmental impact of climate change (CARB 2017a:101–102). The Scoping Plan further notes that lead agencies have the discretion to develop evidence-based numeric thresholds consistent with the Scoping Plan, the state's long-term GHG goals, and climate change science.

Local

Placer County Air Pollution Control District

In October 2016, the Placer County Air Pollution Control District (PCAPCD) Board of Directors adopted its *Review of Land Use Projects under CEQA Policy* document, establishing thresholds of significance for GHG emissions and criteria air pollutants for projects under CEQA review in the County. The document serves as guidance for lead agencies reviewing GHG impacts associated with a project. In the development of these thresholds, the board considered statewide regulations to accomplish statewide emissions reduction targets for GHGs. PCAPCD has prepared a *CEQA Thresholds of Significance Justification Report*, which contains the rationale, modeling analyses, and factual data to justify the thresholds of significance that have been established (PCAPCD 2016). PCAPCD has established a de minimis level of 1,100 $MTCO_2e$/year for project operations and 10,000 MT CO_2e/year for construction activities. In accordance with PCAPCD, projects that would not exceed these levels would not make a considerable contribution to climate change.

Placer County General Plan

The *Placer County General Plan*, which was originally adopted in 1994 and last updated in 2013, includes the following policy related to addressing GHG emissions and climate change in Placer County (Placer County 2013):

- **Policy 6. F.5**. The County shall encourage project proponents to consult early in the planning process with the County regarding the applicability of Countywide indirect and areawide source programs and transportation control measures (TCM) programs. Project review shall also address energy-efficient buildings and site designs and proper storage, use, and disposal of hazardous materials.

4.11.2 Analysis Methods

4.11.2.1 METHODS AND ASSUMPTIONS

All GHG emissions modelling results and supporting data are provided in Appendix G. Short-term construction-generated greenhouse gas emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 computer program as recommended by PCAPCD and other air districts

in California. Modeling was based on project-specific information (e.g., structure size, area to be graded, area to be paved), where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use types. Emissions from the use of helicopters and off-road vehicles for construction were estimated using available emission factors and the applicable module in CalEEMod (SCAQMD 2017).

The loss in sequestered carbon associated with anticipated tree removal was estimated in CalEEMod using the vegetation module. The types and amounts of vegetation that would be removed permanently because of construction were estimated as part of the impact analysis presented in Section 4.12, "Vegetation." A conservative approach was taken for the GHG modelling and it was assumed that 500 trees would be removed (see Appendix G), which is above the number of affected trees identified for each action alternative in Section 4.12, "Vegetation" (the combination of removed trees and trees where canopies could be affected does not exceed 330 trees for any action alternative). Total one-time GHG emissions from the loss in carbon sequestration were attributed to the construction phase of the project as this is when trees would be removed. No additional sequestration benefits were assumed from potential new tree plantings associated with mitigation activities.

Operational GHG emissions were estimated using a variety of sources and models. Mobile-source emissions were estimated using the emission factors provided in CalEEMod (SCAQMD 2017) and estimates of project-generated vehicle trips and vehicle miles traveled (VMT) that were developed as part of the analysis presented in Section 4.7, "Transportation and Circulation." Development of the number of vehicle trips and VMT generated by the project took into account the additional VMT as a result of increases in visitors to Squaw Valley and Alpine Meadows and a reduction in VMT from the elimination of shuttle services, as well as visitor vehicle trips between mountains.

Winter-time emissions from the use of Gazex exploders were estimated based on the quantity of propane needed for each explosion and assumed maximum level of avalanche control needed. Indirect emissions associated with energy demand from the operation and maintenance of the gondola were estimated using energy intensity of running the system at full capacity for the necessary hours during the winter season as well as running the system for maintenance purposes during the off-season.

As described in Section 2.2.6, "Resource Protection Measures," the project incorporates a number of Resource Protection Measures (RPMs) designed to avoid and minimize environmental effects. These RPMs are considered part of the project by the Forest Service and will be conditions of approval of the Placer County Conditional Use Permit (CUP). The text of all RPMs is provided in Appendix B. The potential effects of implementing the action alternatives are analyzed as follows: The effect of the action alternatives was determined, relevant RPMs were applied, and the effectiveness of reducing adverse effects was determined. If additional measures were needed to further reduce effects, they were identified.

As it relates to CEQA, the significance of impacts is determined before RPMs are implemented. The analysis then determines whether the RPMs would reduce significant impacts to a less-than-significant level. If significant impacts would remain, mitigation measures are added, as feasible, to further reduce the significant impact. All RPMs, as well as additional mitigation measures, would be included in the Placer County mitigation monitoring and reporting program, and their implementation would be ensured by the CUP's conditions of approval. All RPMs are considered roughly proportional and have an essential nexus to the impacts they reduce.

4.11.2.2 EFFECT ANALYSIS AND SIGNIFICANCE CRITERIA

NEPA Indicators

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the action alternatives. Under NEPA, impacts should be addressed in proportion to their significance (40 CFR 1502.2[b]), meaning that severe impacts should be described in more detail than less consequential impacts. This is intended to help decision

makers and the public focus on the project's key effects. The evaluation of effects considers the magnitude, duration, and significance of the changes. Changes that would improve the existing condition if they occur are noted and considered beneficial, and detrimental impacts are characterized as adverse. Where there would be no change, a "no effect" conclusion is used. The Forest Service has determined that the action alternatives could affect GHG emissions and climate change and could be affected by climate change. The following analytical indicators are used to inform the Forest Service's determination of impacts:

- Compliance with local, state and federal regulations regarding GHG emissions (including Assembly Bill 32 recommendations and Placer County Air Pollution Control District thresholds) **(Impact 4.11-1)**
- Quantification of GHG emissions associated with construction and operation of the project, including power generation, as compared with the existing condition **(Impact 4.11-1)**
- Quantification of GHG emissions related to potential changes in traffic volumes **(Impact 4.11-1)**
- Discussion of the impact of climate change on the operations of the proposed project and the potential effects of climate change on the project's environmental impacts **(Impact 4.11-2)**
- Discussion of potential GHG emissions associated with the proposed project and alternatives and potential contributions to climate change **(Impact 4.11-1)**
- Identification of BMPs to reduce GHG emissions **(Impact 4.11-1)**

CEQA Criteria

Based on the Placer County CEQA checklist, Appendix G of the State CEQA Guidelines, and GHG policies and PCAPCD thresholds of significance, implementing any of the alternatives would result in a significant impact related to GHG emissions and climate change if it would:

- generate greenhouse gas emissions, either directly or indirectly, that may have a significant and/or cumulative impact on the environment (i.e., exceed 1,100 MT CO_2e/year) **(Impact 4.11-1)**; or
- conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gasses **(Impact 4.11-1)**.

4.11.2.3 ISSUES NOT DISCUSSED FURTHER

All issues related to GHG emissions and climate change are analyzed here except for one element of one NEPA indicator. The effects of climate change on the project's environmental impacts are addressed as appropriate within the individual impact sections in Chapter 4 of this EIS/EIR. For example, the effects of climate change on avalanche risk is considered in the evaluation of public safety impacts in Section 4.6, "Public Safety."

4.11.3 Direct and Indirect Environmental Consequences

4.11.3.1 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Impact 4.11-1 (Alt. 1): Greenhouse Gas Emissions

Alternative 1 – No Action Alternative would result in a continuation of existing conditions. There would be no construction or operational activities that would result in substantial temporary increases in GHG emissions. There would be **no effect** under both NEPA and CEQA.

Under Alternative 1 – No Action Alternative, the Tahoe National Forest (TNF) and Placer County would not provide necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions, with no new construction and no installation and operation of new facilities, continued operation of the winter shuttle service between the Squaw Valley and Alpine Meadows base areas, and continued use of personal vehicles by individuals to move between the two base areas. No increases in long-term energy demand or vehicle trips, relative to existing conditions, would occur. Therefore, there would be no increase or decrease in generation of GHG emissions.

NEPA Effects Conclusion
With no increase or decrease in generation of GHG emissions, there would be **no effect** related to this issue.

CEQA Determination of Effects
With no increase or decrease in generation of GHG emissions, there would be **no effect** related to this issue.

Mitigation Measures

No mitigation measures are required.

Impact 4.11-2 (Alt. 1): Impacts of Climate Change on the Project

Alternative 1 – No Action Alternative would result in a continuation of existing conditions. There would be no land development that could be exposed to increased risks and changes in climate patterns. There would be **no effect** under both NEPA and CEQA.

Under Alternative 1 – No Action Alternative, TNF and Placer County would not provide necessary authorizations to allow construction of a gondola or Gazex facilities. The outcome would be a continuation of existing conditions, with no new construction and no installation and operation of new facilities. Changes in future climate patterns would have no new effects as there would be no new development.

NEPA Effects Conclusion
With no new development occurring, there would be **no effect** related to this issue.

CEQA Determination of Effects
With no new development occurring, there would be **no effect** related to this issue.

Mitigation Measures

No mitigation measures are required.

4.11.3.2 ALTERNATIVE 2

Impact 4.11-1 (Alt. 2): Greenhouse Gas Emissions

Under Alternative 2, construction and operation of the new gondola, and associated components, would result in GHG emissions. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to increases in GHG emissions would result in a **minorly adverse** effect because the project would contribute a small amount of net GHG emissions to the cumulative global climate change problem. RPMs AQ-17 and AQ-18 would reduce construction-related GHG emissions and mitigate this effect. Under CEQA, the project would not exceed applicable PCAPCD construction or operational thresholds for GHG emissions and this impact would be **less than significant** for both construction and operational phases. In addition, RPMs AQ-17 and AQ-18 would reduce construction-related GHG emissions by requiring the use of cleaner fuel in construction equipment and limiting idle times for construction vehicles. With implementation of these two RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Construction-related activities that would generate GHG emissions from exhaust include worker commute trips, haul trucks and a helicopter carrying supplies and materials to, from, and within the project site, and off-road construction equipment (e.g., dozers, loaders, excavators, off-highway vehicles). Construction may require an onsite and temporary construction office that would require electricity. Operation of Alternative 2 would result in indirect GHG emissions associated with electricity use required to operate the gondola, vehicle exhaust emissions associated with maintenance personnel during the off-season, increases in VMT associated with increased visitors during winter months, and emissions from combustion of propane from Gazex use during avalanche control. Emissions estimated for construction and operational activities are summarized in Table 4.11-1. Emission modelling results and supporting data are provided in Appendix G.

Table 4.11-1 Summary of Project-Generated Greenhouse Gas Emissions

Construction Emissions	GHG Emissions
Helicopter Use	38 MT CO_2e
Tree Removal (loss of sequestered CO_2)	100 MT CO_2e
Other Construction Equipment and construction office	430 MT CO_2e
Construction Total	**568 MT CO_2e**
Operational Emissions	**GHG Emissions**
Gondola Operation (Base Terminals and Mid-Stations)	313 MT CO_2e/year
Gazex Exploders	<1 MT CO_2e/year
Mobile-Sources	430 MT CO_2e/year
Maintenance Vehicles	12 MT CO_2e/year
Operational Total	**755 MT CO_2e/year**

Notes: GHG= greenhouse gas; MT CO_2e = metric tons of carbon dioxide equivalents

Source: Modeling conducted by Ascent Environmental in 2018

As shown above, construction would result in one-time emissions of 568 MT CO_2e that would be emitted during the construction phase, anticipated to last one construction season (i.e., 200 days). 100 MT CO_2e of these emissions is attributed to the loss of sequestered CO_2 (i.e., carbon stocks) from the removal of trees during construction. As stated previously in the description of methods and assumptions, the modelling assumed removal of 500 trees, which exceeds the estimated amount of tree removal for each action alternative identified in Section 4.12, "Vegetation." Also as stated previously, no additional sequestration benefits were assumed from potential new tree plantings associated with mitigation activities. The modelling also did not consider that some of the trees that would be removed would be among those identified as being in poor health by the Registered Professional Forester (RPF) during the arborist survey and recommended by the RPF for removal. Removal of these trees could provide an overall benefit to forest health, and thereby increase the growth rate and rate of carbon sequestration by remaining trees. The modelled loss of 100 MT CO_2e sequestration from project implementation would have little to no influence on the overall carbon stocks provided by the thousands of acres of forest land on the TNF.

Considering the combined long-term operational GHG emissions from Gazex operation, gondola operation, vehicle exhaust, and maintenance activities, the project would result in emissions of 755 MT CO_2e/year (Table 4.11-1). The 313 MT CO_2e/year of GHG emissions attributed to gondola operations in Table 4.11-1 assumes electricity delivered by Liberty Utilities comes from its existing portfolio of energy sources (including renewable energy sources) and associated GHG emissions per kilowatt hour (kWh) of generation. As identified previously in the discussion of "Existing Squaw Valley and Alpine Meadows GHG Emissions Reduction Measures" in Section 4.11.1.1, "Environmental Setting," SVSH is currently finalizing contracts with Liberty Utilities and seeking approval from the CPUC to have 100 percent of the electricity delivered to Squaw Valley and Alpine Meadows come from renewable sources by December 2018. However, at this time, the appropriate contracts and agreements are not in place. Nonetheless, if SVSH achieves its commitment

by 2018, energy-related GHG emissions (i.e., 313 MT CO_2e/year) would be zero, and total operational GHG emissions would be reduced to 470 MT CO_2e/year.

Considering that the project's GHG emissions would not exceed the PCAPCD adopted threshold of significance of 10,000 MT CO_2e/year for construction emissions or the de minimis level of 1,100 MT CO_2e/year for operations, the project would not result in a substantial cumulative contribution to climate change or conflict with plans or policies in place for the purpose of reducing GHG emissions.

RPMs AQ-17 and AQ-18 would reduce construction-related GHG emissions by requiring the use of cleaner fuel in construction equipment and limiting idle times for construction vehicles. However, emission reductions from these measures are not reflected in the results provided in Table 4.11-1.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to generation of GHG emissions and climate change would result in a **minorly adverse** effect because construction and long-term operations would contribute a small amount of net GHG emissions to the cumulative global climate change problem. These effects would be mitigated through implementation of RPMs AQ-17 and AQ-18.

CEQA Determination of Effects

Alternative 2 would result in an increase in GHG emissions associated with short-term construction and long-term operation of the project. However, emissions would not exceed applicable PCAPCD construction thresholds or operational de minimis levels. Under CEQA, and using the CEQA criteria, this impact would be **less than significant** for project construction and **less than significant** for project operations. RPMs AQ-17 and AQ-18 would further reduce construction-related GHG emissions by requiring the use of cleaner fuel for construction equipment and limiting idle times for construction vehicles. However, these RPMs would not be necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs AQ-17 and AQ-18 as mitigation measures would reduce the effects of GHG emissions from construction vehicles but are not necessary to reduce a significant effect.

Impact 4.11-2 (Alt. 2): Impacts of Climate Change on the Project

Climate change is anticipated to result in changes to local weather patterns in California and within the project area, including increases in average temperatures and decreases in snowpack. These changes may lead to increased risk of wildfires, mass wasting (e.g., rockslides), and avalanche risk. However, fire protection agencies would continue to monitor fire risk and serve the area as needed. Further, the project would not include any new residences or occupied structures, and would not be operational (other than for maintenance and repairs) during the times of the year when fire risk is high or when heavy rain could increase the risk for rockslides. Many of the project structures are also primarily metal (e.g., gondola towers, Gazex exploders) and are not highly susceptible to fire damage. In addition, the project would include eight new Gazex exploders specifically designed to reduce avalanche risk in the vicinity of *the Buttress* area and for some towers associated with the Alternative 2 alignment. For these reasons, local changes in weather patterns and associated effects would not pose additional risk on the project. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be a **minorly adverse** effect on the project from climate change because fire and avalanche risk could increase to a small degree in the project area. There are no applicable RPMs that would mitigate this effect. Under CEQA and using the CEQA criteria, this impact would be **less than significant** because climate change would not adversely affect the project. There are no applicable RPMs that would reduce this effect.

As discussed above in Section 4.11.1, "Environmental Setting," global climate change may result in local effects in California and within the project area (i.e., Sierra Nevada). Expected changes in climate patterns affecting the project include:

- increases in average temperatures, extreme heat days and drought, leading to increased frequency of large wildfires;
- decreases in snowfall/snowpack and increases in rain, resulting in fewer snow days and greater risk for landslides (e.g., rockslides, mudslides, rock fall, debris flows) during heavy rain events;
- increased risk of avalanches associated with changes to precipitation and snowmelt patterns.

The project area is within a California Department of Forestry and Fire Protection–designated very high fire severity zone, thus, prone to increased risk for wildfire, especially if future conditions become more favorable for increases in wildfires. Although much of the project area is designated as a very high fire hazard severity zone, the project would not result in the placement of housing and other structures that would contain substantial numbers of people in a wildland area. In addition, many project structures are primarily metal (e.g., gondola towers, Gazex exploders) and are not highly susceptible to fire damage. Further, fire protection in the project area would be provided by the Squaw Valley Fire Department and North Tahoe Fire Protection Agency, who both have an established defensible space program and would subject all structures constructed by the project to all the requirements of the program, including annual physical inspections of every structure in the respective district's jurisdiction for compliance with California's defensible space laws. Fire protection agencies currently responsible for the project area would continue to operate, monitoring and assessing fire risk, to minimize injury and damage to people or structures. Because the project would not result in the placement of structures where people reside, or work on a continuous basis, in a wildland area, fire risk would be minimal. Further, other than for maintenance and repairs, the gondola would only operate during winter months when fire risk is greatly reduced; thus, people using the new gondola, and winter time employees, would not be exposed to higher fire risk.

Given that the project is located within the Sierra Nevada, where snow levels are anticipated to decline in the future, snow-related recreational activities could also decline. However, reductions in snow pack would have no physical effect on the project. Further, with anticipated increases in precipitation as rain and reduction in snowpack, along with increased risk for wildfire, the potential for landslide events (e.g., rockslides, mudslides, rock fall, debris flows) to occur could increase. The risk for landslides currently exists and may increase in the future with changing climate conditions. Human-related causes of landslides typically include substantial excavation of slope, loading of slope, water reservoir drawdown, deforestation, over irrigation, mining, artificial vibration, and water leakage from utilities (U.S. Geological Survey 2004). Of these causes, only excavation is relevant to the project. However, the project would be limited to minor ground disturbance for installation of towers and terminals and would not alter existing slopes or remove substantial amounts of vegetation; thus, it would not result in increased potential for erosion that could lead to landslides. Further, as discussed in Section 4.16, "Soils and Geology," debris flows are not a significant hazard at the project site. The proposed alignment would not be constructed within areas where debris flows typically occur, thus minimizing the potential to expose people or structures to debris flows. The project would not physically alter the existing mountain terrain in a way that would increase the risk of landslide events or result in the placement of people or structures in hazard-prone areas.

Regarding avalanche risk, Squaw Valley and Alpine Meadows already regularly monitor avalanche hazards and implement avalanche forecasting and prevention measures on an ongoing basis, such as triggering small slides to reduce excessive buildup of snow. If climate change were to result in conditions that are more prone to avalanches, the existing avalanche management program would continue to purposely trigger avalanches at smaller sizes to reduce risk from larger avalanches. In addition, the project would install eight new Gazex exploders specifically designed and located in key areas to more efficiently control avalanche hazards compared to existing methods (i.e., artillery). Thus, avalanche risk would be adequately managed into the future, even with potential climate changes.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to impacts of climate change on the project would result in a **minorly adverse** effect because fire and avalanche risk could increase to a small degree in the project area. However, these effects would not result in increases in risk of injury to people or structures. There are no applicable RPMs that would mitigate this effect.

CEQA Determination of Effects

The project would result in a new gondola connecting Squaw Valley and Alpine Meadows that would operate during the winter season only. Impacts from changes in local weather patterns due to climate change could result in increased risk of fire, avalanche, increased potential for rockslides, and reduced snowpack. However, the project would include new technology specifically designed to more efficiently minimize avalanche risk and fire protection activities would continue to occur in the area as they do today. Reductions in snowpack would not result in physical effects on the project. The risk for rockslides currently exists and may increase in the future, but the project would not result in any changes that could increase this risk. Further, the project would not physically alter the existing mountain terrain in a way that would increase the risk of landslide events or result in the placement of people or structures in hazard-prone areas. Under CEQA, and using the CEQA criteria, impacts from climate change on the project would be **less than significant.** There are no applicable RPMs that would reduce this impact.

Mitigation Measures

No mitigation measures are required.

4.11.3.3 ALTERNATIVE 3

Impact 4.11-1 (Alt. 3): Greenhouse Gas Emissions

Under Alternative 3, construction and operation of the new gondola, and associated components, would result in GHG emissions. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to increases in GHG emissions would result in a **minorly adverse** effect because the project would contribute a small amount of net GHG emissions to the cumulative global climate change problem. RPMs AQ-17 and AQ-18 would reduce construction-related GHG emissions and mitigate this effect. Under CEQA, the project would not exceed applicable PCAPCD construction or operational thresholds for GHG emissions; therefore, this impact would be **less than significant** for both construction and operational phases. In addition, RPMs AQ-17 and AQ-18 would reduce construction-related GHG emissions by requiring the use of cleaner fuel in construction equipment and limiting idle times for construction vehicles. With implementation of these two RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Primary components for Alternative 3 would be the same as described above for Alternative 2 (e.g., towers, mid-stations, base terminals, Gazex system). Thus, construction activities and duration would also be the same. Further, under Alternative 3, the new gondola would operate in the same manner as for Alternative 2, only with a slightly different alignment. Operational activity and increases in visitation to Squaw Valley and Alpine Meadows would be the same for Alternative 3 as described for Alternative 2. Therefore, GHG emissions were not remodeled and increases in GHG emissions and impacts are considered the same as for Alternative 2.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to generation of GHG emissions and climate change would result in a **minorly adverse** effect because construction and long-term operations would contribute a small amount of net GHG emissions to the cumulative global climate change problem. These effects would be mitigated through implementation of RPMs AQ-17 and AQ-18.

CEQA Determination of Effects

Alternative 3 would result in an increase in GHG emissions associated with short-term construction and long-term operation of the project. However, emissions would not exceed applicable PCAPCD construction thresholds or operational de minimis levels. Under CEQA, and using the CEQA criteria, this impact would be **less than significant** for project construction and **less than significant** for project operations. RPMs AQ-17 and AQ-18 would further reduce construction-related GHG emissions by requiring the use of cleaner fuel for construction equipment and limiting idle times for construction vehicles. However, these RPMs would not be necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs AQ-17 and AQ-18 as mitigation measures would reduce the effects of GHG emissions from construction vehicles but are not necessary to reduce a significant effect.

Impact 4.11-2 (Alt. 3): Impacts of Climate Change on the Project

Climate change would affect Alternative 3 in the same way as described for Alternative 2. Climate change is anticipated to result in changes to local weather patterns in California and within the project area, including increases in average temperatures, decreases in snowpack. These changes may lead to increased risk of wildfires, mass wasting (e.g., rockslides), and avalanche risk. However, fire protection agencies would continue to monitor fire risk through and serve the area as needed. Further, the project would not include any new residences or occupied structures, and would not be operational (other than for maintenance and repairs) during the times of the year when fire risk is high or when heavy rain could increase the risk for rockslides. Many of the project structures are also primarily metal (e.g., gondola towers, Gazex exploders) and are not highly susceptible to fire damage. In addition, the project would include eight new Gazex exploders specifically designed to reduce avalanche risk. For these reasons, local changes in weather patterns and associated effects would not pose additional risk on the project. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be a **minorly adverse** effect on the project from climate change because fire and avalanche risk could increase to a small degree in the project area. There are no applicable RPMs that would mitigate this effect. Under CEQA and using the CEQA criteria, this impact would be **less than significant** because climate change would not adversely impact the project. There are no applicable RPMs that would reduce this effect.

Primary project components for Alternative 3 would be the same as described above for Alternative 2 (e.g., towers, mid-stations, base terminals, Gazex system). Within the scale of changes in weather patterns attributable to climate change, the project location would be the same under Alternative 3 as Alternative 2. Thus, future changes in weather patterns and associated effects would be the same.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to impacts of climate change on the project under Alternative 3 would result in a **minorly adverse** effect because fire and avalanche risk could increase to a small degree in the project area. However, these effects would not result in increases in risk of injury to people or structures. There are no applicable RPMs that would mitigate this effect.

CEQA Determination of Effects

Like Alternative 2, Alternative 3 would result in a new gondola connecting Squaw Valley and Alpine Meadows that would operate during the winter season only. Impacts from changes in local weather patterns due to climate change could result in increased risk of fire, avalanche, increased potential for rockslides, and reduced snowpack. However, the project would include new technology specifically designed to more efficiently minimize avalanche risk and fire protection activities would continue to occur in the area as they do today. Reductions in snowpack would not result in physical effects on the project. The risk for rockslides currently exists and may increase in the future, but the project would not result in any changes that could

increase this risk. Further, the project would not physically alter the existing mountain terrain in a way that would increase the risk of landslide events or result in the placement of people or structures in hazard-prone areas. Under CEQA, and using the CEQA criteria, impacts from climate change on the project would be **less than significant.** There are no applicable RPMs that would reduce this impact.

Mitigation Measures

No mitigation measures are required.

4.11.3.4 ALTERNATIVE 4

Impact 4.11-1 (Alt. 4): Greenhouse Gas Emissions

Under Alternative 4, construction and operation of the new gondola, and associated components, would result in GHG emissions. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to increases in GHG emissions would result in a **minorly adverse** effect because the project would contribute a small amount of net GHG emissions to the cumulative global climate change problem. RPMs AQ-17 and AQ-18 would reduce construction-related GHG emissions and mitigate this effect. Under CEQA, the project would not exceed applicable PCAPCD construction or operational thresholds for GHG emissions; therefore, this impact would be **less than significant** for both construction and operational phases**.** In addition, RPMs AQ-17 and AQ-18 would reduce construction-related GHG emissions by requiring the use of cleaner fuel in construction equipment and limiting idle times for construction vehicles. With implementation of these two RPMs, this impact would be reduced, although these RPMs are not necessary to reduce a significant impact to a less-than-significant level.

Primary components for Alternative 4 would be the same as described above for Alternative 2 (e.g., towers, mid-stations, base terminals, Gazex system). Thus, construction activities and duration would also be the same. Further, under Alternative 4, the new gondola would operate in the same manner as for Alternative 2, only with a slightly different alignment. Operational activity and increases in visitation to Squaw Valley and Alpine Meadows would be the same for Alternative 4 as described for Alternative 2. Therefore, GHG emissions were not remodeled and increases in GHG emissions and impacts are considered the same as for Alternative 2.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to generation of GHG emissions and climate change would result in a **minorly adverse** effect because construction and long-term operations would contribute a small amount of net GHG emissions to the cumulative global climate change problem. These effects would be mitigated through implementation of RPMs AQ-17 and AQ-18.

CEQA Determination of Effects

Alternative 4 would result in an increase in GHG emissions associated with short-term construction and long-term operation of the project. However, emissions would not exceed applicable PCAPCD construction thresholds or operational de minimis levels. Under CEQA, and using the CEQA criteria, this impact would be **less than significant** for project construction and **less than significant** for project operations. RPMs AQ-17 and AQ-18 would further reduce construction-related GHG emissions by requiring the use of cleaner fuel for construction equipment and limiting idle times for construction vehicles. However, these RPMs would not be necessary to reduce a significant impact to a less-than-significant level.

Mitigation Measures

All RPMs provided in Appendix B are adopted by Placer County as mitigation measures and are included in the Mitigation Monitoring and Reporting Program for the project. The adoption of RPMs AQ-

17 and AQ-18 as mitigation measures would reduce the effects of GHG emissions from construction vehicles but are not necessary to reduce a significant effect.

Impact 4.11-2 (Alt. 4): Impacts of Climate Change on the Project

Climate change would affect Alternative 4 in the same way as described for Alternative 2. Climate change is anticipated to result in changes to local weather patterns in California and within the project area, including increases in average temperatures, decreases in snowpack. These changes may lead to increased risk of wildfires, mass wasting (e.g., rockslides), and avalanche risk. However, fire protection agencies would continue to monitor fire risk through and serve the area as needed. Further, the project would not include any new residences or occupied structures, and would not be operational (other than for maintenance and repairs) during the times of the year when fire risk is high or when heavy rain could increase the risk for rockslides. Many of the project structures are also primarily metal (e.g., gondola towers, Gazex exploders) and are not highly susceptible to fire damage. In addition, the project would include eight new Gazex exploders specifically designed to reduce avalanche risk. For these reasons, local changes in weather patterns and associated effects would not pose additional risk on the project. Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, there would be a **minorly adverse** effect on the project from climate change because fire and avalanche risk could increase to a small degree in the project area. There are no applicable RPMs that would mitigate this effect. Under CEQA and using the CEQA criteria, this impact would be **less than significant** because climate change would not adversely impact the project. There are no applicable RPMs that would reduce this effect.

Primary project components for Alternative 4 would be the same as described above for Alternative 2 (e.g., towers, mid-stations, base terminals, Gazex system). Within the scale of changes in weather patterns attributable to climate change, the project location would be the same under Alternative 4 as Alternative 2. Thus, future changes in weather patterns and associated effects would be the same.

NEPA Effects Conclusion

Under NEPA, and considering the NEPA indicators, absent RPMs and/or mitigation, direct and indirect impacts related to impacts of climate change on the project under Alternative 4 would result in a **minorly adverse** effect because fire and avalanche risk could increase to a small degree in the project area. However, these effects would not result in increases in risk of injury to people or structures. There are no applicable RPMs that would mitigate this effect.

CEQA Determination of Effects

Like Alternative 2, Alternative 4 would result in a new gondola connecting Squaw Valley and Alpine Meadows that would operate during the winter season only. Impacts from changes in local weather patterns due to climate change could result in increased risk of fire, avalanche, increased potential for rockslides and reduced snowpack. However, the project would include new technology specifically designed to more efficiently minimize avalanche risk and fire protection activities would continue to occur in the area as they do today. Reductions in snowpack would not result in physical effects on the project. The risk for rockslides currently exists and may increase in the future, but the project would not result in any changes that could increase this risk. Further, the project would not physically alter the existing mountain terrain in a way that would increase the risk of landslide events or result in the placement of people or structures in hazard-prone areas. Under CEQA, and using the CEQA criteria, impacts from climate change on the project would be **less than significant.** There are no applicable RPMs that would reduce this impact.

Mitigation Measures

No mitigation measures are required.

4.11.3.5 SUMMARY OF DIRECT AND INDIRECT EFFECTS

Table 4.11-2 provides a summary of the effects determinations for the direct and indirect effects evaluated above for each alternative.

For Alternative 1, the No Action Alternative, there would be no effect for all NEPA indicators and CEQA criteria evaluated.

Addressing the action alternatives, for Impact 4.1-1, there would be a minorly adverse effect for all applicable NEPA indicators. Construction and operation of the project would result in a small net increase in GHG emissions, contributing to the global climate change problem. Implementing RPMs would reduce the amount of construction-related GHG emissions associated with vehicle exhaust, but emissions would not be eliminated. Under CEQA, impacts for all alternatives would be less than significant, and no mitigation would be required; however, implementation of RPMs would further reduce construction emissions. Primary components for all alternatives would be the same (e.g., towers, mid-stations, base terminals, Gazex system). Thus, construction activities and duration would also generally be the same. Further, the new gondola would operate in the same manner under each alternative, only with a slightly different alignment. Similarly, the action alternatives would require a similar level of electricity, and would not differ in other ways that would affect operational emissions. Therefore, GHG emissions were not remodeled for Alternatives 3 and 4 and increases in GHG emissions and related impacts are considered the same for all action alternatives. It should be noted that conservative assumptions were used for conducting the emissions modelling, that is, assumptions were used that would result in a higher emissions estimate. Therefore, the emissions estimates provided in this analysis are likely higher than those that would actually occur for any of the alternatives.

For Impact 4.1-2, changes to local weather patterns associated with climate change would result in physical effects in the project area, including increased risk of wildfire, mass wasting (i.e., rockslide) and avalanche. Because the alignments of all the action alternatives are located in the same vicinity, effects from climate change would affect all the alternatives equally and there would be a minorly adverse effect for all applicable NEPA indicators. No aspects of any action alternative make it more or less susceptible to, or resilient to, the effects of climate change compared to the other action alternatives. Appropriate fire protection agencies and programs are currently in place, the gondola would not be operational during periods of wildfire and rockslide risk, and new avalanche control systems would be installed as part of the action alternatives, minimizing this effect. Under CEQA, impacts for all action alternatives would be less than significant, and no mitigation would be required. There are no RPMs that reduce this effect.

Table 4.11-2 Summary of Direct and Indirect Effects

Impact	Applicable Analytical Indicators and Significance Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4
4.11-1: Greenhouse Gas Emissions	Compliance with local, state and federal regulations regarding GHG emissions (including Assembly Bill 32 recommendations and Placer County Air Pollution Control District thresholds)	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3

Table 4.11-2 Summary of Direct and Indirect Effects

Impact	Applicable Analytical Indicators and Significance Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4
	Quantification of GHG emissions associated with construction and operation of the project, including power generation, as compared with the existing condition	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Quantification of GHG emissions related to potential changes in traffic volumes	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Discussion of potential GHG emissions associated with the proposed project and alternatives and potential contributions to climate change	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Identification of BMPs to reduce GHG emissions	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant and/or cumulative impact on the environment (i.e., exceed 1,100 $MTCO_2e$/year)	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gasses	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3
4.11-2: Impacts of Climate Change on the Project	Discussion of the impact of climate change on the operations of the proposed project and the potential effects of climate change on the project's environmental impacts	No effect	Minorly adverse under NEPA; less than significant under CEQA	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternative 2	Minorly adverse under NEPA; less than significant under CEQA Same as for Alternatives 2 and 3

4.11.4 Cumulative Effects

4.11.4.1 METHODS AND APPROACH

The list of past, present, and reasonably foreseeable future projects considered in this cumulative analysis is provided in Chapter 3 of this Draft EIS/EIR.

4.11.4.2 CUMULATIVE IMPACTS

As indicated in the preceding discussion of project impacts, any analysis of GHG emission–related impacts is inherently a cumulative analysis that considers the project's contribution to the cumulative global climate change problem. For this reason, a separate discussion of cumulative impacts associated with GHG emissions is not included. The conclusions provided in the discussion of Impact 4.11-1, that the GHG emissions from each action alternative would result in a minorly adverse effect under NEPA and a less than significant impact under CEQA, characterize each action alternatives contribution to the cumulative global climate change impact.

The discussion of the impacts of climate change on the project under Impact 4.11-2 concludes that for each action alternative climate change effects on fire risk, rockslide risk, avalanche risk, and snow pack would result in a minorly adverse effect under NEPA and a less than significant impact under CEQA. These effects of changing weather patterns on the project do not interact with other projects in the area. Other projects do not alter the effects of changing weather patterns on the gondola, and the gondola does not alter the effects of changing weather patterns on the project. Without an interaction between the gondola and other projects, there is no potential for a cumulative effect.